

THE EC MOVEMENT, OR THE QUANTITATIVE TURN IN BANKING,

A CASE STUDY OF THE VIRTUAL TURN OF SOCIETY.

DISSERTATION

to obtain
the doctor's degree at the University of Twente,
on the authority of the rector magnificus,
prof. dr. W.H.M. Zijm,
on account of the decision of the graduation committee,
to be publicly defended
on Friday, 10th February 2006 at 16:45

by

Adriaan Kukler
born on 15 February 1968
in Nieuwe Bildtzijsl

This dissertation has been approved by:

Promotores: Prof. dr. A. Bruggink

Prof. dr. H.J. Achterhuis

**THE EC MOVEMENT, OR THE
QUANTITATIVE TURN IN BANKING,**

**A CASE STUDY OF THE VIRTUAL TURN
OF SOCIETY.**

Colophon

Graphic design cover: Heleen Klopper

Cover photo: jan@janbijl.com

Middle Photo: Zweefmolen, Popas Mamaia, Roemenië 2002,
Marco van Duyvendijk

Printing: Febo Druk BV.

Copy right 2006 Adriaan Kukler, Amsterdam

ISBN number: 90-365-2326-5

Contents	
1	Preface..... 10
2	Background and introduction..... 12
2.1	Background..... 12
2.2	Introductory summary..... 16
3	Research question and strategy..... 21
3.1	Research question..... 21
3.1.1	Introduction..... 21
3.1.2	Problem statements..... 22
3.2	Research strategy..... 24
3.2.1	Philosophy of science..... 25
3.2.2	The theory itself..... 25
3.2.3	Context and plausibility..... 26
3.2.4	The clinical study..... 27
3.2.5	Content-context..... 27
3.2.6	Philosophy of travelling..... 28
4	Developments in science..... 31
4.1	Objective..... 31
4.2	Developments in philosophy of science..... 32
4.2.1	Introduction into the modernist – postmodernist debate..... 32
4.2.2	Standard model of science: Modernism..... 34
4.2.3	Postmodernist complications in science..... 37
4.2.4	Conclusion about Modernist- postmodernist debate..... 40
4.3	Current philosophy of science approaches..... 41
4.3.1	Standard text book approaches..... 42
4.3.2	Nozick: the Functional response to postmodernism..... 43
5	Conceptual morphology..... 48
5.1	Introduction..... 48
5.2	Sloterdijk's Spheres..... 50
5.3	Comments on Sloterdijk..... 52
5.4	The form of the traveller..... 54
6	The philosophy of travelling..... 58
6.1	Introduction..... 58
6.1.1	Classification of philosophy of travelling..... 58
6.1.2	Definition and mechanism of travelling..... 61
6.1.3	Detail analysis of identity-changing mechanism in travelling. 63
6.1.4	Types of travelling..... 66
6.1.5	Concepts of Environment and Border..... 68
6.1.6	Speed..... 74

6.1.7	Scope of application of philosophy of travelling	78
6.2	Genealogy of travelling.....	81
6.3	Philosophy of travelling epistemology	86
6.3.1	Nietzsche's traveller.....	87
6.3.2	Deleuze and Guattari's nomadic war machine	89
6.3.3	Rosi Braidotti's nomad	90
6.3.4	Weick's play and game	91
6.3.5	Components of the epistemological process, according to the traveller. 93	
6.3.6	Characteristics of traveller's knowledge.....	99
6.4	Philosophy of travelling social analysis.....	100
6.4.1	Virtual travelling	101
6.5	Synthesis: the analysis toolbox	104
7	Cognitive aspects	106
7.1	CRPM theory identification.....	106
7.1.1	Introduction.....	106
7.1.2	General EC theory.....	106
7.1.3	EC applied to credit risk: Model of CRPM theory	110
7.1.4	The case study: RI model of CRPM	115
7.2	Classification of CRPM theory	119
7.2.1	Introduction.....	119
7.2.2	Social context / Context of justification.....	119
7.2.2.1	Description of user community.....	119
7.2.2.2	Credit Risk Management	123
7.2.2.3	Shareholder value.....	125
7.2.2.4	The regulator	126
7.2.2.5	The exogenous developments enabling EC based CRM	128
7.2.2.6	Summary	130
7.2.2.7	Conclusions regarding the context.....	132
7.2.3	Ontology.....	133
7.2.3.1	What is ontology?	133
7.2.3.2	Capital ontology	134
7.2.3.3	Credit ontology	138
7.2.3.4	Risk ontology	141
7.2.3.5	Ontological classification summary	145
7.2.4	Epistemology / Methodology.....	147
7.2.4.1	Introduction.....	147
7.2.4.2	Statistics / empiricism	149
7.2.4.3	Econometrics.....	156
7.2.4.4	Financial Markets.....	159

7.2.4.5	Expert Opinion.....	160
7.2.4.6	Polanyi: The Tacit dimension	165
7.2.4.7	Conclusion regarding epistemology/methodology of CRPM	172
7.2.5	Conclusions regarding classification of EC theory	175
7.3	Content issues	177
7.3.1	Risk concepts	177
7.3.1.1	Introduction.....	177
7.3.1.2	History of risk.	177
7.3.1.3	General concept of risk	180
7.3.1.4	Credit risk: the Rabobank International case.	192
7.3.1.5	Model risk	194
7.3.1.6	Philosophy of science perspectives on the risk issue.....	198
7.3.2	Diversification of risk versus concentration of knowledge	211
7.3.2.1	Philosophical experiment.....	211
7.3.2.2	Empirical findings.....	213
7.3.2.3	Rabobank International (RI) Case.....	214
7.3.2.4	Philosophy of science perspectives on the diversification issue	217
7.3.3	Valuation problem: Corporate finance vs. Accounting	220
7.3.3.1	Introduction.....	220
7.3.3.2	Accounting based valuation	220
7.3.3.3	Market based valuation	222
7.3.3.4	Mixed models and fair value.....	223
7.3.3.5	Criticism on fair value.....	224
7.3.3.6	EC and valuation.....	225
7.3.4	Quantification.....	228
7.3.4.1	Introduction.....	228
7.3.4.2	Philosophy of science analysis of quantification	234
7.4	Conclusions regarding the content analysis	239
8	Social implications.....	242
8.1	Introduction.....	242
8.2	Short description of the EC movement.....	243
8.3	Problem and strategy of analysis of part two	251
8.4	Model of society.....	253
8.4.1	A history of western social philosophy.....	253
8.4.1.1	Introduction.....	253
8.4.1.2	Classical society	254
8.4.1.3	Modernist society	256
8.4.1.4	Postmodernist society	262

8.4.1.5	Network society	263
8.4.2	Philosophy of travelling view on society.....	265
8.4.3	Conclusions regarding the overview of social philosophy	268
8.5	Information & communication.....	269
8.5.1	Introduction.....	269
8.5.2	The network society	269
8.5.3	Social implications of ICT developments.....	274
8.6	Social implications of Risk concepts	277
8.6.1	Introduction.....	277
8.6.2	Risk society: Reflexive modernisation	278
8.6.3	Risk perception, Risk communication & Trust.....	283
8.6.3.1	Introduction.....	283
8.6.3.2	Subjectivity in risk	285
8.6.3.3	Social and cultural approaches.....	287
8.6.3.4	Risk communication	288
8.6.4	Managing expectations	290
8.6.5	EC based risks.....	291
8.6.5.1	Measurement by quantitative reductionism	291
8.6.5.2	EC based Management.....	294
8.6.6	Social implications regarding risk management.	296
8.7	Capitalist economy.....	298
8.7.1	Introduction.....	298
8.7.2	Critical analysis of capitalism	299
8.7.3	Social implications of capitalist aspects of EC	305
8.8	Philosophy of travelling	307
8.8.1	ICT travelling.....	307
8.8.2	Risk management travelling.....	310
8.8.3	Global capitalism travelling	313
8.8.4	EC movement specific travelling.....	316
8.9	Conclusions.....	321
8.9.1	Introduction.....	321
8.9.2	Information.....	321
8.9.3	Risk	323
8.9.4	Capital	324
8.9.5	Types of travelling	325
8.9.6	Final conclusion	328
9	Part three: implications of the virtual turn.	330
9.1	Introduction.....	330
9.2	Problem and approach of part three	330
10	Virtuality	332

10.1	Virtuality	332
10.2	Analysis of the use of the word.....	335
10.3	Virtual travelling.....	337
10.4	Philosophy of travelling analysis of virtual travelling	339
10.5	The virtual turn.....	345
10.6	Indications of the virtual turn.....	347
11	Implications of virtual travelling.....	350
11.1	Conclusions regarding the EC movement.....	350
11.2	Implications of virtual travelling.....	352
11.2.1	Speed and acceleration.....	353
11.2.2	The body	356
11.2.3	Horizon.....	359
11.2.4	The nomad.....	360
11.3	Illustration of speed and horizon in the EC case.....	362
11.4	Conclusions of part three: implications of virtual travelling	364
12	Final summary.....	366
13	Dutch summary / Nederlandse samenvatting.....	371
14	Appendix: Analysis of the Rabobank econometric model for (credit)	
EC.	377	
15	Literature.....	380

1 Preface

Moved by the phenomenon of travelling for many years already, the last four years I was able to spend considerable time on this thesis to elaborate ideas. As will be elaborated extensively later, the production of this thesis required a considerable closure; writing requires some isolation. I realise that in recent years, in many cases I have neglected social obligations to withdraw myself from the social context and devote my time and attention to the subject under investigation. Therefore, first of all, I would like to thank my family, my wife and kids in particular, for the space given to finalise this thesis. But also I would like to thank my friends and relatives for holding on to the relationship, although the exchange may have been asymmetric in occasions.

Furthermore, I would like to thank the Rabobank, who not only provided time to do my investigations, but also offered a fascinating opportunity to study an important transformation in the core of today's society, ie. the quantitative turn in banking. As a project manager I have been participating and managing many projects that contribute to the transformation mentioned. This provided the opportunity to participate in and interact with the subject of research, which is, as far as I know, quite revolutionary for a philosophical analysis. It provided a strong link to reality, to the pragmatic issues that are solved in this business context. With hindsight I can say that this opportunity has contributed significantly to my understanding of the subject.

Of course, thanks also go to colleagues who worked with me during the past four years, especially the colleagues from the credit department and the risk modelling department in Rabobank International. Especially, I would like to thank Walter Foppen and Martijn Derix, with whom I made many travels to foreign offices. This travelling time allowed me to discuss any thoughts I had on issues like risk, econometrics or statistics. Thanks to Walter and Martijn for their introductory remarks, as well as corrections on my initially simple thoughts about numbers.

Furthermore, I would like to thank my fellow members of the LIFF¹ who shared so many thoughts about travelling, nomads and the sedentary citizens while walking and leaping over the green fields of Friesland.

Finally, I want to thank my two tutors, Bert Bruggink and Hans Achterhuis, who have on the one hand left me the freedom to pursue my own research, and on the other hand have contributed so much to the quality of the research with their critical attitude.

¹ Life International Fierljep Foundation

The analysis shows that the virtual turn is highly driven by privately owned technology and algorithmic rationality, while the value of humans seems neglected in many ways. An example of such non-human developments concerns the issue of global capitalism, driven by technology and calculations. I am not too positive about this development of globalisation, creating speed differentials in society and ultimately, a Fourth World of the unconnected, of the poor. As will be shown, being slower makes vulnerable.

Realising that I do not sketch a clear solution, I hope that this analysis contributes to a better understanding of the implications of the virtual turn of society. At best, it may serve as inspiration for selective counteractions.

2 Background and introduction

Although some hold that the context of discovery, the background for the thesis, is of no importance for the quality of scientific theories (see below for a discussion of Popper in §4.2.2), I believe that the background provides a first frame to capture the problem. Therefore, I will try to describe what drove me to put forward this thesis; what made me investigate this problem.

In the first paragraph of this chapter I will elaborate several developments which together provide the inspiration for this thesis. The acceleration of society in general, as well as the quantification of credit risk in what I have started to call the Economic Capital movement as a specific case of this acceleration are among the largest inspiration sources.

In the next paragraph of this chapter, an introductory summary is provided. This summary shows that the thesis starts with a short introduction into the research question and strategy, literature, and the philosophy of travelling as alternative to mainstream thinking.

After determination of our subject and approach we can start the investigation in part 1 with the cognitive analysis of the theory.

Having a clear understanding of the content of the theory, in part 2 we can complete the assessment of social implications of the EC movement and now also include contextual factors in our analysis.

Concluding in part 3, a generalisation of the conclusions from the EC case towards the virtual turn in society is presented. The aim is here to assess potential implications of the virtual turn in general, no longer restricted to the case of the EC movement.

A final conclusion regarding the EC movement, its social implications, and regarding the implications of virtual travelling in general completes the thesis.

2.1 Background

Of course, already as a child I also was fascinated by the magic of Vikings, Indians, Knights and the like. But at the end of my student period, I made my first journey, to India, Nepal, Thailand, Malaysia, Singapore and New Zealand. This journey definitely produced my interests in the human phenomenon of travelling. As a backpacker you find out quickly that you are on your own, a stranger in a strange land, and you do not belong to the population, can not trust their goodwill towards you. Nor can they trust you, as you will leave soon.

A separation had taken place; while I was used to being part of my environment, as a backpacker I was really meeting environments, as in opposing them. In order to survive, I had to watch myself, while simultaneously navigate in a strange environment.

After a while, you find yourself chasing the Lonely Planet² path along tourist attractions, travelling over surfaces, sight-seeing and ignoring depth, not able to see things that take more than a few hours or days. The temporary visits allowed me to see many places, but prohibited to get to know them.

These differences caused by differences in tenor of stay drove me to think that the intensity or speed of travelling was of large influence on the possible way of life. Wanting to elaborate this idea, I attempted to elaborate it in a master's thesis, already back in 1994. Referring back to the Vikings and the others mentioned above, I identified major types of travelling, marking very distinct lifestyles, including (nomadic) hunters, (sedentary) farmers, (transiting) merchants, and quite recently, (virtual) informationlists. The recent transformation into virtual travelling involves a change from a money based society, where the merchant can use this universal value (money) to access any place on earth and buy his way out of there and create trade flows, towards a society primarily focused on information, where the informationlist does not visit places anymore, but leaves physical travelling to flows of information³ and thus resides to virtual travelling. Circumstances prohibited the finalisation of this research at that time.

Since 2001, fortune⁴ put me in the position where, as an employee of Rabobank, I joined the BIS II/ EC⁵ program for Rabobank International, the wholesale finance division of the Rabobank Group, as project manager for credit risk projects. Next to that, the bank supported me to start the research for this PhD thesis. I found myself in the centre of the money society (the finance industry) in a project to quantify credit risk, ie. capture it in ICT systems and quantitative models, requiring and producing information to manage credit risky portfolios. I found myself on the intersection of money and information, the ideal spot to investigate the effects of the proliferation of virtual travelling.

² Lonely Planet provides books for backpackers, such as the Travelling Survival Kit for preparation of their visits. It is very popular and many backpackers follow its suggestions, creating the Lonely Planet path.

³ Or, more accurate, flows of electronical particles that represent information.

⁴ Or careful planning?

⁵ BIS II: initiative of the Basle Institute for International Settlements, an important advisor for central banks, to reform current banking regulations in industrialised countries, to become effective in 2008.

EC: economic capital, a measure to quantify risk. EC, or a substitute, is the fundamental risk measure in BIS II.

Especially the last decade, we can observe an acceleration of society in general; society is picking up mobility. Several developments provide hints in that direction:

- Deregulation and subsequent globalisation of economies.
After the Cold War lost its meaning, more and more governments released border restrictions and opened up their economies. Money controls were eased, as well as ownership controls, allowing foreign companies to enter. Negotiations in world trade platforms further eased cross border trade. We can safely conclude that developed economies are global to a significant extent. No industrialised country refers to itself as autarkic anymore. A complex web of import and export of products, components, resources or services, and an even more complex web of flows of money characterises our economies.
- Domination of market economy.
Since the collapse of the Soviet Union and the capitalistic turn in China, there is no viable alternative for market capitalism. Not all countries share the same purity of capitalism, with the US and the EU restricting imports, with the Scandinavian model of social capitalism, etc., but all are organised around competition and private property. Since time is one of the largest competitive factors, introduction of market capitalism means that mobility is stimulated.
- Hyper-mobility of capital, ideas, and knowledge.
It was flash capital that contributed to the Asian crisis in 1997, capital that could be withdrawn easily from the economy, because it had no commitment to any locality other than wanting maximum return. Vast amounts of money, large multiples of the value of all goods and services produced, flow around the globe any day. Investors are supported by ICT and quantitative models to screen the globe daily for the best opportunities.
Internet has provided access to an infinite common base of ideas, facts, fantasies and knowledge, but it also provides connection to others, to distribute ideas, or to find each other. On internet we travel with the speed of the ICT, which is the speed of light (ultra speed). Travelling with this technology results in lifestyles that reflect this technology. Especially conventional notions of time and space will change.
- A cascade of high profile fraud cases.
Enron, Worldcom, Ahold, Parmalat, Baan, etc. A long list could be provided of high profile fraud cases, which tends to make us think that either fraud has become so much more easy, or the rewards of fraud are much higher (if not caught).

- Volatility on financial markets.
With deregulation, volatility is introduced. However, for example, while the USD-DEM foreign exchange rate has been deregulated since the fall of Bretton Woods in the 1970's, recent volatility of the USD-EUR FX rate is remarkably high. The increased risk of fraud also attributes to volatility in the respective instruments (bonds and shares). Markets seem increasingly sensitive to information, and react strong on the arrival of new information.

My thesis is that underlying the above observations is a fundamental development which I call the virtual turn in society. The virtual turn demarcates a phase in which the virtual environment(s) emerge(s) as important forum in society. Information is the key concept; it is chiefly information that allows virtual travelling, that enables networks to function.

The main thesis is that society is transforming ("turning") from a monetary focused society into an informational society, and this has significant effects on our lives and society.

This will be most visible in the intersection of information and money, ie. in risk management.

Seizing the opportunities available to me, and having to restrict the subject of investigation in order to see something, I decided to consider the implementation of EC based frameworks within Rabobank's wholesale division as a special case of this transformation of society.

The implementation of EC based frameworks in the banking industry (what I refer to as the EC movement) is a landmark development, causing a quantitative turn in credit risk management. This EC movement currently captures the attention of banks and other parties related to the banking industry and motivates them to spend a lot of energy in transforming their risk measurement and management (which is at the core of the banking business) into EC based frameworks. It is a global movement in the sense that banks over the whole world are spending considerable budgets on it⁶. And its effects are profound and deep in the sense that it is supposed

⁶ In the "The Banker", a magazine, of Dec. 2001, p.16 it is reported that the conservatively estimated costs to prepare banks for BIS II, the new internal models based banking regulations planned for 2005, amount to 2.25 trillion dollars, 1250 times the amount the global top 1000 banks have as tier 1 capital (straight equity). Although the author thinks the number is somewhat inflated, it illustrates that the required efforts are considered huge. Maybe "Euromoney", another magazine, of Dec. 2002, p.102, provides a better estimate in stating a spending of all global banks of about 25 billion USD to implement BIS II, with the largest banks typically investing 50 to 200 million USD over five years. They estimated that this would amount to 5 basis points of all global credit assets.

to become the basis of credit measurement, credit pricing and structuring, credit approval, performance measurement, provisioning and capital adequacy⁷. To the extent that the economy is financed by banks, this may have severe implications for the economy. Hence, the influence of the EC movement in a core industry (finance of production) is both wide and deep.

The EC movement is driven by the sophistication of banking regulations (known as BIS II), which allows banks to develop and use their own internal risk models, and by the quest for shareholder value, so very popular at the turn of the millennium.

It is enabled by underlying developments, such as:

- the progress of ICT, providing processing capacity;
- increasing sophistication of risk management, providing risk concepts and tools;
- increased liquidity of credit risk on financial markets, providing prices and the opportunity to trade credit risk.

The EC movement connects corporate credit risks⁸ to the global financial markets by the application of (or capture of credit risks in) a quantitative, standardised framework. By quantification and risk adjustment, credit risk becomes informational, ie. information will determine the amount of risk and the value of capital. Standardisation allows the use of ICT for processing of data and information (increasing speed), and the inherent commoditisation⁹ of credit risk provides liquidity (offering the speed of the financial markets).

The EC movement is an important vehicle to transform a monetary society into informational, and as such, analysis of this case can reveal interesting general aspects of this transformation, next to particular statements concerning the epistemological quality and social implications of the EC movement.

2.2 Introductory summary

First, we will spend considerable time on the determination of a suitable approach. We will assemble a cognitive tool box that must help us in analysing the subject. The toolbox is based on the main conclusions from an analysis of the state of the art of science and philosophy of science in particular. We find that not one theory

⁷ Pillar 2 (Supervisory Review Process); Pag.9, art. 42, The new Basel capital accord, second consultative proposals, Basel Committee on Banking Supervision, BIS, January 2001.

⁸ Think of e.g. loans to corporates to finance working capital or investments.

⁹ By standardising credit risk it becomes completely specified by known standards (like a commodity), which makes it tradable on a market.

in particular can explain the rationality of the development of knowledge, so we add an alternative, non-mainstream theory: the philosophy of travelling, based on interactions and identities that sequentially involve in various interactions. The philosophy of travelling can be considered an alternative conceptual form to contemplate social issues. Its relevance is given by the focus on orientation frameworks that change when the intensity of travelling changes. We decide to use a multi-perspective approach, based on standard recommendations, Nozick's functional response to postmodernism and the alternative philosophy of travelling.

With this toolbox, in part one we start a cognitive analysis of the subject: Economic Capital (EC) theory for wholesale credit risk, an application of general EC theory to credit risk, resulting from transactions with large and midcap counterparties.

Starting the cognitive analysis, first we identify EC theory in general, ie. as a theory to describe all the various types of risks of financial institutions. Next, the subject is constrained to EC for credit risk. And finally, the subject for cognitive analysis is further constrained to the wholesale credit risk EC framework applied in the Rabobank, as the specific case that will be studied.

Also, to allow comparison with other theories, EC theory is classified in terms of:

- its social context (a regulated business context),
- an ontological description of its main elements, such as credit risk (rare, invisible) or capital (blurred concept from valuation perspective),
- the epistemological principles used (mainly empiricism) and its methods (statistics, econometrics).

We conclude that the ontology of the main elements does not match with the epistemological principles or methodologies applied. For example, when something is rare, the Law of Large Numbers does not apply (by definition).

Next, we turn to the concept of risk and find that it is essentially about (future) time management, involving both cognitive as well as normative statements, subjective as well as objective elements. Turning to the issue of diversification, we find that the theory assumes that diversification is always beneficial, but ignores expertise of a bank and the role of the bank itself in the development of credit risks. Some empirical studies suggest that not all diversification is equal. Finally, turning to the issue of valuation and quantification, we find that the requisites for measurement and information to predict the future are not satisfied in the EC movement. We find that EC applications, such as Credit Portfolio Management create an accounting mismatch between banking and trading books, and more in general, that capital is a blurred concept from an accounting perspective. Next to that, we find that quantification allows the use of ICT to process data, but that the underlying

statistical and econometric models create a quest for data that is endless and can not be satisfied. The data problems of all banks that struggle to implement BIS II evidences the poor empirical grounds for application of statistics in wholesale finance¹⁰.

After the analysis of the cognitive aspects of the theory, we turn to a social analysis of the EC movement and find that the EC movement has social implications, but also that there are social aspects to the EC movement that seem to be neglected currently.

Our analysis shows that the EC movement is part of an interplay between several more general social developments, such as the strong emergence of Information and Communication Technology (ICT), the sophistication of risk management in terms of concepts, tools, techniques, etc, and the emergence of global capitalism with its nerve centre, the global financial markets. The EC movement is dependent on these underlying developments, but reversibly is also a cause for further expansion of these developments. The EC movement causes many banks to upgrade their risk IT systems; the increased attention from business and science stimulates further progress in risk concepts and applications, while the emergence of credit risk derivatives markets and increased liquidity of other credit risk related financial instruments has enabled the actual and active management of credit portfolios.

These four developments have a profound effect on society and change society. Castells mentions the network society, with alternative production relationships, different power mechanisms, and differences in social experiences for example in possibilities to interact, or in the fragmentation of communities. Beck mentions the risk society, in which the industrialised society is now in a phase where it produces its own risks; where man produces his own main hazard. Finally, Schweickart shows that global capitalism is the best alternative we have, but the formal capitalism has several serious unwanted side effects, such as the inequality it produces. Most countries therefore are not organised as formal capitalist economies, but have amended formal capitalism, employing subsidies and taxes to redistribute the effects of capitalism. Most countries counteract the unwanted biases of formal capitalism.

We find that the EC movement fits in nicely in these three societies, but also contributes significantly in their further expansion: connecting corporate credits to global networks, producing its own risks, and increasing the mobility of capital.

¹⁰ The default of a hedge fund at the turn of the millennium, Long Term Capital Management, involving two Nobel Prize winners, shows a case where the level of knowledge concerning statistics and econometrics is of little importance in managing financial risks.

Furthermore, the social analysis shows that risk has social aspects, is essentially a human artefact, involving issues like subjectivity in risk assessment, in risk perception and identification, risk communication and trust, and other types of “soft” factors in risk evaluation.

Concluding our social analysis, we find that risk is the link between capital and information in the risk adjusted valuation principles. Risk colonises the future in terms of managing future outcomes by directing (non-future) behaviour. Next to cognitive statements which are required to build the chains of causes and effects to describe risks, normative and judgemental statements are required to identify, assess and evaluate risks. It can be concluded that, in the mainstream EC movement, the human aspect of risk seems neglected, which adds significantly to model risk, but allows the speed of computers. Also, the EC movement adds to the mobility of capital by enlarging the investible universe, with ICT providing the ultra speed of light. Because of the fixed investment costs, the Law of Large Numbers and the concept of diversification, the EC movement is expected to lead to concentration in the banking industry, concentrating capital further.

EC is earnest in its calculations, but not solidary in favouring the strong and penalising the weak. This effect, combined with a concentrating tendency will increase inequality, one of the basic biases of capitalism.

Finally, we observe a mismatch in the sense that risk identification (if the risks can affect society) is a political process, deciding where our attention is allocated, while the technology and applications are privately owned. When the role of technology in society increases in importance, the political process may suffer.

In the last part of the analysis, we make an attempt to generalise the above conclusions to society in general. In part one and two, the philosophy of travelling has been elaborated to show that all mentioned developments have in common that they involve some kind of virtual travelling, which is exactly what provides the strength (read: speed) to the development.

The philosophy of travelling helps to analyse the effects of a specific level of mobility on cognitive processes and social issues. In this respect, it helps to focus on the shift in basic orientation of people caused by the virtual turn.

In this part three, first the concept of virtuality, virtual travelling and the virtual turn will be elaborated, next to some indications of the actual existence of the virtual turn in society.

In Chapter 11, we summarise the main conclusions from the EC case, as a special case of the virtual turn. Next, we concentrate on two main features of the virtual turn: the increased mobility on the level of ultra speed, and the relating broken horizons that must be replaced. We find that speed devaluates proximity and that high speed requires to leave the body behind. Without the body, we miss a natural reference, being constrained only by human attention and technology. Furthermore, we find that high speed breaks a lot of horizons, and with that, puts large pressure

on processes of giving meaning, especially where these are based on locality. For example, on the level of our nation state, multinationals and minority groups put pressure on sovereignty. On the level of the individual, we find multiple temporary identities, a scattered personality.

Finally, the abstract notions and implications regarding speed and horizon are illustrated by referring back to the Rabobank, and the EC movement. We find that the Rabobank is indeed loosening its ties to local communities in accordance with its entrance in the network society, introduction of (portfolio) risk management and access to the global financial markets; that the EC movement prefers speed above accuracy and efficiency; and that the EC movement is bound to change vehicle, as current epistemological principles and methodological assumptions do not keep up with the speed they are looking for.

As a matter of course, the thesis is concluded with a final summary in chapter 12 and a Dutch summary in chapter 13.

3 Research question and strategy

3.1 Research question

3.1.1 Introduction

As we have seen in the introduction above, this research project focuses on three levels of detail of one fundamental development, ie. the virtual turn in society. The basic assumption is that the EC movement is a special, but important case of this virtual turn, and that the implementation of EC theory in Rabobank is illustrative of problems and features of the EC movement in general. In short, by studying the Rabobank case, we not only find observations valid for the Rabobank case itself, but cautiously generalising, also find observations valid for other banks and stakeholders involved in the EC movement, and find observations valid for society turning virtual in general.

Given that we want to analyse a theory, to reflect on its assumptions and consequences, a more general concept is required to provide the dimensions for the analysis. The EC theory should be evaluated from a wider framework than the EC theory itself. We should look at EC theory from some distance.

This distance is found in philosophy; in the philosophy of science as discipline to evaluate the cognitive development of theories; and in social philosophy as discipline to evaluate the social implications of the application/implementation of the theory. In this thesis, we look at EC theory from philosophical perspectives. Chapters three up until six are focused on identifying a proper framework for analysis of the subject.

The combination of financial economics and philosophy in this PhD project is translated into three philosophical approaches with increasing levels of generalisation of a financial economical subject, which is the EC movement. The project will consist of the following three phases:

1. ***Investigation of EC theory***: on a detail level, EC theory – a theory about capitalisation¹¹ used increasingly in banks – will be the subject of analysis. Given the deep and wide impact of the EC movement, which is funded on EC theory, credit risk portfolio models (CRPM) and accompanying support tools, it seems quite beneficial, maybe even morally demanded, that we assess the validity of the underlying theory and assumptions. More precise, that we investigate the scope and limits of the theory, the borders

¹¹ Capitalisation refers to the proper level of equity (versus debt) as a cushion against losses for a bank.

of its validity or accuracy. Philosophy of science offers several ideas about how to assess theories and assumptions which are maintained in science. My assumption is that these approaches offer valuable tools for analysis of the validity of EC concepts, even if latter prove to be unscientific, but mere business tools. Part one (chapter seven) of the PhD project consists of a philosophy of science analysis of EC theory for credit risk.

2. **Investigation of social implications**: on a more general level, the role of banks in society and changes in this dynamic interaction will be analysed. Banks, at least in Continental Europe, have a major role in the economies by way of financing production, capitalising corporations and hedging financial risks. Implementation of EC frameworks will change the way banks work, hence will change the influence of banks on the societies they serve. Critical philosophy offers several ideas about analysis of social implications. Part two (chapter eight) consists of an analysis of the (possible) social implications of implementation of EC for society.
3. **Extrapolation of findings to the virtual turn**: generalising one step further, the EC movement can be regarded as a special case of a wider movement of informatisation of society, of a virtual turn in society. This refers to the increasing use and reliance for several objectives on information and information systems, on communication technology, and other virtuality tools in more and more parts of society. Actively philosophising, starting from the “EC movement in banking” case, can reveal possible implications of this virtual turn in society. In part three (chapters nine to eleven), this virtual turn is considered the largest mega trend in (post-)modern societies, according to the philosophy of travelling.

3.1.2 Problem statements

Summarising the above remarks, the following problem statements will be investigated in the three parts of the investigation.

In the first part of the program we will focus on a philosophy of science analysis of EC theory for credit risk portfolio management (CRPM) purposes. The analysis is further limited to the application towards wholesale credit risk portfolios of banks, ie. lending to midcap or larger corporates, banks, governments and related parties.

The objective of the analysis is to find the characteristics, rationality and weaknesses in the CRPM concepts in terms of inconsistency or irrationality. In other words, this phase will provide an assessment of the quality of the fundamental EC theories regarding credit risk.

For the first phase in the project, the research question in general is as follows:

What are the characteristics, rationality and especially weaknesses of the CRPM concepts, theories and techniques from a philosophy of science perspective?

This question will be approached from different angles, resulting in sub-questions like:

- ***How shall we look at our subject?***
What is a proper philosophy of science approach to this problem? Which available analytical frameworks are useful for an analysis of EC? (chapters 3-6)
- ***What is our subject?***
What is a clear description of the EC theory, where does it come from and why is it important? (chapter 7.1)
- ***How can it be classified?***
How can EC theory be classified in terms of social context factors, the ontology that is assumed and the epistemology that is applied? This will help us to get to know the subject and be able to compare the theory to other theories. (chapter 7.2)
- ***What are the relevant critical issues?***
What are specific content issues from a philosophy of science view, analysed with the toolbox of philosophy of science (first bullet)? (chapter 7.3)

In the second part of the thesis we will explore the social effects of the EC movement. In part 1, we have assessed the EC movement from a philosophy of science perspective. In this part we will apply social philosophy concepts and perspectives for an assessment of the social implications of the EC movement.

The research question in this part is:

What are the social implications of the EC movement?

As described in the introduction, the EC movement was made possible by ICT developments, by sophistication of risk management, and given economic importance by the link with cost of capital. Therefore, the research question will be subdivided into questions revolving around:

- Approach: how shall we look at our subject: what is a proper social philosophy approach to this problem? (chapter 8.4)

- Infrastructure: what are social implications of the increased use of ICT and the rise of the information society? (chapter 8.5)
- Content: what are the social implications of the quantitative turn in risk management? (chapter 8.6)
- Value/significance: what are the implications with respect to the capitalist economy of application of EC concepts and relating informationalism? (chapter 8.7)
- What are the characteristics of the new types of travelling introduced by the EC movement? (chapter 8.8)

In part three, we will generalise the conclusions from the analyses in part one and two to infer more general statements about the virtual turn in society. Basically, we want to focus on those conclusions that are not restricted to the specific case, but are illustrative for a wider scope.

The research question in this part is:

What can we say about the virtual turn in society?

Here, we concentrate on the two most important features, as distilled from the case study, being the increased speed and the broken horizons.

Assuming that these issues are not specific to the Rabobank case, we question ourselves:

- ***What is virtuality, what is the virtual turn in society and what are the indications of its existence?(chapter 10)***
- ***What are the implications of the increased speed and broken horizons for society in general? (chapter 11.1 – 11.3).***
- ***How does the orientation framework of the virtual traveller change? (chapter 11.4).***

3.2 Research strategy

In this chapter, the research approach will be justified by referring to developments in science and philosophy. Features, including the distinction in content and context, a philosophical classification, the case study approach, and philosophy of travelling will be discussed and justified.

3.2.1 Philosophy of science

Philosophy is self reflective, hence it must be realised that to catch a theory, you need a theory. Therefore, a pre-precondition concerns an assessment of the available meta theories regarding theories, ie. an assessment of different philosophy of science approaches to theory-analysis in relationship with the suitability of a specific approach for capturing CRPM theory. This in turn requires a first assessment of what factors are important for the current state of CRPM theory. Continuing the argument would lead us in a vicious circle and the quest of the first principle. My approach to this is to use my personal knowledge and feedback from my involvement in the Rabobank case to make some first required hypotheses regarding CRPM theory and start the analysis mentioned above from there onwards.

To come up with an approach itself has been a preparatory exercise which I will try to justify in chapter four in detail. In that chapter I will give a brief overview of recent developments in the philosophy of science and will show that the standard (modernist) model of logical positivism has been criticised by postmodernism and complemented with various complicating factors, mainly resulting from the context of science, instead of the theories themselves.

In this PhD project, I intend to respect both the fruits of modernism and postmodernism, in the sense that I recognise the need to analyse the theory itself in a content-analysis, and I recognise the need to investigate the role of various factors in the context of the theory. Both approaches have their particular merits, both content and context can be important for the development of the theory.

3.2.2 The theory itself

The starting place of the analysis will be the theory itself, its concepts and major applications as stated by EC theorists, and more specifically, as specified in the BIS II/EC program within Rabobank. For an analysis of the validity of the theory, we first have to look at the assumptions which underlie the theory, the transformations within the theory, and the empirical results of the theory.

A precondition for such an exercise is the identification of the theory, ie. to provide a clear description of the theory which subsequently can be analysed. First, we have to pinpoint the object of analysis and sketch its context. In order to do so, in the context of Banking Finance or wholesale banking credit risk, a model of CRPM theory will be presented which contains the minimal required components and highlights the main schools of thought of proponents of the basic theory. Where the basic theory splits into different schools having different opinions on assumptions, entities, etc. a controversy is marked, and basic theory ends.

Next, the discussion of the features of the EC framework implemented by the Rabobank provides a specific application of the basic theory.

Next to a model of the theory itself, a quite general classification of the theory will be presented. This will enable us to compare and relate this particular theory with other theories in the cognitive universe and make use of lessons learned elsewhere. The previous analysis of developments in philosophy of science provides the framework for classification. This classification will identify the CRPM theory in terms of its social context, its ontological assumptions, its epistemological approach and methodologies.

3.2.3 Context and plausibility

Since the post-modern turn in philosophy (and corporate finance as a science), a theory can no longer be fully explained within the theory itself. Matters relating to the type of use, the concerns of the users, the culture, rhetoric, power structures, etc. all relate to the context of a theory, more than to its content. As Cools (1993, p.34), who has made a philosophical analysis of the capital structure theory, put it:

“Postmodernism in economics, rhetoric or discourse analysis, likewise concerns a whole new –postmodernist- worldview, it concerns the relationship between such paramount notions as knowledge (or truth), discourse (or language) and meaning. Knowledge is paradigm-, or episteme-specific, facts are discourse specific and facts are paradigm- and theory-specific. There is interdependence between theory and fact, mediated by culture, paradigm and experience that govern perception and that are themselves products, not independently given. Facts do not speak for themselves and conversely, reality is socially constructed. Also the individual ability and willingness to forego absolute answers and to experience contingency and ambiguity are involved in the study of science as rhetoric or discourse. These are only some of the issues that should be addressed in performing a full scale analysis of capital structure theory.”

Cools then carries on to state that his project does not allow him to make this full scale analysis, let alone whether he was able to. Postmodernism seems to have caused a fragmentation and multiplication of factors which could be important for explanations of theories. Thereby, it has become impossible to make a final analysis, containing answers to all the questions which might be relevant, either in this world or in all possible worlds. This limitation forces the researcher to make choices as to what is included or excluded in the analysis, and substitute the missing theoretical or empirical basis for general validity of the theory with *plausible* arguments, embedded in plausible stories, lacking a significant empirical basis to prove the arguments according to modern prescriptions.

3.2.4 The clinical study

With respect to research methods in the corporate finance area Cools points at the rise of a new research method, *clinical studies*, as he sees it, an indication of the growing awareness of the discrepancy between the official [*Modernist*] and unofficial methodology and the limitations of econometric fine-tuning (p.37):

“In 1989, the editorial Board of the Journal of Financial Economics, one of the top three journals in finance, wrote a four page editorial in which they introduced a new type of research in addition to theoretical and empirical papers: *clinical studies*. Clinical studies – the term is borrowed from the medical literature- stand alone as an important medium of research and will frequently deal with individual situations or small numbers of cases of special interest.”

It is mentioned that theoretical studies are more and more immune to the real world in what Cools refers to as the immunisation stratagem (Cools, p.45), and empirical studies have to rely on these theoretical studies to deduce testable implications. In tandem, both are leading towards the risk of irrelevance for real life problems:

(Cools, p.37, quoting the JFE Board) “...Unfortunately, most of these theories are irrelevant to understanding the world. In this sense they are possibility theorems – propositions that, while logically correct, have little or no probability of explaining any real phenomenon...But in the capital markets area sophisticated econometric techniques are developed and applied to increasingly irrelevant estimation problems whose primary source is the journal literature rather than problems of the world.”

Clinical studies have at least one firm connection with reality which is based on the case under investigation. In that sense, they can provide deep knowledge about all factors and processes at work in a real life situation. However, the clinical study doesn't provide wide knowledge regarding many different situations in different spaces and times, in as much as it is specifically determined by local circumstances. It does not yield universal knowledge, as it is restricted to a limited empirical base. It may be plausible that findings in one case apply broader, but that is not proven.

3.2.5 Content-context

For the philosophical analysis of CRPM theory, in my view it is evident that the context of CRPM theory plays an important role in the theory and its further development. However, as progress is strongly driven by banks themselves in order

to manage the risks in their credit portfolios with respect to desired levels of risk and return, it is also clear that further developments of theory and calibrations to the real world have a proprietary aspect. Therefore, it will be impossible to have a close look in all kitchens where CRPM is cooked. Some basic knowledge might be exchanged between banks, but certainly not the secret of the cook! Which is the key to their credit risk selection and management, hence CRPM theories.

Concerning the cognitive content, already a sort of converging of core theory can be observed, supported by the efforts of the Regulators to revise the Capital Accord, stimulating increased use of portfolio risk models. As BIS II¹² has pointed out, the main controversies can be found in the modelling of the portfolio effects (such as portfolio volatility and correlations), not regarding the singular risk measurement (such as Expected Loss components). For the analysis of the content of the theory, a typical theory based on mainly BIS II material (research and regulations) will be constructed as the basis of analysis. Next to BIS II regulations, a high level CRPM model of the Rabobank will be used for reference.

Concerning the analysis of the social implications and the context of the theory, however, no such typical construct can be made, due to the very different contexts in which CRPM is used and the proprietary nature of the knowledge. It will be either impossible or highly inaccurate to make a detailed typical model of the context of EC theory for (postmodernist) analysis. Therefore, for the investigation of contextual factors, I may in some instances have to rely on the clinical study of the bank I'm currently employed at and involved in CRPM projects. However, since the Rabobank case deals with a general development, affecting all banks in developed countries, the case can be expected to be illustrative for many aspects that affect other banks as well.

3.2.6 Philosophy of travelling

Finally, typical for the approach taken in this research is the application of the perspective of philosophy of travelling. In my view, and as I will try to justify later on in this document, the philosophy of travelling offers an alternative framework for conceptual analysis.

It is based on an alternative underlying form, which implies an alternative focus. In order to explain this remark, a discussion about conceptual morphology is presented (see chapter 5) that shows that classic thinking was based on the form of the circle, the bubble or the globe. It assumes an all-encompassing circle around us

¹² BIS II is the term used in literature to refer to the revised capital accord, which will be the cornerstone for banking regulations globally. BIS (I) is the current cornerstone.

that helps us in making sense of the world, helps us in understanding each other. For example, the idea of a God, from which all life emanates. This underlying morphology implies a focus on the centre, on essences, on universal knowledge.

My problem with this form is that it is not suitable to analyse risk theories, as it principally denies the existence of the unknown. Try to think of risk as outside the circle; that which is not God. In universal knowledge, things are known, or at least, they could be known by scientific endeavour, and if known, it will hold in all times and places. Universality denies the contingency of truth on time and place, while modernist scientific observation in the core of (hard) science, ie. physics, has shown that time and place do affect knowledge, that the position of the observer, as well as the process of observation do affect theories.

According to Ilya Prigogine¹³, in classic physics, all events that can happen can be derived from the initial conditions and the universal laws of physics. Nature was perceived as deterministic, with all possible development paths known in advance. Nature could be known objective, without having to consider the subjective perspective. In fact, subjectivity is regarded as aberration, as deviation. Therefore – confirmed by Einstein – for the physicist, past, present and future have no specific meaning. In this world, evolution has no meaning; the information, expressed in terms of dynamic quantities, will remain constant. In this world everything is assumed to tend to uniformly decay into balance. In this quantified world, every spot in the system can be described fully, in terms of masses in space and their speed. Every situation comprises all information about all other possible situations, be it in the past or future. For this convenient knowledge, it is essential that renewal and diversity are denied in the name of the universal laws.

In what Prigogine calls a “Keplerian” revolution, the point of view of the observer is finally acknowledged in physics, irreversibility is finally recognised as major principle. Without irreversibility, causality is impossible. Two fundamental impossibilities in physical nature have caused this turn:

- 1) the fact that it is impossible for signals to exceed the speed of light¹⁴, and
- 2) the fact that it is impossible to measure the position of an object simultaneously with its impulse¹⁵.

Einstein himself showed that the (difference in) speed of the observer is important for the observation, ie. the impulse of the observer is important for what is observable. Secondly, Heisenberg showed that full measurement is impossible;

¹³ Ilya Prigogine & Isabelle Stengers, *Orde uit chaos*, Uitgeverij Bert Bakker, 1988, Amsterdam

¹⁴ One of the basic postulates of Einstein’s Relativity Theory.

¹⁵ Known as the Heisenberg uncertainty principle

always only one of the dimensions can be measured. And in fact, the measurement will have an influence on what is measured.

The philosophy of travelling is an elaboration of *perspective rationality* that does take into account the position and speed of the observer (the traveller), and the subsequent contingency on time and place. It is based on the form of the exchange between two parties, as well as the continuity of the effects of interactions on one particular identity. It allows the closure of a situation in a particular timeframe, but also allows the variation of interactions through time, as experienced in a sequence by the respective traveller; it presents the non-change in the midst of change. Philosophy of travelling helps in focusing on the changes in the most basic link of the individual with reality: his orientation framework. When the intensity of his travelling changes, for example, when turning virtual, his orientation will change.

In chapter five, the morphology of the concept of travelling will be presented, while in chapter six the philosophy of travelling will be elaborated further.

4 Developments in science

In this chapter we analyse developments in the philosophy of science to see what kind of framework would be applicable to assess EC theory. Philosophy of travelling does not have a scientific status, and will be elaborated in the next two chapters.

4.1 Objective

The aim of this chapter is to explore the historical reservoir and find a suitable approach and framework for analysis of the EC, or more specific CRPM, theory. For this purpose, we first need to create an overview of the available theories and analytical frameworks within the philosophy of science with respect to the applicability of the available frameworks for EC theory.

This overview consists of three parts:

- A. Overview of the current philosophy of science debate, highlighting the controversy between modernist and postmodernist approaches.
- B. Summary of current standard text book philosophy of science recommended approaches, showing a mix between modernist and postmodernist positions.
- C. Elaboration of one specific answer to the postmodernist complications of the modernist model; the functional response of Nozick

Given the complexity of the subject at hand – EC applied in credit risk portfolio management within wholesale banks- I believe that one approach would not suffice to illustrate the rich dimensions of problems and issues of CRPM. Therefore, the standard recommendations are supplemented with Nozick and the philosophy of travelling.

The elaboration of my personal answer to Postmodernity - the philosophy of travelling- is a relatively new concept, and will therefore be presented separately in the next two chapters. The philosophy of travelling is presented in chapter 5 as a new morphology, ie. being based on an alternative form, which is the exchange instead of the circle, in contrast with for example Sloterdijk's thinking. Application of this morphology produces new insights into epistemological processes, into the genealogical account of human history, as well as into the analysis of social implications and ethics. The applied morphology, ie. an epistemology, genealogy and sociology from the philosophy of travelling perspective is presented in chapter six, next to a definition and general description of travelling.

Instead of investing in a complete overview of scientific developments, I will focus on a summary of the modernist-postmodernist debate. Current philosophy of

science approaches prescribe a mix between modernist and postmodernist positions. In this mix, the modernist focus on content is preserved, while also attention is given to the impact of contextual factors on the content and development of theories.

First, the standard, modernist view on progress of scientific theories will be explained. Then the postmodernist turn will be presented as a set of complicating factors for the standard model of science. Consequently, some current standard textbook notions of philosophy of science types of analysis are presented to illustrate the idea of the mix.

Given this general overview, next I will present two specific ideas about the required response to the complications of the standard model of science, while trying to remain constructive and appreciate rationality. The first is the approach of Nozick's functional response to the complications of modern science and focus on biasing factors and counteracting features to assess rationality and objectiveness. The second is based on principles of the philosophy of travelling as a view on knowledge, and, as mentioned above, will be presented separately in the next two chapters.

Finally, in § 6.5 a synthesis is made of the presented approaches which will serve as the toolbox for the analysis in later chapters. From the standard text books, Nozick and the philosophy of travelling, useful concepts will be summarised in the toolbox, required for analysis of EC theory.

4.2 Developments in philosophy of science

Philosophical analysis can be focused on various dimensions or various levels. We can search for the forces within the fields of CRPM and try to find positive equilibria, we can analyse all phenomena in terms of their economic values, or include all human values (such as moral values) in the analysis. We can ask whether the theory is true in real life situations, or only in possible worlds. We can even analyse the theory in terms of what it does with the relationship between man and his environment, ie. in terms of the philosophy of travelling. In this chapter we will *analyse how various historical philosophies of science would analyse theories*.

4.2.1 Introduction into the modernist – postmodernist debate

Until in the 1980s postmodernism came up, the scientific method -modelled on logical positivist or empiricist notions- was generally considered as the method to

produce objective and true knowledge. The scientific method has helped mankind escape out of the “dark” Middle Ages, with its beliefs, superstitions and mystical knowledge¹⁶. The preconditions and theorems of the scientific method have been in practice for hundreds of years now and are deeply embedded in western culture. However, in the last decennia criticisms of the scientific method have evolved in a postmodernist denial of the premises and promises of the scientific method.

Cools¹⁷ following Mc Closkey and Hamminga, distinguishes between the official and unofficial methodology in economic science, the explicit and the implicit. “The official attitude of economists towards discourse is the modernist Scientific Method... It is based on the Cartesian knowing subject, with the belief that the real exists independent of the idea of it and that the sense data is the only possible source of knowledge. Later on, prediction and control became the goal of science and the logical positivists argued that only observable implications matter. These should be empirically tested; introspection, metaphysical belief, aesthetics, and the like cannot figure in justifying theories, methodology demarcates science from non-science.

In the field of economics Friedmanian instrumentalism became the apogee of modernism: “the theory should be tested by its conclusions, not by its assumptions (Roll and Ross, 1980, p.1083), or “the realism of the assumptions matter little” (Sharpe, 1970, p.77); questionnaires are “almost useless as a means of testing the validity of economic hypotheses” (Friedman, 1953, p.31). The above are some characteristics of the modernist economic scientific method.”

Modernism has many shortcomings as a methodology for economics. Cools¹⁸ even asserts that “there is, indeed, a difference between the official and unofficial methodology. There is a limitless number of conjectures ...but no refutations, theory development is immune for the results of econometric studies. The official rhetoric is not followed.”

Nobody behaves like modernists and rejects theories when falsified or only accepts testable theories or concepts based on empirics. It is more likely that we stick to theories, however wrong they may be, as long as there is no better alternative. Next to that, truth is no algorithm, free from doubts, morals or beliefs. There is no universal indicator of Truth; the last part of the proof is based on beliefs. There is no exact theory that tells you when something is the truth.

¹⁶ The darkness of the Middle Ages was resolved by the light of the ratio introduced by the Enlightenment.

¹⁷ C. Cools, Capital structure choice: confronting (meta)theory, empirical tests and executive opinion, Dissertation KUB, Drukkerij Uitgeverij H. Gianotten b.v., 1993, p. 26.

¹⁸ Cools, p. 47

Modernist science has provided significant progress since the medieval times when scholastic knowledge ruled, based on metaphysical grounds, such as the Bible. The focus on Earth, on empirical observations, has emancipated mankind. Modernist science has contributed significantly to many essentials for modern life. Modernist science has ruled until the 1960s, when (quoting Dylan) “the times are changing”. Culminating in postmodernism emerging since the 1980s, a lot of criticism on the Modernist Official Method was raised. The development of knowledge can no longer be explained by the availability of empirical evidence¹⁹. Also other factors, which complicate the standard –modernist- model of science have to be taken into account for an adequate explanation of the development of knowledge. Currently, both modernist and postmodernist accounts of scientific progress co-exist in the philosophy of science. In the next paragraph, the standard model of science will be elaborated. Next, the most important complicating factors and the main responses to them are presented.

4.2.2 Standard model of science: Modernism

According to Cools²⁰: “ Science is a typically modernist word: It presupposes the existence of an object and, inspired by Descartes’ “Cogito ergo sum”, also the existence of a *liberated knowing subject* and with that the emancipation of human reason and the existence of a scientific method that since the sixteenth century owed much to men like Descartes, Bacon and Galilei. In the modernist world scientific statements and activities have a higher standing than non-scientific ones. Science is supposed to be progressive and to make increasingly valid claims about the world around us, a world that is considered to be ruled by an intrinsic logic, a world that ‘makes sense’ and is believed to be makable and controllable. Moreover, the – especially natural – sciences are viewed being both cumulative and goal-oriented. Consequently, scientific knowledge can and should be functional and usable. Since the Age of Enlightenment, scientific knowledge is proven knowledge, scientific theories are derived in some rigorous way from the facts of experience acquired through observation and experiment. Science synthesises disinterested and unbiased empiricism and the power of human reason. ...Scientific knowledge is reliable knowledge because it is objective, proven knowledge, uses empirical data and has a strong preference for formalism in argumentation. Logic, geometry and mathematics are the favourite languages. Science is a break with history (liberation from tradition) and a search for universal structures.”

These ideas of modernism were thought to characterise natural science, especially physics, which was the methodological ideal for all rational debate. The philosophy of *positivism* prescribed these kind of rules and evaluative norms for deriving valid

¹⁹ In my opinion that is one of the effects of virtual travelling.

²⁰ Cools, 1993, p. 8...

knowledge. At the beginning of the 20th century positivism had become *the* modernist scientific worldview, reaching its culmination in the *Logical positivism* of the Vienna Circle, with ao. Rudolf Carnap. At the core of this movement is the verifiability principle of meaning. This principle states that all statements are either true by virtue of the definition of their own terms or true by virtue of practical experience, which means that they must be capable of being empirically verified, in principle. This principle serves to reject all metaphysical statements as meaningless.

Anti-positivist beliefs came in numbers, including Kantian and neo-Kantian idealism, Simmel (stressing the importance of empathy), the German historian Droysen (emphasising the difference between explanation and understanding), phenomenologic philosophers like Husserl and Heidegger, science itself (Heisenberg's uncertainty principle (1929), undermining the belief that science would reveal certainties of the world) and also Popper's critical rationalism. Karl Popper, who originally was a participant in the Vienna Circle, criticised the positivist tenet of inductive inference²¹. But back in 1738 the "riddle of induction" was already noted by David Hume, who made clear that induction is a kind of optical illusion. We cannot make (inductive) generalisations from a series of observations; the fact that A 'caused' B to occur a million times does never fully prove that it will also do tomorrow. It is a logical fallacy to confirm the consequent in order to prove the antecedent, this in contrast to confirming the antecedent (modus ponens) or denying the consequent (modus tollens).

After rejecting the positivist principle of verification, 'quest for justification' or 'logic of confirmation', Popper proposed the principle of *falsification*. A theory is falsified when empirical evidence is considered to be inconsistent with the theory, giving rise to an anomaly. Moreover, scientists should make every effort to infer falsifiable predictions from their theories and to make all possible counterexamples that would falsify their theory explicitly. If a theory is not refuted despite earnest and frequent attempts to find counterexamples, the theory is said to be *corroborated*. The degree of corroboration depends on the degree of testability of a theory; the severity of the tests it has undergone; and the way it has stood up to these tests. Scientific honesty then, consists in specifying, in advance, an experiment or test in such a way that if the results contradict the theory, the theory has to be given up.

Falsification concerns the context of justification, how new ideas should be evaluated. The context of discovery is unimportant. According to Popper²² "this is

²¹ Verifying theories, ie. accepting their general and universal truth, by individual experiments is induction.

²² Popper, 1962/1968

the way knowledge progresses, and especially our scientific knowledge, by unjustified (and unjustifiable) anticipations, by guesses, by tentative solutions to our problems, by conjectures. These conjectures are controlled by criticism; that is, by attempted refutations, which include severely critical tests. The very refutation of a theory...is always a step forward that takes us nearer to the truth.”

Although Popper claims to have destroyed logical positivism, not everyone regards Popper as being so far from positivism himself, especially the logical positivists themselves. Nozick²³ asserts that even Popper’s position involves some inductive assumption, in stating that a theory passing severe tests, ie. its past degree of corroboration, eventually does provide some inductive support that it will pass the very next test of that same sort. Otherwise, Popper did not have to state that the wider the variety of circumstances under which a theory is tested, the more severely it has been tested. Why would not a theory be severely tested by doing the same test over and over again? Because it is induced that, when a theory passes a specific test once, it will pass it again. Nozick²⁴ states that Popper’s theory is incoherent, because it assumes somehow what it is trying to attack, ie. induction.

All in all, falsificationism is the antithesis of scepticism, and hence, the ultimate modernist position. Modernists can not give up the scientific claim on rationalism unless they fall back into the dark abyss of scepticism or metaphysics. In the modernist framework, theories should be judged by the severity of tests regarding their empirical predictions. A modernist analysis of a theory would consider the ways that this theory could be falsified (the more and diverse ways, the better) by empirical tests, and the actual number of tests it passed (ie. the degree of corroboration).

If we now turn to EC theory, we can observe that debtors operate in the real world and repayment capacity is affected by numerous factors. Furthermore, for most western banks only a fraction of loans are in acute risk of not being repaid (ie. in default). By far most loans pay back regularly, without the inherent risk having materialised. When risk does not materialise, it can not be measured directly. And when risk has materialised (hence became measurable) it is no risk any longer! Can we measure this uncertainty? Can we test it?

Therefore, we may conclude that credit risk quantification is not testable until it is too late, and indeed it is never tested properly. However, backtesting does get performed on defaulted clients. These constitute only a small sample of all credit risk positions and should not be compared to regular clients, because they are a quite biased sample. Therefore, credit risk of the sound part of the portfolio is hardly testable and, hence, hardly ever tested. From a modernist perspective CRPM

²³ Nozick, 1993, p. 103

²⁴ Nozick, p. 104

theories should be rejected because of their un-testability. Hence, in making an analysis of CRPM, a modernist perspective solely will not help us much in appreciating the fact that it seems to solve problems and gain support.

4.2.3 Postmodernist complications in science

With Kuhn in the 1960s, the standard model of science started to be criticised more and more, culminating in the 1980s in the postmodernist movement, which highlighted several serious complications regarding the standard model.

Nozick²⁵ provides some of the complications of the standard model of science:

1. Isolated statements or even theories, Pierre Duhem claimed, are not subject to refutation by themselves, because, by themselves, they do not imply any particular observational data. Auxiliary hypotheses are needed also to derive observational predictions (for instance, hypotheses about the propagation of light, about the functioning of our measuring instruments, and about how our own perceptual apparatus functions.)
2. Theories are not given up unless a better theory is available. Testing is best seen as differential testing that occurs *between* formulated theories, rather than just of one theory alone.
3. Theories might be rendered immune from refutation by *ad hoc* modifications. Popper formulated a methodological rule barring these, but there is no clear demarcation between a wise modification that reformulates a theory and an *ad hoc* one that merely preserves it in the face of recalcitrant evidence. Imre Lakatos proposed looking at a series of theories formulated within a research program, and he attempted to formulate criteria to determine if this series was progressive or degenerative.
4. The data itself are not completely solid and are not completely independent of theory. Sometimes the data are dropped or discredited, rather than the theory. And data and observations are shaped by the theories held by the scientist, and are reported in terms of these theories. Such “theory-laden” observations and experimental procedures are used to establish the facts that then are used to test theories, including the very theories they are laden with.
5. There are no rules or algorithms to determine the acceptance of a scientific theory. There are different desirable features of a theory that may conflict (fitting data, explanatory power, accuracy, scope, precision, simplicity, theoretical fruitfulness, and so on). There also are different conceptions of each of these desirable features; moreover, different weightings can be given to these features. No explicitly formulated and accepted rules precisely resolve questions about the acceptance of theories, and there is

²⁵ Idem

much leeway for scientists to disagree. Thomas Kuhn sometimes put this more colourfully: accepting a new theory is like a psychological gestalt switch or (more colourfully still) like a religious conversion.

6. Much scientific work takes place within a tradition of what kind of work is fruitful, what questions are worth asking and working on, what kinds of answers are acceptable, and so on; scientists normally work within a “paradigm”.
7. Theories are underdetermined by the data.²⁶

Regarding the underdetermination of theories by the data, Nozick²⁷ explains that “our observational data are one small consequence of the laws that hold, and sometimes are quite distant from the most basic processes. For things to be different, our observations and data would have to be “in the round” and deep. In that case, although we could not get very far beyond our observations, we would not need to, for those observations would reach all the way to the basic structure of the world; they would be observations *of* the basic structure of the world, a direct experience of the underlying laws, of elementary particles, and of the structure of space and time. In that case, science would not exist – it would be unnecessary. We would know its results already, *by observation*.”

Nozick²⁸ identifies in total three reactions to these complications for the standard model:

- A **radical** reaction, which holds that these complicating features undermine the objectivity of science. The theory-ladenness of observations means that theories cannot (easily?) be refuted, for the theories themselves shape the observational reports, and thereby make it likely that these reports will fit together with the theories. Work within a paradigm makes science “path dependent”, in that the past history of science and of what theories have been accepted by scientists partly determines our current formulation and acceptance of theories, which therefore is not simply a function of the data available to us. If different theories had been formulated earlier, science would have taken a different path, with different procedures being invoked and different observations “reported”, and hence different theories later being accepted. The current theories of science are path-dependent historical products. The lack of agreed-upon rules to determine theory acceptance makes such acceptance a matter of subjective judgement, or the product of non-rational social forces, or of other factors such as gestalt

²⁶ That is, more than one theory can explain the data. (p. 111...)

²⁷ Nozick, p. 112

²⁸ Nozick, p.105

switch and conversion which are not governed by reason. This reaction asserts that there is no objectivity in science.

- The **defensive** reaction tries to formulate a more nuanced notion of objectivity, one according to which science is objective *despite* the complications. The theory-ladenness of observation does not guarantee that it will comport with the theory that loads it. People concluded that the Earth revolved around the Sun, despite having previously thought differently and so “observing” the Sun to rise. The meaning of scientific terms might vary from theory to theory, but still scientists might be referring to the same things in the world, and their different predictions about these things might be comparable and inter-subjectively agreed upon, across the competing theories. Although there are no precisely agreed-upon rules of theory choice, rationality does not require such explicit rule-following. Moreover, although there might not be a complete ordering of theory preferability, relative to given data, there might be a partial ordering that is enough to decide the question scientists are facing.
- The **functional** view holds that science is rational and objective, not despite the complicating factors but (in part) *because* of them. The complicating factors contribute to the progress of science and to its rationality and objectivity. For instance, it would not be rational to start science from scratch at every moment. Things that have been learned can be built upon, not just to save time and effort but to enable us to get farther, learn more. We can make more, and deeper, empirical predictions by utilising several theories and assumptions rather than just one. Not only do we learn more things, but also we subject our theories to a more severe test, for their inaccurate consequences might be apparent to us only when they are wielded jointly.

The notion of observation uncontaminated by theory is an evolutionary naïve notion. Consider how we see egg-shaped figures as convex or concave, depending upon the pattern of bright light and shadow. Evolution has built the equivalent of certain inferences or theories into our observations, selecting for structures in our visual system (the pattern of excitations and inhibitions in our neuronal wiring) so that, given certain stimulation of sensory receptors, we see things a certain way. Evolution seeks to give us a useful picture of the world, in preference to a fully accurate one. Would it be better to start from scratch, having learned nothing of our ancestor’s long experience of what facts typically produce which stimuli? How far down the evolutionary scale of our origins do we have to proceed to find observations that are uncontaminated by any instilled (framework of) facts? Must uncontaminated science be done only by amoebae?

Path-dependence can be rational because a paradigm that has solved some

recalcitrant problems (without failing significantly yet) probably will succeed in solving its next problems. Next to that, the existence of Kuhnian revolutions shows that scientists are not *stuck* in the paths they find themselves upon. They can shift to another, very different theory, one so different that some philosophers are led to hold that the theories (or theorists) cannot speak to or understand each other. This functional view will be elaborated further below in the paragraph regarding Nozick.

4.2.4 Conclusion about Modernist- postmodernist debate.

Together with Nozick, we can reject the radical reaction of *anything goes*. That does not comply with intuitive feelings about progress of science; there is good and bad science, statements that really help and those that do more harm than help, ie. there is a distinction. Also, we can reject the defensive reaction because it leaves no space for foundation of knowledge or rationality. It acknowledges the complications, but just persists in the belief in rationality of science, without specifying why. Rationality is thus lost.

We can conclude that the solution of Nozick to the postmodernist complications is based on pragmatism; it is the pragma, the real world, that binds us whatever language we speak, and allows (or rejects) our successes in our reasoned actions. It is the real world in which we are confronted with the complications and respond to them, as we see them. In actual behaviour, it is clear that we already include responses to the complications, as Cools presented earlier: there is a difference between the formal/modernist model of science and scientists' true behaviour. It is also the real world in which we live, which provides the problems requiring our attention. Those problems determine importance and grounds for acceptance of solutions offered by theories. Non-important facts can be ignored safely. If anything becomes important, we will act on it if and when. We have to go forward with the best perceived alternative. Although we have to deal with the one real world, the way we approach it, hence what we get out of it, is determined by social forces, subjective forces. These forces may be aware of biasing factors and are able to produce satisfactory counteracting processes.

For assessment of the quality of a theory, we have to look at the success in resolving the most important problems of the main propagators of the theory. And we have to assess the way the theory or its propagators deal with the complicating factors and counteract possible biases. To assess a theory, you have to look at how much and which attention is focused on preventing the theory from being wrong.

4.3 Current philosophy of science approaches

After sketching the backgrounds of the current philosophy of science discussions, we may conclude that a proper philosophical analysis should pay attention to both content and context. A mix between modernist and postmodernist approaches seems most rational, as both can offer important explanations of knowledge development. Both seem to be right in some respects.

In this paragraph, current philosophies of science approaches are being discussed. First, standard text book approaches will be presented to illustrate the focus on both content and context. Also a general classification of theories is presented.

Next, attention is focused on a distinct approach, that presents a mix for dealing with modernist and postmodernist contributions. It is the functional response to postmodernism of Nozick which has been introduced in the modernist-postmodernist discussion above. He argues that science is rational when it is paying attention to the complicating factors in order to correct the bias resulting from them. It is rational to counteract one's possible mistakes. Truth for Nozick means invariant under various conditions. Nozick searches for those things which uphold their existential status from various perspectives.

In the next two chapters, attention is focused on a second alternative approach, ie. the philosophy of travelling, which argues that knowledge is build and maintained according to the partial interactions between subject and object. As a metaphor for this approach, the traveller²⁹ can be mentioned, the person who is himself a strange identity in various environments. It focuses on the structure of action of the subject in its various environments. Without the environment the traveller would not know whether he was dreaming or awake.³⁰ The interaction with and resistance of the environment awaken his attention to the real, and repetition and memory enable him to learn and gain knowledge.

The active traveller is able to gain wide knowledge, linking and encompassing various places, the static traveller is able to gain deep knowledge, staying long enough to make a fundamental analysis of an object. The philosophy of travelling analyses reality from a dynamic perspective, not from a stationary point of view. In my opinion it is the most suitable framework to analyse risk theories, because it emphasises the importance of changes, both in the relevant subject as in its context. It is, as van Peursen calls it, a *risky* philosophy.

²⁹ In the philosophy of travelling, travelling as a concept is defined much broader than in day-to-day language. Here travelling refers to any activity in which the interactions between an identity and its environment change. Hence the traveller as we know him is only one dimension which we know very well, that is, a model for other, less well-known dimensions of travelling, ie. a metaphor.

³⁰ According to van Peursen, 1955, p. 92 OT (own translation): "Without reality human consciousness would only be dreaming consciousness."

Both the standard text book, as Nozick, as the philosophy of travelling provide analytical frameworks to assess EC theory. They overlap and complement, viewing the same subject from different angles. Like the traveller who transits various perspectives on the same reality during his journeys, and by this very act of travelling (transiting perspectives) increases his knowledge.

4.3.1 Standard text book approaches

A Dutch snapshot in 2002 of available philosophy of science literature confirms the above recollection of the modernist – postmodernist debate and shows approaches which try to combine content analysis with context analysis. They all recognise both positions and recommend a mix between them.

Boon and de Vries³¹ confirm the increased emphasis on the context of knowledge in what they call the empirical turn in philosophy:

“Philosophy of science, history of science and sociology of science have met each other in the empirical turn. The new style has three elements:

- Focus is not on the content of the theory, but on the conduct of scientists,
- The context of the researcher, ie. the contemporary society of scientists must be included in the analysis,
- Increasing influence from pragmatism, instead of empiricism.”

Van den Bersselaar³² tries to offer an approach which combines modernist philosophy with the context analysis :

” The core questions of Philosophy of science are:

- Where do research questions come from and what are the interests of their solutions? (who are the actors and what are their interests? Social-philosophy Q)
- What is the nature of the research object? (empirical, general, dynamic? Ontologic Q)
- Under what conditions is knowledge possible? (observation or participation, experimentation or free of interference? Epistemological Q)
- How should researchers work? (Methodological Q).” E.g. EC models are heavily mathematical and based on statistics, with standard deviation defined as risk.”

³¹ L. Boon, G. de Vries , 1989, p.9, OT

³² V. van den Bersselaar , 1997, p. 17, own translation

These four questions comprise a general philosophical classification framework. If for a theory the questions are answered on a general level, the theory is classified. These four questions will be investigated in the content analysis, chapter 7.2, for identification and classification of the relevant EC theory.

Leezenberg and de Vries³³ also advise both content and context:

“Philosophers of science have a double task. They should evaluate and research knowledge with respect to;

- Philosophical adequacy, ie. evaluate the epistemological claims of a theory by studying the nature of the knowledge and the way of argumentation.
- Historical adequacy, study the knowledge in the historical context and practical use.”

Pragmatism is the criterion for success of a theory: in the application of it in the real world and the subsequent success in action. Leezenberg and de Vries³⁴ refer to Rorty when stating that this pragmatism should also be applied to philosophy: “The task of philosophers is not theoretical (like funding knowledge claims) but practical: philosophers should contribute to the public discussion regarding practical matters... notions and conceptual differences can only be maintained in as much as they result in noticeable differences in practice.”

The philosopher in business contexts is one of the solutions for the above advice. Philosophising about new and important economic subjects, and simultaneously being employed by a major Dutch bank and working on projects to implement an EC framework in their wholesale finance division, for me provides a context which is highly likely to be influenced by this thesis and vice versa.

The standard text book teaches us to make a general classification of EC theory in terms of the social context or context of justification, the ontology or structure of being which is assumed by the theory, and its epistemology or prescribed methods for knowledge development. That will be elaborated in chapter 7.2. It also teaches us to pay attention to both context and content, respectively chapter 8 and 7.

4.3.2 Nozick: the Functional response to postmodernism

Nozick³⁵ describes the functional response as a post-postmodernist approach which learns from the complicating factors to the standard model and tries to subsume them: “The functional response to the complications of the standard model of

³³ M. Leezenberg, G. de Vries , p. 14 own translation (OT)

³⁴ M. Leezenberg, G. de Vries , p. 203 OT.

³⁵ Nozick, p 115

science delineates the role of these [biasing or complicating factors] in contributing to the rationality and the objectivity of the scientific endeavour.”

Counteracting processes or procedures can correct the biases and still make the theory objective. Science should include such self-correcting principles, and in the degree it does, it can be objective.

The complicating factors consist of:

- Theory ladenness of empirical results
- Under-determination of theory by data
- Working within a paradigm
- Other postmodernist criticisms of modern science, such as historicisation and socialisation.

These complicating factors have also been discussed in the modernist-postmodernist debate, described above. See above, § 4.2.3.

According to Nozick³⁶ there are two different goals for a philosophical account of a notion:

1. present the necessary truths, which are all the special truths that hold universally in all possible worlds. This is a characterisation of the breadth of the theory and delineates the domain of validity.
2. present the deepest truth, which is the actual essence of the notion, as exhibited in this world to foster a deeper understanding of the nature of the object. This is a characterisation of the depth of the theory and concerns the actual applicable content of the theory.

There can be a trade-off between the two goals to result in an intermediate mix. A good example is the clinical study, which reveals most about the depth of the theory in a particular real situation. The clinical study, however, has to sacrifice breadth of the results, which are specific instead of general.

Next to the distinction in wide or deep knowledge, Nozick also distinguishes between subjective and objective aspects of knowledge (of the truth).

According to Nozick³⁷: “To know the correct and deep theory of truth’s nature requires far more than the ability to state particular truths. It requires a knowledge of the ultimate dependence relations, and of the ultimate explanatory and ontological factors.”

What is meant by truth is a complex set of factors explaining the success in a person’s actions. According to Nozick³⁸: “ Truth is what explains a person’s or group’s success in action; it is what is serviceable *for* the person or

³⁶ Nozick, p.83

³⁷ Nozick, p.74

³⁸ Nozick p.57-59

group...Success in realizing the goals of an action depends upon the goals aimed at, the action done, and the nature or state of the world. The action a person performs depends, in turn, upon his goals, upon his beliefs (about the nature of the world), upon the range of alternative actions that might be done, and upon the decision rules he uses to select a particular action (given those goals, beliefs, and possible actions). Hence a person's success in realizing his actions' goals depends on *all* of these factors."

According to Nozick, truth as success in this respect is highly dependent on personal or subjective aspects. However, it is not only dependent on subjective aspects. The action must be oriented on and invokes a reaction from the objective world, where we meet. It is clear that the criterion for truth is pragmatism for Nozick. This pragmatism combines subjective elements, such as success in action, with an objective world that provides a stage for human action.

The ordinary notion of objective facts or of an objective truth has three strands to it, according to Nozick³⁹: They

- are accessible from different angles
- can be subject to intersubjective agreement
- hold independently of our beliefs, desires or observations.

However, Nozick⁴⁰ asserts that there is a fourth criterion which explains the first three, which is that an objective fact is invariant under various transformations. "It is this invariance that constitutes something as an objective truth, and it underlies and explains the first three features (to the extent that they hold)."

Different people can have different affections towards the objective world, but the objectivity of the world means that people relate to the same thing. There must be an overlap in views, ie. different views must deliver something similar, which makes it invariant. The similarity in different views on the same thing is the objective part of our knowledge, represents the truth about the thing. If there is no overlap, we might be talking fantasy.

Therefore, Nozick⁴¹ analyses knowledge in terms of the invariances under admissible transformations: "Knowledge shows an invariance under all admissible transformations."

Admissible transformations can be:

³⁹ Nozick, p.75

⁴⁰ Nozick, p.74

⁴¹ Nozick, p. 79

- mappings; functions from one set to another set. This is to say that, when certain things have a property, other things also have this property.⁴²
- dynamic change or alteration through time. This is to say that the very same things, though present, are changed in some way (which is compatible with the continued existence of those things). Properties invariant under such dynamic transformations, however, are not changed; they still apply to the entity. “Identity through time”.⁴³

Which transformations are admissible?

That will be the result of a reflective equilibrium of objective facts and admissible transformations, including the new input from new explanations of new phenomena. In short, it will be the result of a stepwise process in which we have to try to understand:

- What is the starting place ? the phenomena and invariances that evolution has shaped us to notice and take account of,
- Why it is appropriate?
- What transformations are admissible according to the current views?
- A general description of past, present and future views, including ontological and epistemological restrictions.

Of course, transformations that are caused by biasing factors are not allowed and must be counteracted and corrected.

These four questions and the counteraction of biasing factors can be interpreted as the approach to the analysis of a theory. We may conclude that Nozick provides a useful framework that (also) focuses on the counteracting forces within science which create an equilibrium with the complicating factors.

In the next two chapters, the (in)variance under various transformations, or better stated, the (in)variance under various perspectives will be further elaborated in terms of the philosophy of travelling. The traveller, by way of his journey, collects various views on the world, meets different societies, which offer different orientations on the world. In fact, the traveller himself is to an extent invariant under various transformations. But the various perspectives he transits also change and shape his identity, ie. they create variances over time, or development of personality due to ever increasing experience. Recall the alterations through time, which are mentioned by Nozick as one of the admissible transformations above.

⁴² Think of statistics where we can say that other things have a property by measuring a sample of different things, or a formula like $B = 4A - 12$, which maps B into A.

⁴³ Think of ageing processes, which change me although it is still me.

First the concept of the traveller will be presented as a morphology, highlighting the dominant form underlying all processes of cognition and socialisation. When the fundament of the form of the traveller has been described, we turn to applications of the form in terms of genealogy of human society, epistemology and sociology in the following chapter.

Concluding, the presented theories about theories will be synthesised in a conceptual toolbox in § 6.5 that is at our disposal when we analyse the cognitive aspects of the EC movement in chapter 7.

5 Conceptual morphology

5.1 Introduction

Any analysis of a phenomenon requires concepts to describe it. An adequate analysis can be viewed as the selection of concepts and assembly of relationships between these concepts. An analysis is helpful precisely because it basically is a translation of a real life entity into things that only refer to the object of analysis, without requiring its presence. It is the translation of real things in references, signs, words that allows to contemplate situations without actually being there, without actually meeting the object of analysis. Even stronger; since we can not have the world in our heads, concepts are required to contemplate *sic*. The translation increases mobility and is therefore beneficial. Also see the analysis of the use of the word further below in §10.2.

In turn, the particular (set of) concepts used in the analysis determine what can be captured; determine the selection of all possible views. For example, if empirical or statistical concepts are used, the analysis will undoubtedly focus on historical and measurable facts. The concepts *colour* the analysis, both in terms of scope, ie. referring to the selection (or exclusion) of events that are described, and in terms of qualities, ie. referring to the particular aspects of the events in the selection. A statistical analysis focuses on *objective* facts and their quantifiable properties.

There is some kind of paradox in the requirement to focus, to limit the view, to exclude specific features or aspects and concentrate on other features. As if we have to be selectively blind to be able to see. As if we only have capacities for partial perception and always need a limitation to see. In terms of concepts, there seems to be a positive relationship between detail vision and number of limitations or assumptions. Every assumption is to be seen as a restriction, as a limitation. Releasing assumptions makes a concept more general, while introducing more assumptions makes a concept more specific.

Now, if we want to make a philosophical analysis of anthropological or socio-cultural developments, we want to be aware of all assumptions and their effects (*distortions* or *colour*) on the analysis. In fact, we would like to make as less assumptions as possible and provide an analysis that is as general as possible. Any assumption used should be made explicit and should be explained in its consequences for the analysis. In order to restrict the effort of explanation of many assumptions, it is most efficient to make as less assumptions as possible. Therefore, the conceptual inspiration should derive from the most general theory regarding humanity and its being in the world.

Together with some others⁴⁴ I believe that a morphology provides the most general concepts to analyse the human condition. A morphological analysis assumes a form (from the Greek μορφή) and describes how that form has materialised in the particular object of analysis. For example, Peter Sloterdijk⁴⁵ provides the form of the sphere, the bubble, or the globe as basic form in his anthropology and sociology. He shows how people create spheres around them that enable them to live, to understand and give meaning to the outside world. Also, in his analysis of the empire, he shows how essential the form of the circle is to understand the subject. For example, the empire can be understood as circle that is maintained by central power, emanating from the middle to every position that is within the circle. For the Roman Catholic church, the monopoly on messages, embodied by the apostles and later the missionaries, was one of the essential mechanisms for this emanation. The form of the circle/sphere, with the idea of the powerful middle and emanation of power to the borders of the circle, helps us in understanding these phenomena.

Implicitly, when applying a morphology, there is the assumption that the form chosen represents a general and important feature of (human) reality; that the form is present in many important developments and situations; that the form is repeated frequently⁴⁶, occurs often in important aspects. Furthermore, there is the assumption that the form determines the characteristics of the object of analysis. I.e. that the form is important to take into consideration when trying to explain human phenomena. The shape of the form relates to the characteristics of the object of analysis. If the emperor compares to the sun, it is the light emanating from his existence that enables life.

These kind of images have a significant impact on the order of society and reflect its deepest essences. But, agreeing with Sloterdijk⁴⁷, these forms have a real existence as well. They are present in all fundamental relationships of human culture and existence, and although initially they can not be captured in words or numbers, the forms force nature in it, or vice versa, nature seems to develop these forms repeatedly. And because the western scientific culture is focused on the concrete and empirical, it excludes the observation of forms. According to this tradition, morphology is not scientific, although it may serve for philosophy.

⁴⁴ Ao. P. Sloterdijk and Oswald Spengler, see below.

⁴⁵ P. Sloterdijk, Sferen, Boom, Amsterdam, 2003, and P. Sloterdijk, Sphären III, Schäume, Suhrkamp, Frankfurt am Main, 2004.

⁴⁶ Note that the Fractal Theory (By B. Mandelbrot) has similar assumptions, but from a completely different perspective. This fractal theory holds that specific forms are repeated in nature on various scales. As if nature favours specific forms, that, subsequently, occur often.

⁴⁷ Sloterdijk, 2003, p. 61

Below, the analysis of mankind, especially the history of the psyche, according to the theory of spheres of Sloterdijk will be elaborated as an example of a morphological analysis. Sloterdijk shows how the sphere has been vital for society up until modernity, when its morphological strength became impaired. Postmodernity, according to Sloterdijk, is best represented by an implosion of the bubble, being foam. With the morphology of foam, Sloterdijk illustrates the crisis of the circle based society.

Subsequently, arguments will be provided to disagree with the choice of the circle/sphere for analysis of current society. Finally, in this chapter, an alternative morphology will be presented in terms of the Philosophy of Travelling, which holds that the exchange, the crossing of borders is the most vital view for analysis of human developments. In short, I believe that the form of the circle is not adequately able to explain the changes and dynamics, which are currently one of societies' dominant characteristics. In the description of current society by the form of foam, Sloterdijk agrees with that. However, in the morphology of the traveller, the form of the circle is replaced by the form of the traveller, precisely to stop focusing on the centre, but focus on the border and the exchange processes that take place at the border and change the identity.

Implicitly, attention is shifting outwards when moving from circle to exchange, which is in line with the social developments as sketched by Sloterdijk himself⁴⁸. I believe that this development requires another morphology than one or many circles.

5.2 Sloterdijk's Spheres

According to Sloterdijk, life has to do with forms, or in other words, life, the formation of spheres and thinking are different expressions of the same thing. Anywhere there is human life, whether nomadic or sedentary, inhabited forms in the shape of spheres originate. Spheres exist on the level of the individual (microspheres) and on the level of society (macrospheres). In fact, Sloterdijk develops a general theory of immune systems, which holds that humans shape forms in which they can live and have social experiences. Here, immunity means encircled, within a bubble. Being-in-spheres is the fundamental condition of humans according to Sloterdijk⁴⁹. Humans are deeply and exclusively the creations

⁴⁸ See for example Sloterdijk, *Sferen*, 2003, p 51, where Sloterdijk describes the history of world views as process of externalisation and attributes the current increased attention for the outside to the cybernetic virtuality offered by technology, such as Internet. However, (see p. 17) since modernity thinking has become oriented on the outside world; since Copernicus man has shifted to an external orientation, breaking traditional spheres.

⁴⁹ Sloterdijk, 2003, p. 35

of their interior and the products of their labour on their inalienable sphere. They can only live in the greenhouse which is the atmosphere created by themselves.

In microspheres, there is always a bipolarity, or in other words, even the smallest sphere is a common sphere, needs a relationship to become meaningful. This may range from the similarity alliance between God and man, or the psychoanalytic concept of the early mother-child relationship, or the true love. According to Sloterdijk⁵⁰ in any model it turns out that at least two persons are required for real subjectivity. When two persons share the same space intimately, and open up to each other exclusively, in each of them a sustainable form of subjectivity develops.

On the level of the macrospheres, Sloterdijk holds that for each social structure, there is a specific world home, a dome of meaning, under which humans gather, understand each other, defend themselves, and cross their borders. At any moment in their existence they are forced to establish a semiotic heaven above them from which their common typical inspirations emerge. Up till the middle ages, the church or the classic Roman empire provided such a home. Sloterdijk quotes Nicolas from Cusa who said that the entire theology is determined by the circle (and especially the focus on the centre). However, as from Copernicus, who held that the Earth is not the centre of the Universe, this dome is broken, and modernity starts with its external orientation, called Enlightenment or progress and with its continuous trend towards decentralisation.

In his macrospheric analysis, Sloterdijk⁵¹ provides a model to understand human history in three phases:

- 1) the Neolithic phase in the stone age with hunters and gatherers;
- 2) the Agro cultural civilisation with its kingdoms and their commanding administrations;
- 3) the Industrial phase since a few centuries with its modernity and technology.

Since the emergence of Internet in the nineteen nineties, Sloterdijk sees a new globalisation. The fast images on Internet will lead to a new crisis in space, referred to as *virtuality*. The virtual space of the cybernetic media is the modernist version of “the outside” which can not be reduced to the known categories of the divine interior; it is sold as a technological exteriority, or in other words as an outside which finds no response from the inside.⁵²

⁵⁰ idem, p.41.

⁵¹ Sloterdijk, 2004, p. 860 and 868.

⁵² On p.51 in Sloterdijk, 2003, he holds that this cybernetic virtuality has been preceded by a philosophical virtuality which was established when Plato established a virtual sun above

The first answers to this development are a-morphological metaphors such as *foam*, *accumulations*, *sponges*, *clouds* and *turbulences*. With these new forms, or actually non-forms, we can try to understand the interior design, the creation of solidarity and coherence and architecture of immunity in the era of unrestricted technological complexity. From this view, three important conclusions can be made:

- I. politically; foam has an uncontrollable structure, and inclines to morphological anarchy;
- II. cognitively; people and groups that live in foam have lost their overview of the total, are unable to have a holistic view;
- III. psychologically; people who live in foam experience a diminished solidarity, and consequently suffer from immunity weakness with the risk of lonely imprisonment with only a window on moving media landscapes.

According to Sloterdijk, in foam, discrete and polyvalent games of thinking should develop that are able to live with continuous changing perspectives and that decline the illusion of one dominating view. Thinking in foam is navigating on unstable flows. Only a theory of the amorph, of the non-round would be able to develop into the most intimate and general theory of the current era, by doing research into the actual game of destruction and recreation of spheres⁵³.

5.3 Comments on Sloterdijk

Sloterdijk provides a very extensive⁵⁴ analysis into several sphere producing mechanisms. As such, it is a very welcome opening of the area of research into world views, systems that provide meaning to people. After all, the meaning people experience drives them to perform specific activities in a specific way; it is meaning that creates the world.

From a historical point of view, I believe that his analysis is valuable and provides an adequate account of developments in immune systems, particularly relating to the western empires and the Catholic Church. The description of mechanisms that are employed to make sure that the macro sphere is maintained, for example by apostles and missionaries later, or by a monopoly on messages is illuminating and adds to the understanding of the transfer and distribution of meaning in pre-modernist stages. Furthermore, I support his view on Plato, introducing the first

the empirical world, which is called the Good and of which all that is real derives its being. Hence, virtuality was discovered 2400 years ago.

⁵³ idem, p.57.

⁵⁴ Spheres parts I to III contain 1781 pages in my (shortened Dutch) editions.

virtuality with his idea of the cave and indirect observation of the Truth or the Good. The Idea as the virtual presence of the thing.

My comments on Sloterdijk's theory of spheres are partially recognised by Sloterdijk himself as well. For example, when⁵⁵ he refers to the typical modernist disturbers (e.g. scientists) of the illusion of any happy, intimate, vibrating cell. Or, in his look-back he acknowledges that his theory has a problem with the relationship between immunity and community⁵⁶.

Furthermore, throughout his text⁵⁷ he acknowledges that the fundamental unit for mechanisms of meaning involve a relationship, ie. an exchange between two parties. From the minimum scale -where even the individual is bipolar-, to the maximum scale -where the emperor fights his borders- the theory of unity, of all-encompassing globes and universal perspectives is under pressure from the other, from the outside.

And also for the micro world, Sloterdijk recognises the importance of the exchange. For example, when he describes the importance of the membrane functions –the gates to out there, windows to the world. According to Sloterdijk⁵⁸ the degrees of opening or closure determine the chances and faith of the subject, and the membrane is the gate through which the metabolism between subject and world develops.

And next, in his morphological metaphor of foam, in my view the inspiring power of the circle is exhausted; the concept is stretched too far. The great working of the sphere, which has helped mankind in its first two stages (until modernity), is absent in foam. Foam is used mainly as expression for the confusion after the falling away of the great narratives, ie. after the post-modern turn, which has destroyed the centre completely. Sloterdijk even calls for younger writers to continue the history of *Welt Anschauungs* and provide adequate explanations of current processes of giving meaning.

Furthermore, in the introduction of part I (Bubbles) Sloterdijk refers to the children's game of blowing bubbles of soap to illustrate the effect a bubble can have on meaning. However, for him this means that we should concentrate on the centre of the bubble. It is the centre that creates the bubble, for example, as the Good of Plato that provides being to the world, or God, who has created the world and is represented in every piece of it. In my view, the centre is not the right place to focus on. When blowing bubbles, the initiation of a bubble, its size, as well as its

⁵⁵ Sloterdijk, 2003, p.59.

⁵⁶ See Sloterdijk, 2004, (Schäume), p. 871.

⁵⁷ Sloterdijk, 2003, p.41

⁵⁸ Sloterdijk, 2003, p. 292.

life time are determined by flows coming from outside. A bubble is determined by the outside, not the centre of the inside.

Finally, Sloterdijk shows⁵⁹ a fundamental paradox in the assumption of one God, who is everything. In order to only have one God, God must be infinite. However, the circumference of an infinite globe is a straight line, not a circle, and thus does not provide immunity. Where is the centre of an infinite space? Where should be our focus?

In the end, the recognition of the Other is inevitable.

5.4 The form of the traveller

In order to capture dynamics, a dynamic concept is required. A concept is needed that can reflect changes through time, a concept that does not assume everlasting situations or universal knowledge. This concept needs to be able to reflect progress or decay, experience, memory and history, and, quoting Sloterdijk, be able to reconcile immunity and community.

The form of the traveller is constituted in two steps;

1. Interaction as the fundamental existential principle. Only in interaction there can be awareness of reality. The rest might be fantasy. Instead of a static geometric form, interaction is proposed as a dynamic form. Interactions are exchange processes between at least two different entities. In an interaction, not only physical matter is exchanged, but also feedback on each other. An interaction takes place between two entities, ie. not in their centres, but at their border, in the in-between-space, linking the two entities temporarily.
2. The perspective of the traveller, with his travel companions, his experience and luggage and his apparently existing capacity to transit situations. A traveller is a (time)sequence of interactions with different situations. He embodies the unique connection between all places he has visited, and he functions as the repository of all experiences as well as the captain of his own vessel. The traveller can decide about both the direction or future location of his vessel, as well as about the intensity of his action. It is this last issue that introduces affective aspects, such as enthusiasm and motivation.

⁵⁹ Idem p. 740-750.

Any human will have interactions with his environment until his death. However, due to mobile capacity, environments may be exited, to enter new ones. Due to this travelling, the interaction pattern of the traveller will change. On top of that, the intensity of travelling determines the character of the possible interactions severely.

The first step takes the attention to the border instead of the centre; it is the resistance from the outside that makes us aware in the first place. In fact, this concept elaborates on the membrane function as mentioned by Sloterdijk. In a time of abundant external changes, it may be wise to focus on the openness and closure for this turbulence. As Sloterdijk mentions, the traditional spheres are under pressure in an infinite space. From a strategic point of view, all attention should be focused on the defence of the border, on the cross-border activity that may change the identity: we should be thinking about the gate, not about the most holy centre. When the emanation mechanisms are too weak to counter the attack of the outside, we should focus on the outside to learn how we can relate with it.

The second step provides the basis for stability, provides a memory, a slow body that does not change overnight. In terms of Sloterdijk, the second step provides the fundament for community, in case the travellers are circular travellers, ie. revisit the same places regularly.

Lemaire⁶⁰ refers to the structure of the oriented repetition as archetype of orientation (p.89, own translation): “The religious phenomenology has firmly established the idea that time and space are constituted from respectively repetition and centre. When the primitive man is the typical religious man, and when time and space are a-priory forms of culture, it may be concluded that man in the beginning could only transform nature into culture by repeating fundamental actions that are focused on a centre. Repetition and centre turn out to be archetypes of time and space. The mythical world is a world in which man repeats the exemplary act of a god, and in which he is focused on a cosmic centre. In this way man succeeds in maintaining himself in the infinity of time and space by celebration and concentration of his actions.”

A typical example of what Lemaire refers to is the Mass on Sundays, or the prayers on Fridays; people come to the same space, focus on the same thing and repeat the same action regularly. Within a rigid rhythm, they focus on the same text as ever, repeating the same words and confirming the same norms and values. This repeated focus in sacred space helps them to transform the surrounding (and often hostile) secular nature into culture. It is the main survival tool for people in the desert or the wilderness, people in a hostile environment. On another level, it is the

⁶⁰ Ton Lemaire, Filosofie van het landschap, Ambo, Baarn, 1970

general principle for every living being, ie. to focus on the self and repeat what is proven to work.

Note that centre and repetition in this respect mainly refer to human attention. Centre is the space where the attention is focused on, not limited to physical space. Minds that focus on ideals that do not exist have proven to be very powerful. Repetition is not so much physical repetition, as in a tree that swings in the wind, but rather regular attention with a similar focus. It is clear that the centre of religious groups is not physical. For example, Christians believe and focus on a person who lived long ago, and focus on the hereafter. Two entities that are not physically present, but can only be grasped by attention. Whether focus is on a local church or a local shrine, or on fantasy or wrong plans does not really matter. Whatever we repeat enough becomes meaningful to us.

Lemaire showed that centre and repetition are the archetypes of orientation. As a consequence, the distinction must be made between circular travellers and linear travellers⁶¹. Circular travellers do focus their attention regularly on the same place, the centre, and thus contribute to the production of culture. It is evident that the linear traveller will most likely transit through other cultures, which may be equal but very different. The linear traveller is forced to see the various perspectives, as a consequence of the motion of the point of view embodied by himself. For him, traditional centre and repetition are far away, forcing him to apply other orientation techniques.

The second step also causes a fundamental division between the two entities in an interaction. The fact that travelling is possible means that the interaction will not lead to unification: to the merger of the two entities. An entity that can always exit has some reserve towards the environment it is visiting; the two will never completely overlap. It is this reserve that allows it to exit, that allows the separation between environment and traveller. The availability of an option to exit creates the issue of reciprocity and related to it, trust.

In contrast with Sloterdijk, I do not believe that two lovers are in the same sphere, inhabit the same bubble. In fact, the attraction between two lovers is exactly in their being different⁶², to provide a human mirror. It is the other that is sought for in a relationship. If there is any merge, this is only a volatile moment of ecstasy and unsustainable (for normal people).

⁶¹ This is not to say that, for example, the chaotic traveller, or the reactionary or opportunistic traveller do not represent material segments in current society.

⁶² even for homosexuals

This form of the traveller can be discovered on the minimum scale of the individual⁶³, as well as on the maximum scale of human society. Travelling is an act that may cross places as well as times. In that sense, a city can also be considered as a time series of interactions with different environments. In the early days, cities had stone walls and still could be invaded by barbarians, while in the modernist days, cities have licences, permits or concessions to keep unwanted trade out. Any identity, any entity that is somehow separated from its environment is able to travel. In order to be able to travel, only a horizon and a mobile capacity need to be determined: *Sloterdijk's bubbles on the road*.

Of course, identities like humans, their institutions and societies are most interesting for analysis. Although in this theory everything travels, this observation does not become meaningless. The statement is in strong contrast with the sphere producing mechanisms Sloterdijk has described so well. From an ontological perspective, the traveller is a form of becoming, while the circle is a form of being. The form of the traveller provides an alternative, non-mainstream morphology, to be tested in the analysis below.

The philosophy of travelling departs from the perspective of the hunter, who is continuously breaking horizons, continuously on the move, contrasting the hunter with its archetypical opposite, the farmer. In this sense the philosophy of travelling is a renewed attention for mobility and dynamics. It starts from the dynamic and finds that even the farmer grows older.

Main features of the form include the environment and the horizon, the resistance in the interaction, the border or gate, and any patterns or repetition. In the next chapter, the philosophy of travelling will be elaborated extensively. The form will be given flesh and bones.

After an introduction to define and classify this philosophy and to explain its basic mechanisms, the various distinct types of travelling will be discussed. Next, the core concept of environment will be discussed, followed by the description of the scope of application of the concepts. As the form of the traveller already was assumed to be frequently occurring, it may be no surprise to recognise it in many aspects, such as in the development of order in society or in processes of cognition, like in scientific endeavour, and even in the norms and values.

⁶³ Note that virtuality decreases the minimum scale; in virtuality the body does not have to join in the travels.

6 The philosophy of travelling

6.1 Introduction

The philosophy of travelling provides an alternative framework for analysis. It is an increased awareness of the changing nature of reality and explicitly recognises the unknown new. It focuses on interactions and mechanisms that create stability. It does not deny the existence and even need for stability, but tries to complement this picture with the dynamics that inevitably emerge in any interaction. In showing the missing complement, much emphasis is put on the dynamic concepts, such as nomads, which are to be considered as an extreme case of the traveller. In the extreme, implications are usually clearer.

As we will see in the thesis further below, the EC movement and its context, current society, are characterised by acceleration, ie. increased dynamics, which legitimises the increased awareness for dynamic concepts.

In this chapter, the philosophy of travelling (PoT) will be classified in order to allow comparisons with other philosophies. Subsequently, travelling will be defined and its mechanisms elaborated. Next, 5 distinct types of travelling will be presented. Subsequently, the central concept of environment and the border are discussed, as well as the concept of speed and its effects on the interaction with the environment. Concluding the general description of travelling, the scope of the philosophy of travelling will be discussed. Next, the chapter starts the discussion of virtual travelling as the major type underlying the EC movement.

This chapter concludes in § 6.5 with a complete inventory of our analytical toolbox which we have tried to fill with historical as well as contemporary, as well as alternative concepts for the analysis of theories.

6.1.1 Classification of philosophy of travelling

In a certain way, Philosophy of Travelling (PoT) is an extension of contingency theory in the sense that PoT takes its principles absolute. A human existence is dominantly influenced by the specific ‘contingencies’ of a specific environment, as materialised in the specific interaction (pattern) with any specific environment. Recall step 1 of the form of the traveller, as described in the previous chapter. As change takes time, each environment will have a specific closure in which the traveller has to deal with existing contingencies.

However, PoT also asserts that humans can change their environment; they are not bounded to one specific environment. Recall step 2 in the morphology.

With this dynamic view, humans can counteract contingencies in one environment by, for example, preparation and training in another environment. Difference of environments is no longer problematic, but the life blood of the traveller, who lives from transit. In contrast with Sloterdijk, there is no need for one unifying sphere.

This philosophy of travelling essentially views reality as linked to man's relationship with place and time dynamically. In this way, it combines a subjective view – what goes on inside the traveller- with an objective view –the environment or the Other⁶⁴ with which the traveller is confronted and has to deal with. In this view subject and object are inextricably linked and are both determinants of our knowledge and of reality itself in their specific combination, ie. interaction. Humans are themselves not enough and principally rely on an environment, a situation they are in, for both physical needs (food, warmth, love, etc.) as for cognitive reference and knowledge, as for aspects of meaning. Humans are necessarily externally oriented. However, to sustain themselves they must also be internally oriented. The traveller has to take care for himself.

Reality -as far as we can be aware of- is created in the relationship between subject (the traveller) and the objective world. Knowledge and reality thus depend on time and place and relationship, next to specific objective and subjective factors. Philosophy of travelling (PoT) leaves the stationary view and studies the dynamic relationship with the other, as encountered while travelling. Although it combines objective facts and subjective acts, it is also perspectival, from the point of view of the traveller, and relatively stable through time.

It is what van Peursen (1955) calls a risky philosophy, a type of existential philosophy, taking the perspective of human existence in reality into account. However, PoT is not purely existential in the sense that it explicitly and necessarily assumes that there is a relevant reality outside of human existence⁶⁵.

(p. 14) Van Peursen asserts that various philosophies, ao. those based on ratio, breathe a specific certainty. Structures of reality can be distinguished clearly, or man is able to create structures. Against this type of philosophy contrasts a more prophetic type, the risky philosophy. This philosophising is based on the confrontation with the other, which will never be fully captured in any theory. It is risky because man is challenging his own personality in this type of philosophising.

⁶⁴ In the first meeting, the other is unknown, the new environment of the traveller. It can be anything, hence a capital.

⁶⁵ Existential philosophy asserts that there is no relevant reality outside human existence, ie. without human interference it does not matter whether there is something else. PoT necessarily assumes the existence of the unknown as a precondition for the act of travelling itself. Also see below in the paragraph about environment.

He acknowledges that there is a rest, other things which he can never fully capture. This risk is no ordinary situation, it is exceptional. It puts man in an exceptional situation. It has to do with orientation, acting, faith and destiny. Man sees himself in a situation and reality will only reveal itself in the struggle man has within the situation.

(p. 85) “The real will only reveal itself in a struggle. Revolutionary thinking is only possible within a situation, against resistances, within the being-in-the-world. Not just the act of life, as with surrealists, nor just faith, as with the determinists, but a double condition should be accepted. Both what we do as what overcomes us shape our lives... The fixed past is primarily in the order of knowledge, the uncertain future is in the order of existence”.

Van Peursen created the category of risky philosophies without even mentioning a philosophy of travelling. This was done in another work⁶⁶. The traveller⁶⁷ acknowledges the other as different, not yet fully captured in the thinking of the traveller. He travels into the unknown to get to know it. The traveller also acknowledges the fact that his travels make him wiser, that knowledge grows according to the experience he has, although he will never fully capture the other, nor vice versa. In a traveller's view, one can always escape a capture by exiting and transiting.

In the modernist era, knowledge was supposed to be universal, ie. valid in all places and times (the stationary view). Postmodernity has shown that knowledge is dependent on its context. This means that knowledge is only valid in a specific configuration of identity, environment, culture. Knowledge must be explained in its context and accepted by the environment. Knowledge is a process driven by people that leave and arrive, it develops accordingly.

Conclusion, PoT is both objective and subjective, acknowledging the laws of the universe as well as the act of life. It extends beyond existential philosophy in assuming relevant reality outside human existence. It is dynamic in acknowledging the likely option of arrival and departure, of old and new environments, of transit and development. It is risky, open ended and postmodernist in acknowledging the importance of the context and the role of the observer/participant. However, it is modernist in the sense that it offers universal concepts of growing relationships and breaking horizons.

66 van Peursen, Michel de Montaigne, reizen als wijsgerige houding, H.J.Paris, Amsterdam, 1954

67 Note again that a traveller in this view is defined much broader. Not only the person who makes a classic journey, but anyone who faces a changing relationship with his environment is a traveller.

6.1.2 Definition and mechanism of travelling

The definition of travelling is:

Any act in which a change takes place in the relationship between an identity and his environment(s). Or shortly, travelling is a changing relationship with the environment.

This means that:

1. Any identity can travel. As long as there is a border between a body and its environment, it is possible that the two advance their own development path, and that they separate from each other. E.g. also organisations or cities could travel.
2. Any change in the relationship between identity and environment is travelling.
3. There are different types of travelling, depending on where in the triplet a change takes place: in the identity, in the environment, in the relationship, or in all.

There is no non-change since reality is essentially dynamic. There is no such thing as a non-travelling entity. The philosophy of travelling should be regarded as a perspective on reality, able to view everything in reality, but only from a specific perspective.

Using the metaphor of the traveller, we know that a specific environment is indeed limiting and allowing many important aspects of the situation. Every situation is characterised by a specific closure. A boat is beneficial only in a watery environment, but not in a sandy environment. Specific issues are relevant in specific environments.

In as much as I live in and of the environment, it is a *sine qua non*. We can not live without an environment. However, the same traveller also knows that in time he can leave or escape any specific environment to arrive at another specific environment, characterised by another specific closure.

Taking the postmodernist position seriously, I have to conclude that knowledge must change if I change environment. Even stronger, according to the intensity of travelling (also known as speed), my knowledge must change. In fact, knowledge is constructed due to travelling, due to the changing interactions with others. Nevertheless, as traveller I also know some general lessons which nearly always deliver, and can even be morally preferential, hence intrinsically good. An example is always to be nice when you enter a new situation. As a traveller, I experience specific invariances in all different environments I cross during the passage of (my) life.

Also Leed⁶⁸ stresses the identity shaping aspect of travelling: “The social transformations of travel are closely connected to the origins of identity, the ways in which a person’s selves are defined and made visible. We may find the origins of the self in the process by which it is changed. Closely examined, the social transformations of travel strongly suggest that social being in general derives from nothing more than the mutual identifications, categorisations, and recognitions in which people normally engage, particularly during arrival...An identity may thus literally be left behind with the circle in which it is rooted...The transformations of social being in travel suggest that there is no self without an other; and that, at bottom, identity is done with mirrors. With a change, a twist, a distortion of those reflections, an identity is transformed: thus appears the shape-changing traveller, the stranger who might be god or anything else.”

In the philosophy of travelling, travelling is seen as the only source of relevant knowledge. Only due to feedback from interactions with our environment we become aware and conscious of the environment and our own position in it. In that respect we can expect an explosion of knowledge as a consequence of the significantly increased travelling activity in current developed societies.

Also Ton Lemaire⁶⁹ views travelling as a crisis of the I. He shows that if we are going on a travel, we leave our habitat and postpone our attachment to our daily surroundings. He also mentions the courage needed to put ourselves in the landscape of others, to notice that others are as intimate with their surrounding as we are ourselves at home. This is an outright attack on our consciousness and norms and values and another argument for the label “risky” for this type of philosophy.

Leed⁷⁰ further elaborates and shows that the mind of the traveller is relativistic, eschewing those absolutes and ultimate, timeless values that derive their reality, after all from a stationary perspective. It is a mentality that is essentially comparative, formed by and subsisting upon comparisons. It finds its sources of orientation, its fixed points, in those forms and relations that persist through the variety of experienced objects and situations, and is acutely aware that these persistent forms and relations are provisional and might alter with change of circumstances. It is a mentality that reflects upon surfaces and is adaptive rather than creative: wide rather than deep, mirroring rather than penetrating. It is a mind

⁶⁸ E.J. Leed, The mind of the traveler, from Gilgamesh to global tourism, Basic books, inc., USA, 1991, p. 263...

⁶⁹ Ton Lemaire, p.98...

⁷⁰ E.J. Leed, p. 287

structured in the disciplines of alienation, removal, idealising itself in the canonisation of the objective, outside, disacculturated, and universal point of view. Restless, wide-ranging, alert to difference and to persistencies in the climate of change, it is content only when the possibilities of happiness, of coherence within a home, a patria have been relinquished.

In travelling the particulars of specific environments will stay in these environments while I as a traveller am moving on, and, hence, encounter new particulars. However, as traveller I also experience a stable identity; some lessons learned elsewhere also apply here. As traveller, I combine new particulars with old and continuing higher level or general knowledge. That is, general knowledge is dependent on the commonalities between the various environments I transit. If I leave Earth, other general laws might apply (e.g. things don't fall down anymore).

Travelling is linked with risk and danger. One leaves home to venture into the unknown. Leed⁷¹ holds that travelling has for a long time been associated with experience. Experience stems from the root *per*, which typically has secondary meanings like “to cross space”, “to reach a goal”, all acts of travelling. Leed even recognises the root of *per* or *fer* in the Old High German “irfahran”. Connotations of risk and danger (peril) can be found in these words.

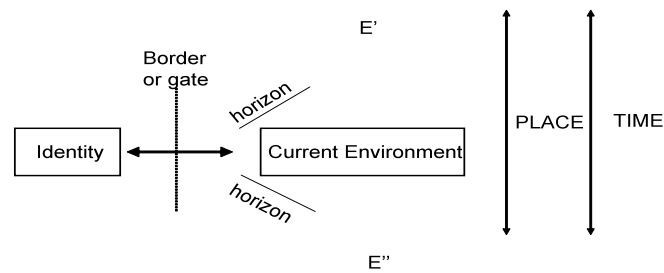
6.1.3 Detail analysis of identity-changing mechanism in travelling.

On the minimum scale of the individual traveller, as well as on the maximum scale of societies and institutions, it is recalled that the interplay between identity and environment is the centre piece of the philosophy of travelling (PoT). PoT focuses on the exchange of flows between the two entities, especially when one of them is changing.

The exchange takes place at and over the border⁷² between the two. This border is not only an attribute of the traveller (the identity), but also of the environment, and thirdly, we may even view the border as that what defines the identity. In the last aspect, an identity is regarded as something that is not what it is not, ie. an identity is defined by what it pushes outward, what is actively excluded from the confined area within the border, known as the identity. The border is also an attribute of the identity, as evidenced by his ability to create a new border in a new environment. This is shown in the picture below:

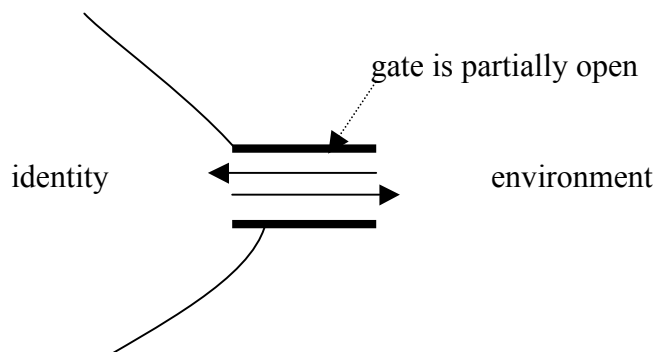
⁷¹ Leed, p. 5,6

⁷² Travelling is essentially a crossing-border activity.



As travelling focuses on flows, the ability of the identity to detect flows defines a specific horizon. The membrane functions as mentioned by Sloterdijk, that can absorb flows, coincide with our sensory organs. Our sensory organs are (still) the gate to the world. The sensory organs can only detect flows within their natural range, the horizon. It is this horizon that allows the possibility of multiple environments, which in turn allows the possibility to travel (as in transiting environments). In other words, it is the horizon that allows to reasonably define a situation, as a confined area, that is important to us. It is important to us, because it delivers the inputs for what we may experience. However, simultaneously, the possibility of other situations, further away, is created, allowing travelling.

Zooming in further on this centre piece of PoT, ie. the border and its exchanges, we can analyse in detail what happens when meeting something or someone new. The picture below shows the zoom in:



To let in something new, the identity must (at least partially) open its borders. However, to protect itself, the identity needs closure. Similar to our skin, which permits some exchanges and actively prohibits others, a traveller in a stable situation has appropriated all flows of exchange, encapsulating what comes from outside and being prepared constitutionally to digest the admitted flow from outside.

In a sustainable relationship, both entities in the relationship continuously exchange processes of appropriation and alienation. The identity will try to appropriate the environment, which in turn tries to alienate the identity. Both try to colonise each other, both try to expand at the cost of the other. The relationship is sustainable if the balance of these processes is somewhere in the middle, ie. if not one of the entities in the relationship is completely appropriated, and therefore assimilated and subsequently annihilated as autonomous entity. The balance in the middle acts as the permeable gate; as the relatively closed gate, offering the comfort of closure and regulated exchange.

In a new interaction, when meeting something or someone new, the identity has to open up to the environment. It has to open up his defences; a gate has to be opened to allow the new exchange. This is a risky moment, since it is yet unknown what exactly will be exchanged and where the new balance will exactly emerge. Opening up the door for something new may lead to saviour or evil, as it is not yet known what exactly will come through the door. The recognition of this step is what characterises a philosophy as risky according to van Peursen (see § 7.1.1). The riskiness is not only in the new thing that may come through some door, but in the existential consequences of the door. The identity does not open the door to the garage, but to himself; he puts himself at stake, as identity.

When opening up, the fixed identity of the traveller for a moment has become opaque, seems to be distant. At this moment, the comfort of closure, of regulated exchange, is gone. Furthermore, this moment offers an option for extension of the identity, an expansion of its territory, an enlargement of its area. This is the moment when ecstasy can be experienced, in case the interaction is really new and drawing attention. As soon as the new is recognised, as soon as the new can be successfully compared to past experiences, the identity has extended itself to also include the new within its horizon from now on. This moment of expansion of identity is the (positive) ecstatic feeling that is the reward (the motivation) for the risky endeavour.

Subsequently, the identity (as well as the environment) will start appropriating processes; will start an exchange to enable investigation and identification of the new. Finding a name for the new is one of the first steps in the appropriation. As

soon as some appropriation is successful, the ecstasy is over, the identity is closing again and the interaction is encapsulated, the exchange is controlled.

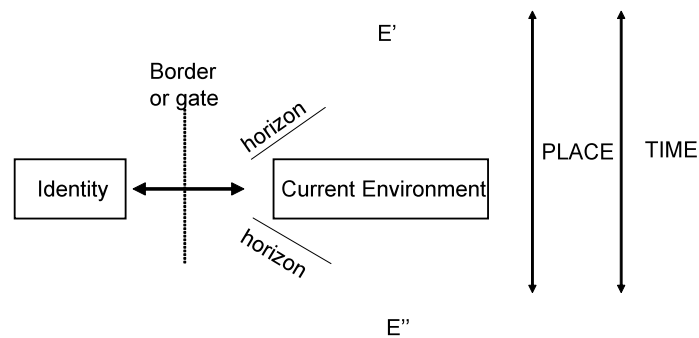
Appropriation is a continuous requirement if the identity wants to continue the controlled exchange. Appropriation only works partially, for as long as there is interaction. Appropriation is not consumption, where the other is consumed, digested and taken up by the body, to become the body. When the banana is taken up in our body, there is no interaction with the banana anymore. Interaction stops with unification or merger of the two interacting entities, or when exiting by leaving the environment.

As long as interaction continues, the two interacting entities remain principally autonomous, can surprise the other. The interaction stops when one of the entities exits the relationship, or, when one entity consumes the other and digests it. This, however, is not easy when we talk about humans.

6.1.4 Types of travelling

The act of travelling is impossible if an identity would be inextricably linked with the environment, if it would be the same thing as the environment, fully dependent on one specific environment. One can only change environment if somehow one can be separated from the environment. There must be a border between the two, which fosters the interaction between the two (borders are made for those who cross them). The border is the meeting place in between Identity and Environment; it allows the interaction between the two. In that respect, the border functions as a gate, allowing and limiting interactions. If Identity and environment are not the same, the references made cross-between identity and environment need to be maintained by check up and feedback from cross-border interactions.

Defining travelling as the process in which an Identity changes environments and if we recall the stylised travelling diagram below, it is clear that there are various kinds of travelling, depending on where the change takes place:



The *five kinds of travelling*:

1. **Growth and decay**, the general working of time on both Identity and Environment change the relation between these two. This is the well-known Journey of life, which all of us undertake. This basic type of travelling causes anyone to travel, as long as one grows older. This basic type of travelling, at least up until recently⁷³, provides a direction; always from past, through present, to future.
2. **Export** of the identity to another environment, the traditional view on travelling, changes the relationship because the Identity leaves one environment and enters a different one. Departure, passage and arrival all have their own characteristics. This is the business man visiting new working areas, or the tourist, or the pilgrim.
3. **Import** of entities within the existing environment change the relationship between the Identity and the Environment according to the importance of the import for the Identity. In the global economy, all of us can eat the same hamburgers, see the same movies, play the same toys, etc. because all of this stuff is imported and changes our environment.
4. **Virtually**, the Identity can assume another environment and thereby focus on another environment than he is in currently. In fact, he is travelling virtually, for instance when reading a good book or being absorbed by a

⁷³ Reference is made to the timeless time of ICT networks, as described by Castells in § 9.4.1.5, see below. In timeless time, this direction is lost.

movie. Or on internet, one can travel the world and get into contact with many different people and different regions, but one sits at home. This is the relatively new type of travelling that is the focus of our analysis in part three.

5. **Ecstasy** occurs when the border between the Identity and the environment is absent. This can only happen for a while in for example love, when two people merge in the act of loving, or in the sudden comprehension of the world in a true discovery. However, the body in time will again move itself, away from the merge, because of the physical integrity of each identity.

6.1.5 Concepts of Environment and Border.

The very act of travelling requires that there is more than one environment; the traveller leaves one environment and enters another. Hence, we should investigate the concept of environment, because it plays a pivotal role in the philosophy of travelling.

Sloterdijk shows how the concept of environment has been overshadowed by the focus on the centre of the sphere in classic and medieval times. In a concept like the Christian God, there is supposed to be only one ultimate sphere, with no further environment. What is outside infinity? The power of the centre emanates evenly to all positions within the circle, in the ideal case without any interference of out-there. Of course, in reality, any emperor will have to acknowledge the enormous effort to achieve this ideal, and confess that not at all places sufficient power from the centre emanates. Most empires did not have completely round borders.

Sloterdijk himself also acknowledges the illusory nature of the circle concept, for example, when he lists the two essential conditions for a successful emanation of power⁷⁴. I.e. first, that there are pure channels to distribute power, without distortion, and secondly, that messengers are completely unselfish. As if the medium would not distort! If it does, then there is no complete circle, no complete sphere.

Or⁷⁵ when Sloterdijk calls the persons well-willing philistines who currently still adhere to the idea of self creation of protecting spaces in which we can live without too much interference of outside.

Young⁷⁶ provides an alternative view on the concept of environment. He shows that the concept of environment has a multitude of adjectives in literature: "physi-

⁷⁴ Sloterdijk, 2003, p. 850

⁷⁵ idem, p 806.

⁷⁶ Young, 1986, p.97

cal; natural; cultural; semantic; built; artificial; synthetic; functional; effective; operational; perceptual; conceptual; total; technical; social; human; geographical; ecological; psychological; behavioural; relevant; institutional; and so on. The lexicon is rich and potentially powerful, depending essentially on the refinement and discrimination brought to the choice by the various writers attempting to use the available modifiers."

These modifiers, each of them represent an important contingency or factor in the environment that determine relevant aspects of human life.

Next to that, its scope reaches from individual to global⁷⁷:" The *reality* of environment for humans runs the gamut from proximal or vicinal to global, depending on the problem."

Next to contingency theory, system theory also describes identities or systems in their environment. Analysing systems theory, Cooper⁷⁸ concludes that it focuses on the concept of the system and its environment and ignores the relationship between the two, whereas, according to Cooper⁷⁹, it is essentially the relationship, or the border between the two that defines them. "It is significant that the analysis is invariably couched in *binary* terms, revolving around the distinction between *system* and *environment*. It is also significant that it is *the system that has the boundary* and not the environment, i.e. the boundary belongs to the system and not to the environment, which further supports the idea that the boundary serves to frame the system, encapsulating it as a thinkable entity and thus preserving its meta-linguistic identity⁸⁰. Traditional conceptualizations of systems are therefore structured so as to give preference to the idea of systemness, of articulated unity and order. The system (with its boundary) becomes conceptually detached from background or environment and thus takes a life of its own. This has the effect of diverting attention from the all-important function of the frame.

Paradoxically, while the social system is defined as a *pattern of relationships*, the concept of *relationship* is its least systematically analysed feature and this effectively means that we end up with a nepotistic conception of social system. It is, we would claim, the frame which constitutes the relationship between system and environment and consequently it is the frame which provides the key to understanding the relationship between the two...The boundary or frame has now to be conceived not as a static concept, subservient to either term, but as an active process of differentiation which serves system and boundary equally."

⁷⁷ Young, p. 93

⁷⁸ Cooper, 1986

⁷⁹ Cooper, p.302/303

⁸⁰ the meta-language becomes a form of representation which denies or hides its own role of interpreter and which acts like it is a transparent window and secretly – since the observer is usually unaware of this identity of the meta-language- designs what is observed. (p.302)

Cooper provides a radical alternative view on the concept of environment, based on a line of thinking which often is said to originate with the concepts of Saussure regarding language, and also includes Derrida's concept of difference. This is alternative because the focus is on what something is not. The analysis is inverted and does no longer focus on the essence of an object, but on its relationships with surrounding objects. To be precise, the focus is not on the environment, exchanging the nepotistic focus on the subject for a nepotistic focus on the environment. But the focus is on the interaction between the two, on the border or the exchange between identity and environment.

A system is defined by its differentiation from its environment. A system is essentially not its environment. In fact, the continuous process of pushing things out and including other things within the system, ie. actively defining the border, defines the system. The work of organisation is focused on transforming an intrinsically ambiguous condition into one that is *ordered* so that organization as a process is constantly bound up with its contrary state of disorganization, according to Cooper⁸¹.

Cooper contrasts two different views on system and organisation (read: identity). One view is based on unity, hierarchy and meaning/goals, the other is based on differentiation, deferred presence and ordering fuelled by the chaos encountered, including fundamental undecidability:⁸² "There are here -and throughout the above accounts- two ways of approaching 'system' or 'organization'. The dominant mode of interpreting and understanding 'system' is by way of a fully present unity, hierarchical order and purpose. We have called this the metalinguistic model whose main epistemological prop is the *asymmetrical* frame or boundary. In contrast, the work of those writers -Saussure, Bateson, Derrida- who view structures *differentially* has brought us to an alternative conception of 'system' and 'organization' in which, perhaps at the level of what we might call the infrastructure, we discover an intrinsic undecidability which can only be 'organized' or 'systematized' through an external force that is wholly foreign to it. It is this level which is resistant to order and organization and which we call 'dis-organization' or, ..., the zero degree of organization."

Saussure asserts that language as system reveals a structure that, far from the positivity and fixity of sign as meaning, is essentially incomplete and without solid foundation, with neither beginning nor end, based on the negative, on what is not. Every linguistic term is a negative product of the other terms, language is most of all built from differentiation.

⁸¹ Cooper, p.304/305

⁸² Cooper, p.316

If it is difference that makes us aware, it is in interaction only that we can become aware. We need to see a difference, which means that at least two separate things (not one) should be contrasted, should meet. It is this difference principle that creates a break with theories of unity, based on Sloterdijk's spheres (see chapter five).

Cooper⁸³ also quotes Derrida with his concept of *différance*, which also emphasises the distinction between order and chaos. "Briefly, *différance* is that which occasions system and which at the same time lies beyond it. The essential point is that *différance*, just like Saussure's conception of difference, can never be fully grasped in the present since it is an active play that always runs before us."

Cooper⁸⁴ emphasises the surplus in the environment which is filtered out in information-processes. The environment is more than the individual experiences, it is a source for conceptualisation and simultaneously it is an undecidable chaos. The filtering is a choice of what deserves attention and what not. The concepts that are created by the filter show the effects of the filter. On the other hand, without such a filter, the outside remains a chaos. The application of concepts to the outside world is essential for survival. The chaos forces us to apply concepts, which in turn force reality into these concepts.

"Allied to the concept of presence as *différance* (i.e. as deferred presence) is the idea of *undecidability*, which is Derrida's way of expressing the non-form of information⁸⁵. A certain force or violence is required for the act of separating the decidable from the undecidable. The idea is reminiscent of Simmel's (1950) statement that: "All system-building, whether of science, conduct or society, involves the assertion of power⁸⁶: it subjects material outside of thought to a form which thought has cast".

The concepts of the meta-language or the frame (which are really the same) are devices for creating decidability or meaning. In terms of the philosophy of travelling, it is the orientation that creates decidability. Orientation serves as a discriminatory device that filters out from the chaos around us only those things which we have learned to appreciate.

However, the framework for interpretation of reality is subjective, perspectival and serves the interpreter at the expense of the interpreted. Foucault has also pointed at

⁸³ Cooper, p.312

⁸⁴ Cooper, p.314

⁸⁵ According to Cooper information links the chaos with order and comprises of both order and chaos terms. Here, Cooper refers to the chaos part of information.

⁸⁶ In this quote it is clear that every distinction, every interpretation is a form of violence, for which a certain amount of force is required.

the disciplinary force of social institutions such as schools and universities, recognising the violence.

An "excess" always surrounds and surpasses systems which claim to be based on "decidables" and which are therefore thought to be complete. But this thought is anomalous, as the system is defined against its surrounding undecidables. Creating decidability is what keeps the system alive.

The relationship between environment and identity can be viewed in moral terms of the battle between good and evil. Cooper⁸⁷ asserts that, leaning on Derrida, in order to preserve the self-identity (or purity), the system grants the inside the privilege of good and tries to push the bad outside its boundaries. In this way, being part (inside) of a system receives moral legitimization.

"The 'inside' must fight to retain its 'purity' (this is another way of defining 'self-identity' and 'presence' against the 'impurity' of the 'outside') in much the same way that Plato cleansed 'truth' of contaminating 'error'. The purity of the inside can only be attained, says Derrida, if the outside is branded as a *supplement*, something extra (an 'excess') not necessary in itself."

However, if the good can only be defined relative to the bad, and if the system can only keep the inside pure because of the contrast with the bad outside, then the issue of inside/outside is a paradox: "An 'outside' is thus seen to be the most intrinsic feature of a system, displacing the inside."

Cooper⁸⁸ observes two orderings which are created by the subject in the process of differentiation: an internal order which must be kept as pure as possible and an external order which allows the system to identify itself "The equivalence of subject and difference is thus distinguished by *order* in a dual sense: an 'external' order which organizes differences into a system of lawful relationships and an 'internal' order which is a command to the subject to rid itself of 'error'."

In the PoT, we will recognise that the environment is both identity-shaping as well as a reservoir of unknown aspects, respectively in the environment which we call home or the one we call the unknown. Where the stranger is seen as evil, moralisation mechanisms are employed to "keep the system pure", to ensure adequate closure, to protect what was historically produced and keep the inside intact.

In the below, we will conclude that environment is a layered concept.

⁸⁷ Cooper, p.315

⁸⁸ Cooper, p.329

Layers of environments

There are basically three layers of environments:

- 1 Environment is everything outside the identity. This comprises both the part of reality that we know of, as well as that part that we don't know of: the unknown.
- 2 The operational environment is that part of the environment that invokes reactions upon the identity. It is the environment which we notice, which we are somehow aware of. It is the environment that we know, because we interact with it.
- 3 The own environment is that part which is under influence of the identity, which has been appropriated by the identity, and hence reflects its identity. It is home.

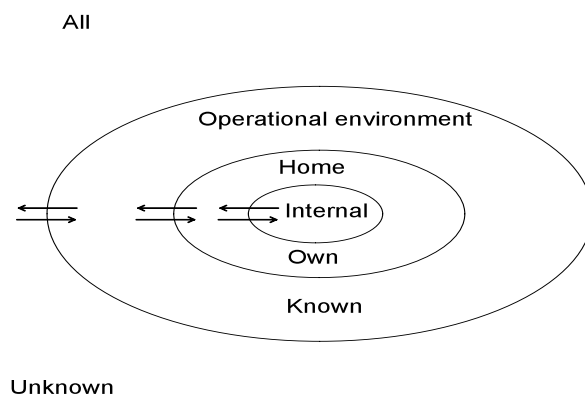
By interacting with an environment, the identity will get to know it, and convert the environment from the unknown to known environment.

If interactions with a specific environment continue, the identity will more and more familiarise with the environment and make it into his own environment.

So it is clear that the first term comprises the second, and the second term comprises the third, although each of these environments has a different relationship with a specific traveller.

Next to that, we can observe that humans build frameworks for interpretation of the reality surrounding them, but people are not the same as their interpretation framework. We can consider this framework as the internal environment, as if it is the software of humans. It is even possible to depart from this internal environment in what is called a Gestalt switch, or Kuhn's paradigm change.

This is depicted below:



It is clear that the border is partially influenced by the traveller himself (by the identity) and partly by the environment. Any specific border can never be detached from its two bordering entities, ie. both the traveller as the environment simultaneously are owner of the border. The Dutch-German border belongs both to the Netherlands as to the Germans.

The process of differentiation mentioned above will be translated in the PoT as the processes of orientation and appropriation/alienation and receives explicit attention. In this respect the PoT is based on Cooper's concept of environment and differentiation, but links the environment to an identity, who can give meaning to the differentiations.

6.1.6 Speed

Speed has a distinct effect on orientation: it directly determines the time available to meet the local environment. In very high speed that time is very short. Processes that take time, such as building trust, or nurturing investments, are under pressure in environments with increased speed. Contact time may be too short to earn trust or harvest long time investments. Speed both contracts the horizon and extends it. In a car you have to watch the limited front window at least 95% of the time (if driving), but after one hour of tunnel vision, you arrive 100 km. down the road.

In cases of mobility, reciprocity is a urgent issue, because mobility provides an exit option, creating the risk that the other party will exit the relationship before delivering his side of a contract.

Next to that, in an economy where time has a value, speed is the competitive factor. The winner is the one who outpaces his opponents.

Virillo shows how speed affects orientation with some examples from military technology and electronics. In the times of his analysis, the technological virtuality of today hardly existed. Internet emerged in the 1990s only.

Virillo is introduced as an outsider to this thesis to create some conceptual space to discuss the effects of speed on orientation. After discussing Virillo, conclusions will be presented regarding the effects of speed on orientation.

Paul Virillo⁸⁹ describes the knowledge of speed and acceleration as a dromology (from the Greek *dromos*, which means track or race). His dromology can be divided into a dromocratic and a dromoscopic part. The dromoscopic part is a

⁸⁹ Paul Virillo, Het horizon-negatief, Uitgeverij Duizend & Een, Amsterdam, 1989.

phenomenological analysis of the effects of speed on perception and humanity in general and will be elaborated secondly.

Virillo's speed

In the dromocratic part, Virillo shows the relationship between power and speed in a historical analysis of the various phases of warfare. Already Napoleon stated: "The power of an army is the product of its size and speed, similar to a movement in physics." Virillo elaborates this statement and starts from a phase where the woman was the only transport vector –carrying the luggage, to free man's attention for the duel with other men- , to the introduction of horses and the corresponding increased striking power and impact of the arms, to the introduction of the mechanic transport vector – from trains to transport troops, ammunition and food, to tanks and airplanes- that again changed war completely. Verdun after WWI was organised for the past war, with its magnificent trenches, and not able to cope with the German tank-troops that simply drove around Verdun⁹⁰. This new (mechanically supported) warfare also changed the basic movement and appearance of troops, as evidenced also in the evolution of uniforms. The speed of arms and transport requires another type of anticipation. If one throws a spear at me, I can try to avoid it, but with a bullet this becomes a martial arts challenge. In the early 19th century, uniforms were still designed to impress the enemy with the presence of the troops, carrying feathers on bonnets and banners and regiment flags. In WWII uniforms were designed to hide and masquerade presence applying camouflage colours and techniques. In the fourth stage, warfare has also turned virtual, using ICT. Issues like availability of satellites, transmission speed and capacity for quick analysis and processing become important, as was the case in the Gulf War. Also here we see that information processing capacities are as important as physical powers.

In the dromoscopic part, Virillo⁹¹ holds that the price of space continuously devaluates because of development of technical transportation vehicles. The message is no longer in the movement of the vehicle, but in the movement of the movement, or in other words, in the speed-vector and acceleration. And, if speed is the only thing that counts, it does not matter so much what is transferred, what moves. Either data or images or people or goods, the vectoral capacity of the transfer matters only. How fast can it move (whatever it is)? Electronics turns out to be the quickest, currently.

⁹⁰ For economic reasons, it was decided to not continue the line of defence of Verdun all the way to the North Sea.

⁹¹ Virillo, idem, p212

Again, Virillo turns to warfare and uses highly manoeuvrable aircraft technology as an example where electronics are as important as the drive mechanism. Electronics are emerging as dominant technology because it is quickest to deliver. In a short evolution of transmission techniques, Virillo shows how mechanic methods have been replaced by electro mechanic and electromagnetic methods, and finally by micro processors. The evolution exhibits a trend of continuous miniaturisation, a disappearance of the actual apparatus. With that trend, the representation of things by the apparatus becomes all important. Electronics will transform into opto-electronics. The dashboard or instrument panel will become the centre of our focus, instead of the objects itself. Similarly, again referring to aircraft technology, Virillo argues that the technology of the Stealth (an airplane that is supposed to be invisible) is based on speed twice, ie. in terms of the physical speed of the plane, but also on speed of radar waves. It shows that not only physical speed of an object is important, but speed of our detection technologies as well. The Stealth is invisible relative to the speed of (current) detection devices.

Speed requires emptiness. The ultimate speed races are organised in deserts, places deserted of things. A highway requires emptiness to allow speed. An aircraft requires even more emptiness to allow ultra speed. The local situation is violated and overruled by the requirements of high speed transit. Birds become an obstacle, all slow transport must give way. The importance of acceleration will dominate the measurement of space, for example by only providing a revolution counter, and no speed meter. The speed provides a horizon to the traveller that takes away his attention for the direct surroundings. The speed encapsulates the traveller and provides him with a window frame on the world that is as small as the speed is high. For example, comparing the window sizes in cars and airplanes.

Speed thus causes a double reduction of proximity: in the far away horizon that comes into reach and in the perspective / the field of vision that is allowed on the direct environment. This continuous devaluation of direct environment, of neighbours, caused by the acceleration of transport and transmission also has political consequences. Local environments can become appreciated only as transit cities, as places to arrive and depart, not as places for domicile. In this environment, the partial citizen emerges as temporary inhabitant of a multitude of societies.

Speed and orientation

Obviously, speed is the central reference when discussing a type of travelling. For example, a farmer is travelling with the speed of time, growing older year by year. Change is everywhere, but speed means fast change. To the extent that time and place are important, speed is a strategic factor. Or better stated, the differential between two speeds is important. It's not how fast you go, it's important that you are fastest.

Speed is important because it determines the potential orientation towards reality. For example, tourists do not look at sights because that's what they like most, but only because they have no more time to involve in the environment than at sight level.

Speed has effects on two aspects of orientation:

1. Cognitive; appropriation takes time.
In terms of appropriation, we can introduce a scale of appropriation extending from quick impressions to deep phenomenological understanding. The physical senses provide output in whatever speed, they deliver instantly appropriations in terms of sound, vision, or smell. Impressions of taste and touch require minimal direct contact and thus take a little longer. On the other end of the scale, understanding the history of phenomena, understanding the relationships and the dynamics of phenomena, or understanding the dynamic alterations through time (such as described by Nozick, see §5.3.2 above) takes quite some time (and effective effort). We may conclude that, maybe except for the three direct senses, appropriation in general takes time. More specific, for specific speeds, specific orientation options are available. In ultra speed I can not touch the environment of transit. As a sedentary farmer, I do not meet other cultures which can help me to see my own values as relative.
2. Social; both building trust and growing investments take time. Principally, mobility provides an option to exit a specific environment and arrive at another one. As such, it provides an escape from social obligations, to break loyalty. Since the other party knows this, mobility requires more trust, while the trust is harder to obtain as long as there is a real exit option available. Trust is won by small test cases, one at a time. The series of successful test cases creates the trust. The longer the series, the stronger the trust. Trust takes time to build.
Investments take time as well. On global financial markets, it is possible to earn return on investments within one day, but for production of goods and services, usually some more time is required. More advanced investments can take a significant time. For example, raising children, our future, takes 20 years easily. Innovative research does not pay off immediately, but can bring worthwhile results on the longer term. Internet has rapidly conquered the world, but it has taken more than ten years before the larger public accessed it.
The costs precede the return, as we say in Dutch, which means that investments take time. More fundamental innovations take more time, but

may well be worthwhile. Speed contracts the investment horizon, which is evidenced by the focus on quarterly results for listed companies.

6.1.7 Scope of application of philosophy of travelling

In my view, the philosophy of travelling offers an alternative form that is fundamental in many areas. Whether we analyse knowledge, morality or society, the form of stable but changing perspectives will be recognised again and again. It not only offers an epistemological framework to analyse EC theory, it also provides a historical and social framework to investigate its origins, development and social implications.

In this paragraph, the scope of analysis based on the philosophy of travelling is elaborated.

In order to show that a travelling view is different than the conventional view, ie. is an alternative, first we resort to some extreme thinkers who have elaborated on nomadic thinking. The nomad is continuously on the move and has well adapted to this dynamic position. His thinking, his morality, his orientation towards reality, and even his time and space are quite different from conventional. As was elaborated in the paragraph concerning speed above, orientation options vary by speed levels.

Deleuze and Guattari show convincingly that speed of travelling matters by contrasting nomadic and sedentary cultures. As an example of a sedentary culture the farmer can be mentioned, as described in the genealogy of travelling (see below § 7.2). The point is not that the farmer is not travelling⁹², the point is that his travelling allows him to see truth as static and universal; it allows an orientation on the static part of reality. He never experiences anything from outside his environment other than strangers who may bring evil, who distort his production. For such a traveller it is easy to take one's view as absolute and universal.

According to Deleuze and Guattari, the distinction between nomadic or sedentary lifestyles is expressed in many areas. Deleuze and Guattari⁹³ describe the nomad by way of contrast with its opposite. They distinct two kinds of rationalities, two kind of movements, two kind of moralities, two kind of times and spaces, two orientation frameworks. They see two heads of political sovereignty or domination,

⁹² Because he is travelling through time, progressing from young to old. However, the statement is that the intensity of travelling is so low that the farmer can assume a static world, with minor deviations such as the weather and the seasons.

⁹³ Gilles Deleuze & Félix Guattari, Nomadology: the War machine, Semiotexte, Columbia University, New York, 1986

when posing the State apparatus against the nomadic War machine, as a necessary pair of magician-king and jurist-priest. And, since the State is against the war machine, so the war is against the State.

Deleuze argues that primitive societies, where there is no State, do not necessarily lack the capacity to organise organs of power, but may have been determined by complex mechanisms to ward off the formation of a State. A formation of warriors may follow a leader, but not necessarily serve him. Deleuze shows that leadership in gangs and bands is a complex mechanism that does not act to promote the strongest, but rather inhibits the installation of stable powers, in favour of a web of immanent relations. Another example concerns the rules in high society life, where groups operate by the diffusion of prestige rather than by reference to centres of power.

But not only the distribution of power is different between settled society and nomads. The war machine applies ⁹⁴“another justice, another movement, another space-time”. As a consequence, both types do not understand each other. As if Genghis Khan did not understand the phenomenon of the city.

Elements of the work of the war machine include secrecy, speed and affect.

⁹⁵“Affects transpire the body like arrows, they are weapons of war”. Affects are externalised feelings, strong feelings that yield an incredible velocity, a catapulting force, like love or hate.

The war machine answers to other rules, based on a fundamental indiscipline of the warrior, questioning hierarchy, perpetual blackmailing by abandonment or betrayal, and a very volatile sense of honour, all of which impede the formation of the State. Gangs, bands, or even families are the war machines on local level. The eminence of a family as a war body is determined by the secret potential or potency for solidarity, and the corresponding genealogical mobility.

Deleuze and Guattari convincingly show that differences in speed yields differences in many areas by comparing nomads to mainstream (the State). Focus on changes in speed, ie. changes in the type or intensity of travelling, of people will reveal instances of important changes.

Philosophy of travelling is focused on changes in intensity of travelling (speed differentials and acceleration) and focused on the process of travelling itself. As such it provides an alternative framework for analysis compared to mainstream thinking.

⁹⁴ Deleuze, 1986, p.4

⁹⁵ Deleuze, 1986, p. 9

If we apply the form of the traveller to traditional philosophical fields of research, we can describe an alternative genealogy of mankind, an epistemology, and sociology or ethics from the perspective of travelling:

Genealogy

The PoT allows for a recollection of the way mankind has and is travelling through its environment in what I call a genealogy of travelling. As each type of travelling requires a distinct orientation, genealogy may teach us about important shifts in orientation. The development of mankind is sketched from hunters to farmers to merchants to virtual travelling, a new informational stage for mankind.

Epistemology

However, the PoT also has implications for knowledge or epistemological implications in what I call an epistemology of travelling. The interaction is considered to be the fundament for awareness, with stored experience, communication and time management as some complicating factors. The intensity of travelling has consequences for the depth and scope of knowledge. The fast know much but superficial.

Social philosophy

Only in part 2 of this PhD project we will focus on the social implications of the EC movement and see how it changes society. There we can apply the philosophy of travelling to social order in a limited environment (wholesale banking). In part three, the analysis is expanded and generalised to investigate the implications of the virtual turn for general social behaviour and ethics.

6.2 Genealogy of travelling

The development of mankind can be described in terms of the stages of its travelling. Mankind has gone through stages from hunter to farmer, to merchant to informationalist. That is, in some groups in society, some people have been able to progress along this development path. Many others stayed behind.

Note that the first two types of travelling can be seen as archetypical. The hunter, symbolising dynamics, and the farmer, symbolising stability, are the necessary pair of ingredients for any human activity. Every activity needs stability to produce and needs change to adapt to new circumstances. Newer types of travelling (emerged after the farmer) can be regarded as combinations of hunting and farming.

In this paragraph we will investigate why man is travelling and see that he tries to solve his most important problems. That is why a genealogy of travelling is a useful type of analysis: it reveals priority one type of problems.

Another remark is that each type of travelling has its own speed of change of environments. As appropriation and external orientation take time to build or develop, this implies that a shift in type of travelling (eg. from import/export to virtual) marks a transition in basic orientation options of the respective traveller. Subsequently, a change in orientation means that interests will shift, as well as capacities to appropriate.

It is this change in orientation that makes it worthwhile to analyse shifts in types of travelling.

Hunter

Thrown on Earth, man finds himself as naked as an animal, subject to natural forces and circumstances. Just like the animals, he has to chase or find his food, requiring him to travel, to leave his safe home and venture into new grounds, into the potential dangerous. His problems arise because the food supply of a specific environment may be decreasing to less than acceptable levels, or because his environment may be invaded by a stronger force and he has to escape or is evicted. In summary, man is unable to grow his own food, hence must accept what is available or go out and find more. Furthermore, man is unable to protect and provide shelter, hence must rob or escape. In this phase, man can appropriate as much as he can carry.

Farmer

The farmer has solved the problem of food supply, by having learned how to sow, maintain and harvest, or how to keep cattle. The farmer has learned with the very first time management techniques to protect himself against natural shortages by creating excess food supplies and shelter or storage facilities. His solution required

him to settle down, ie. refrain from hunter's travelling. He became bounded to one place which he had to defend in order to harvest his investments. He had to plan for the different seasons, actively anticipating the future of nature's behaviour. He had learned to protect himself against repeating natural patterns, by exploiting a number of these patterns in terms of crop cycles. However, serious problems remained in terms of robbers, ie. people who still lived according to the former standard of the hunters, who did not need to grow because they could take from farmers. In the times of the Vikings⁹⁶, there was a well known pattern in which the oldest son inherited the complete farm, in order to protect the heritage from fragmentation, and the younger sons turned to piracy and robbery in North West Europe.

Another major remaining problem concerned the natural disasters, those events which exhausted the buffers of excess food supplies in the storages by far. In times of natural disasters, the farmers for example experienced an earthquake, flooding, fires, lightning, drought, etc. which made their crops fail, or their barns burn. As most food is perishable, buffers could only last for a limited period of time. In other words, periods of natural disaster causing crop failure could be disastrous.

Kings, knights and merchants.

Kings, armies and their knights, ie. the establishment of a military structure which was able to protect against invaders, solved the first problem. Kings and knights represent a new type of travelling, a new combination, as they are in fact hunters who did not turn to farming, but did settle down, but do not grow their own food. They still are warriors, using force, weapons and everything else that is useful in a physical confrontation. But they also build castles and defend their specific territory, or even go out and conquer to expand their territory. Kings provide protection to farmers and in turn earn a share of the harvest or share of the labour of the farmer.

The merchant solved the next problem: the natural disasters, creating unanticipated shortages. The merchant travels between two environments: supply and demand, excess and shortage. His added value is not caused by productive actions, but by linking environments and logistic actions. Technically, he moves goods across locations. By his activity, he provides goods from elsewhere, ranging from the highly necessary help in case of acute shortage to supply of luxury, non-essential goods. They create trade flows of products made elsewhere. Reliance on these trade flows creates dependencies. Once relying on production from elsewhere, man loses his autonomy. An example of this is the development of cities in the middle ages. A city typically is a confined area in which there is not enough room to grow the food required. Trade flows have then become essential.

⁹⁶ Approx. 1000AD.

With the entrance of the merchant, environments become linked. In first instance, simply because one environment supplies another. But with the proliferation of the merchant, a complex web emerges in which environments become more and more inextricably linked providing components multilaterally. With hindsight we know that this system has grown immensely, to become the globally linked economy of today. In order for all these environments to be vital, each of them has to be tuned and coordinated with their counterparts. This coordination takes place as a monetary communication. Money is capable of linking various environments, various products; it is a universal value, serving many purposes.

An “invisible hand” will make sure that people respond to actual supply and demand, thus coordinating production and price on the modern market. The ideal of the modern market place is that you get the best price, considering available alternatives. This requires full information and transparency for all market players.

Information

Currently in the Netherlands we live in a society where money matters. The effects of election programmes are calculated to see what the economic consequences of ideals are. Money is all.

Already for a long time, money has become a hyper good, the ultimate good, with a transparent value, highly liquid, generally tradable, non-perishable. An enormous multiple of the value of available goods on Earth is traded in terms of money.

Money itself has become the object of exchange, target of our most skilled people. Driving the concept of money to its borders, we arrive at information. The value of money in today’s society is determined by the value of the available information.

In short, the concept of risk provides the link between information and value. (See also the chapter on risk below.) Perfect markets do not respond to events themselves, they respond to the information about events, compared to other events and alternatives. In short, information is hyper money. Information will more and more be recognised as the ultimate value driver, defeating money as ultimate priority.

Note that higher levels of travelling rely on lower levels, and that all levels can exist simultaneously. The merchant is dependent on the farmer to produce physical excesses and be subject to shortages. The informationalist is dependent on both the merchant and the farmer.

This also implies that people do not apply the same kind of travelling. While some of us are able to travel virtually, others struggle with the transformation of hunter to farmer.

From money to information

For a proper exchange, a common language, accepted both in environments of supply and demand, is required. Gradually, the concept of money is developed as

the medium of exchange, evolving from payments in cattle, shells, and gold, into digital money. In this process of development, banks have evolved and contributed to the current emphasis on money, or monetarisation of society. Value in a monetary society is determined by the amount of money attributed to the object of valuation. Banks have stepped into the role of being the merchant in the monetary area itself, because they have transformed the supply of excess money into use of money, creating an exchange between lenders and borrowers of money. Where money is the medium of exchange for goods, the medium of exchange for money itself is information. Man becomes an *informationalist* by shifting his attention from the exchange of goods to the exchange of money.

Up till the stage of the merchant, travelling was a physical exercise, requiring physical motion of goods or people. In the stage of the informationalist, physical travelling is no longer the basis of travelling; travelling has become virtual. The informationalist does not need to visit different environments; he is satisfied with just representations of various environments while sitting behind his desktop. On the financial markets the transition between merchants and informationlists is illustrated by the fact that prices currently mostly respond to information differentials and to a lesser extent on differentials in exchange of goods. Next to that, the physical exchange of goods is compared with alternative investment opportunities in the *investible universe*. A company can make nice profits, but see its share price go down. Value is determined by comparing with other opportunities, not by some intrinsic value.

Classically, banks have relied on experience and judgement to take the selection decision as to who is eligible for the use of money, or in other words, banks relied on experience and judgement for the selection of eligible borrowers and the decision regarding the structure of the subsequent financing. It can be easily observed that many banks are currently undergoing a huge change in the attempts to introduce quantitative, statistically supported internal credit risk models. The informatisation of banks has become the major issue since the adoption of portfolio models.

In the banking business, the quantitative turn refers to these widespread developments regarding the use of statistical models and portfolio theories for the management of various aspects of banking, eg. credit risk management, performance measurement and capital allocation, customer relationship management, MIS, portfolio management. These models need systematic data and information for their development and daily operation, ie. data to develop and back-test parameters and data regarding the actual profile of the portfolio of credit risks. With this data, actual risk can be quantified in terms of expected losses, volatility of losses and economic capital. In fact, this quantification requires

making all relevant aspects of risks explicit and expressing them consistently in a uniform language, so that they can be aggregated to the level of the total portfolio of risks of the institution. This language is based on the notion of economic capital which is a quantification of risk.

Summary

In general, we can conclude that man increases his mobility by applying technology (eg. Agro technology) and structured activity (eg. planning and coordination). Structured activity refers to actions taken because of some knowledge regarding causes and effects. Structured activity allows to counteract specific contingencies, while technology enhances our physical capabilities. Technology provides binoculars or telescopes, phones and TVs, internet, cars, airplanes, electricity, etc. which all increase our bodily powers. Increasing our physical capabilities, for example view, technology allows us to extend the horizon. The distance of one day's travelling has grown considerably the last hundred years. Time and space have shrunk in sync with the increase of our capabilities to transit time and space. Our horizons widen as our technology increases. Consequently, the unknown will increase as well, and subsequently, risk will rise.

6.3 *Philosophy of travelling epistemology*

In this paragraph we will investigate how knowledge is possible according to the philosophy of travelling and what type of knowledge this is. By revealing the conditions for proper knowledge and the mechanisms which allow our minds to become and stay aware, we will be able to assess (im-)possibilities of knowledge. This epistemology can subsequently be applied to analyse the knowledge processes in the EC case.

This philosophy of travelling has two strands of it:

1. only when travelling, ie. when interacting, knowledge is possible;
2. the speed of travelling determines the epistemological options of the traveller.

As stated before, all living entities will interact with their environment until their death, but not all living entities will have the same epistemological options, given the speed differentials between entities. The farmer will be able to assume universal knowledge, while the merchant leans towards relativity.

Before the philosophy of travelling epistemology will be discussed, a small excursion into relevant thoughts from Nietzsche, Deleuze e.a., and Braidotti will be made. This will create some contrast with mainstream epistemology, such as in modernist thinking described in chapter four.

These thinkers are on the extreme side of the menu of travelling, being based on nomadic thoughts, assuming intense travelling. Nomads are continuously on the road, are the newcomers and leavers in the community and provide alternative ideas and lifestyles, which are better adapted to the dynamic nature of reality. They are the strangers active on the edges of sedentary (mainstream) society. As such, Braidotti positions nomads as escapes from dominant discourses, as resistance against socially coded patterns of thinking and behaviour. These authors emphasise the hunter aspect of human behaviour.

A more middle of the road thinker, Weick, shows that both dynamics and stability are required for sustainable human activity. Weick integrates the hunter with the farmer. Stability is required to achieve goals, to validate knowledge and to build relationships. Dynamics are required to adapt to new circumstances. Any human activity needs both stability and dynamics, but at different times.

After we have analysed two distinct epistemological positions, based on two different intensities of travelling, the similarity between these positions – the invariances, in terms of Nozick (see §5.3.2)- will be reconciled in the general epistemology of travelling. The components of a philosophy of travelling

epistemology will be summarised. Finally, the characteristics of such an epistemology will be presented.

6.3.1 Nietzsche's traveller

Iwawaki-Riebel⁹⁷ in her PhD study reconstructs a Philosophy of the traveller from Nietzsche's thinking. According to her, Nietzsche opposed to the mainstream orientation on measures for objective reality, which he called *eurocentrism*. This eurocentrism lacked any access to reality, as it was fully focused on the Logos, giving way to the rational at the cost of the physical, the bodily⁹⁸. And because it held on to the ideal of truth for all instead of the perspectives of the individual, and because it held on to the state against the meta-political thinking⁹⁹. The traveller on his travels meets other cultures and has intercultural discussions. In these discussions it becomes clear that different people view the same world differently. He himself is the continuous symbol of perspectival knowledge, which includes the bodily affections and passions that allow the traveller to experience in flesh and blood.

The body is essential for the interpretation, for the provision of impressions that make the traveller aware of himself and his environment. The body is not just resistance for the Self or the I, but is itself an agent and simultaneously a passive in taking impressions. Without the body, there is no connection to reality as there is no presence and no detection of other's presence, which addresses Nietzsche's criticism on rationality.

The traveller is a homeless, as he does not feel bonded to a specific time or place. His only home is the loneliness of his conscience, which is the product of his journeys. His loneliness is his place of understanding, including the things that can not be spoken, and the things that are never said. The body is the only link between his loneliness and the others. With his body, a continuous interplay between being subject and object becomes possible, in which the traveller is the observer and the observed reversibly. In this interplay, own, other and unknown values become fluid and transitory. Own and strange criteria for knowledge and ethics are tested in a travel, to see whether they serve Life or not. In this respect, the will to power must be regarded as the driver of the interpretative acts. The will to power for any bodily organ continuously evaluates whether an action serves Life or not. The will to power is thus not a being, but a process, a becoming, with not one final outcome, but a series of outcomes that will change as long as the organ is alive. As long as

⁹⁷ Toyomi Iwawaki-Riebel, Nietzsches Philosophie des Wanderers, interkulturelles Verstehen mit der Interpretation des Leibes, Königshausen & Neumann, Würzburg, 2004.

⁹⁸ In German: der Leiblichkeit.

⁹⁹ In German: das überpolitischen Denken.

degeneration has not yet started, the will to power is focused on expansion, on exceeding previous horizons. This will to power is the driver for meetings with others, but also, and simultaneously, the driver for the loneliness that is the result of the unique set of experiences. Somebody with a strong will is lonelier.

The traveller crosses time and space, but not according to the classical physical concepts. Time and place are constituted from the perspectival sight of the phenomenal physical presence (the body) of the traveller. Travelling consists of creating distance and coming home again, it is an eternal process that creates the freedom from traditional values to enable a revaluation of values, to enable the *Übermensch* who exceeds himself, who revalues continuously. Time and place are not objective, but evaluated from the perspective of the individual traveller.

In order to make himself at home in the world, the traveller is oriented on signs and images. The signs of the bodily experience, such as the sea, the eternal return, the loneliness, the Dionysian world or the other side of Good and Evil, provide reference for the traveller, make sure he does not get lost. The understanding of others takes place at the level of the physical, the body before any intellectual conception of it¹⁰⁰. With the body, the traveller can open himself to the world and to the others. In this opening, the traveller experiences his own body, as well as that of the others, in a kind of in-between-body. It is in this place that the own and the other can coexist and meet, that the self in the body can wander out, can transcend itself. This in-between-body is what provides meaning, is the authentic feeling of being.

Nietzsche lived at the end of the nineteenth century and emphasises the role of the body for our awareness of the world around us. The body he held in mind was not supported by the technology we know today. Still, in any environment, a presence is required in order to be aware of what is happening in that environment. In virtuality we see that that presence is separated from the individual who is virtually interacting. The reader is not bodily present in the environment he is reading about, but someone else (e.g. the writer) has been. We still rely on bodily contact with subjects of our focus, but that contact may be outsourced to others, who can earn with providing this contact.

¹⁰⁰ Iwawaki-Riebel, idem, p.42.

6.3.2 Deleuze and Guattari's nomadic war machine

Deleuze and Guattari¹⁰¹ also elaborate on the kind of science in nomadic cultures. According to them, a nomad science is characterised by:

- using a hydraulic model, considering flows and reality as flux, instead of the theory of solids that treats fluids as a special case. The hydraulic model consists in being distributed by turbulence across a smooth space, in producing a movement that holds space and simultaneously affects all of its points, instead of being held by space in a local movement from one specified point to another,
- using a model of becoming and heterogeneity, as opposed to the stable, the eternal, the identical or the constant. Nomadic notions also include infinitesimal, passage to the limit and continuous variation. The relevant distinction is not matter-form, but rather material-forces, placing the variables themselves in a state of continuous variation,
- using a vortical model, operating in an open space throughout which thing-flows are distributed, rather than plotting out a closed space for linear and solid things.
- using a model of problems¹⁰² instead of theorems, not proceeding by specific differences from a genus to a species, nor by deduction from a stable essence to the properties deriving from it, but rather from a problem to the accidents that condition and solve it, focused on events much more than essences.

Deleuze and Guattari show that an epistemology based on nomadic principles is a radical different alternative; dynamic, looking at flows, assuming open space and allowing differences and also oriented on the affective.

The nomad is to be considered as a one-sided traveller: focused on transit. As such, he is an extreme traveller, adapted to dynamics.

Nevertheless, to a lesser extent these features are recognised in the philosophy of travelling, as part of the equation. Philosophy of travelling considers flows and considers reality to be in flux, in constant movement, driven by the appropriation and alienation in interactions. It uses a model of becoming, not of being, it assumes open space, where unexpected things may pop up, instead of a closed space that can be fully described, and is focused on the affective, on problems, instead of theorems.

¹⁰¹ Gilles Deleuze & Félix Guattari, Nomadology: the War machine, Semiotexte, Columbia University, New York, 1986

¹⁰² A problem is affective, whereas a theorem is of a rational order. We care about problems.

For a complete picture, stability and dynamics have to be reconciled. After discussing Braidotti who elaborates the nomad as a critical consciousness, the concepts of openness and change versus closure, stability and production will be elaborated with the support of Weick's theory.

6.3.3 Rosi Braidotti's nomad

Rosi Braidotti¹⁰³ holds that travelling, or more specifically, the nomad, is a possibility for resistance against the vested order¹⁰⁴. She provides the image of nomadic subjects as a design for a state of consciousness. These nomads refer to the critical consciousness which resists against a sublimation in socially coded patterns of thinking and behaviour. To be a nomad, it is not necessary to leave physically, just to evade existing conventions. Nomadic displacements are a creative becoming, a being on the road, making it required to sustain relationships, but never taking them for fixed and ever.

For Braidotti, also influenced by Deleuze and Guattari, the nomadic style represents an option to escape from dominant discourses. A nomadic conscience shows what happens on the edges, on the borders of society, and as such, it may serve as a contra-memory, showing what is not in the centre of attention.

Braidotti points at escape from domination, at resistance against mainstream when she mentions the nomad. However, many of the current nomads, usually referred to as refugees or migrants, will not have received the higher order pleasure, but will have fallen to madness. The migrants only escape from, but have no serious alternative; they have nowhere to go to. Nomads as resistance implies something heroic, as the small man opposing the giant ruler (and succeeding). For most refugees, misery and pain are waiting only. Most refugees are the small man against the system.

Note that there is a significant difference between a nomad and a refugee. The nomad is prepared for the journey, and even prepared to endure a journey for ever. Typically, nomads do not settle; do not arrive in my terms. But they are very well equipped to transit; they know the dangers of being on the road, their culture is

¹⁰³ Rosi Braidotti, *de weg van de nomade*, complete text of the socrates lecture, Stichting Socrates, Utrecht, 1993

¹⁰⁴ Note that the vested order in the PoT is also assumed to be travelling. However, the vested order is travelling with such low intensity that it may assume reality is static, and knowledge is universal in time and place. If you never see other times or places, you might assume that everything is the same anywhere.

adapted to the situation of motion. Nomads are not solely driven by motivations regarding departure.

In opposite, the refugee is usually a settled person who is forced to leave by events that he can not influence. He can not prepare, as he does not control the timing and impact of the events that may force him to leave, or affect him when in transit. And if he can prepare, because the event driving him away slowly gains weight, he is the settled type, ie. he is much less adapted to continuous motion.

As theoretical construct, nomadic thinking would explore the borders, which -I agree- is the most interesting place for any organism or organisation. The nomad does not want to integrate into the mainstream, and as such, always is prepared to leave. The nomad has adapted to departure by way of preparing for continuous transit.

6.3.4 Weick's play and game

Weick¹⁰⁵ provides a more balanced perspective with his theory based on interactions. According to him, knowledge is a social-cognitive configuration, which means that knowledge is a product of both the persons, meanings or interactions involved, and cognitive aspects of the actual object of the knowledge. This means that, if the group of people changes, the knowledge will change. Man tries to reduce uncertainty in the endless time and space by construction of knowledge. In this construction process, the relationships between people involved and towards the object are as important as the cognitive aspects of the object. For example, if a specific group decides to achieve specific goals, it can only achieve the goals, if the goals do not change. If other people would come into the group, the goals might be re-discussed, and subsequently changed. In such a case - ie. with moving targets- it is impossible to achieve goals. Production requires closure; change requires openness for the external.

In other words, knowledge requires both a social assembly stage, as well as a cognitive assembly stage. In the social assembly stage, construction involves the determination and fixation of the members of the group and of the relationships between the members and the group. In the cognitive assembly stage, it is clear what the goals are and we can start to research the object of investigation and finalise the construction of knowledge. Stakeholders in the knowledge need to achieve consensus first of all over their own constitution, that is, decide about who is recognised as stakeholder (who is "in"). Only if this stage has stabilised, cognitive assembly is possible. From another angle, if ambiguity is large, social

¹⁰⁵ Weick, K.E., Perspectives on Actions in Organisations, in Lorsch, J.W., Handbook of organisational behaviour, Prentice Hall, Englewood Cliffs, N.J., 1987.

assemblage is required first, as it is unclear which group of people should be involved, or who should decide what the goals will be. If ambiguity is moderate, cognitive assemblage may suffice.

Given the dynamics in society, man must not only construct social cognitive configurations of knowledge, but must also reconstruct them. This means that relationships and cognitions will need to change in order to adapt to a changing environment or changing interests. Change is effectuated by opening up to third parties, such as new relationships, meanings or people. This opening up to third parties essentially is an external orientation, focusing on aspects outside of the group.

People all are multiple included in several configurations simultaneously, even if being physically present in only one configuration at the time. In fact, people are only partially included in any particular configuration. For example, although the employee is present in the company for eight hours, even in that time, he brings aspects from the world outside the company into the company and vice versa. Therefore, different people, processes or meanings that join in the construction phase will all bring their own particular influence in kind and impact. If other people join the party, the party will change.

Next to that, knowledge is sustained by interactions. Only if there is certain circularity in interactions (eg. as in meeting the same people regularly) knowledge will be sustained, or maintained. If knowledge is no longer supported by interactions, it will grow stale and in due time no longer refer to any reality.

Turning this around in an effort to make use of this knowledge (for example for the sake of management), it may be concluded that other rules apply for the construction phase than for the reconstruction phase. If large changes (“transformations” in management jargon) are required, an openness towards third entities must be established. Other people, processes or meanings must be brought into the party in order to effectuate a major change, a transformation. However, in order to achieve set targets, in order to accomplish stable objectives, this openness to third entities must be prevented. Voogt¹⁰⁶ introduced the terms Play and Game into management theory to refer to respectively phases of reconstruction and phases of construction. An example of play is what young children do when roles, objectives and interactions are not set but wildly experimented. Play offers a process for reflection about current reality, processes, objectives and roles. An example of game is chess, where the rules and objectives are clearly stated (and can even be executed best by a computer). Game represents a consensus about the perception, the roles of the people joining and the goals to be achieved. In game it is possible to validate knowledge because the references are set and agreed upon.

¹⁰⁶ Voogt, Managen van meervoudige contexten, Eburon, 1990

In game only it is possible to achieve goals, simply because in play the goals are not agreed upon. It is clear that play and game belong to each other. Everywhere it is essential to reach goals, but also to change perception in order to adapt to new circumstances. Internal and external orientation are both required, but at different times.

With respect to travelling it is obvious that acceleration increases the aspect of reconstruction at the cost of construction. An increase in travelling is an increase in the openness to third entities, and hence a motor for change or transformation. Simultaneously, consensus about goals, roles and perceptions is under increasing pressure when travelling is increased. Important is to distinguish in circular or linear travelling. Circular travelling allows stable knowledge, linear travelling is a continuous openness to thirds.

6.3.5 Components of the epistemological process, according to the traveller.

The epistemological process according to the traveller is focused on flows, ie. those flows that are exchanged between two entities, is focused on the borders or horizons created by our constitution, does take into account history and memory and does allow dynamics because of alienation processes. Sloterdijk referred to the senses as the membranes, the gates to the world for the micro-sphere. Here we show how the senses create horizons in interactions. The components of the epistemological process from a traveller's point of view are elaborated below:

- Interactions, the exchange.
Central in the philosophy of travelling is the idea of interactions between identity and environment. It is the resistance experienced in the interactions with the environment that makes us aware. Only interactions enable consciousness of reality.
Interaction in this respect must be considered as “a double interact”.
Interaction is defined as a mirrored action. A double interact refers to an action from the traveller which is answered, *mirrored*¹⁰⁷, from the perspective of the local who is the opposite party in the encounter. The traveller sees his own action mirrored in the action of the other, and hence becomes conscious of himself as well as of the other simultaneously.
Knowledge is thus built by the awareness of the effects of an action as shown on the other.

¹⁰⁷ Note that the mirror is distorted by the other.

Voogt¹⁰⁸ (quoting Weick) states that “The direction of the stimuli and of their effects is thus circular, the response of each person being revoked or increased by the reactions which his own responses called forth from others.” This is the action-reaction-reaction model and is typical in the social process for reducing equivocality.

In the philosophy of travelling, this notion is taken one step further: the double interaction is not only typical for social processes for reduction of equivocality, but is typical for all knowledge building processes. Even stronger, without the double interaction with the Other (be it humans, nature or matter) no relevant knowledge is possible, actually the Other’s existence would be denied. Without the double interaction, the subject of knowledge is denied. Without the double interaction we may be able to construct possibility theorems (according to Cools), but these will not state any truths about current reality, only about possible (but irrelevant) realities.

The location of the interaction is both inside and outside, as it is the flow starting and rebounding from one entity to and indwelling into another entity; both at the inner side of our senses, as at the outside, the impulses that touch our senses. The location in focus is at and over the border, at the periphery, where the identity creates *in-between* bodies. However, even if it may be internally located as well, it is not located at the centre, but at the periphery, the borders.

- Senses and horizon, openness and closure

In the act of travelling, I notice that I can detach myself from any specific environment in order to attach myself next to another environment.

Although I will always be interacting with one environment (the *current* environment), in time this may mean that I interact with many different environments, one at the time, in a sequence.

Leed¹⁰⁹ speaks of the structure of travel as consisting of Departure – Passage – Arrival (DPA). Which each DPA I encounter new environments. In these different environments I have different interactions with my current environment. As described above, we can distinguish different layers of environment, of which the operational environment is the one we cross while travelling. Beyond the horizon there is another operational environment, one I have no interactions with currently. The particular horizon is determined by the constitution of the identity and especially its senses. If humans were 10 metres tall, their horizon would be much farther away. Could we see the whole spectre of colours, then we

¹⁰⁸ Voogt (1990, p. 49)

¹⁰⁹ Leed, 1991

would also be able to see warmth, etc.

The constitution of the identity not only limits our perceptual capabilities, it also sets boundaries on the physical condition within an operational environment. It always takes time and effort to reach and cross a horizon. Therefore, we may conclude that the current environment is the environment which is closed in the present, due to our limited ability to cross place and time.

My senses are limited, provide a horizon beyond which there is another horizon. When my senses are the basic tool to help me survive, my capability to survive and to act are always limited, are within the horizon of any situation or environment. The range of my senses and capabilities, together with the slow weight of the body (ie. the fact that change always needs time), physically represent the closure of any situation.

Closure is required to produce; one needs to stay long enough to harvest what is sown. Only if goals and circumstances remain stable long enough, goals can be achieved. If the system should produce, it should close off itself from its outside and thus ensure stability. However, if the outside changes, the system will have to adapt or become extinct. The system can live as long as it can maintain a proper balance between openness and closure.

The current environment is the environment which is closed in the present. This closure is important only in the present. Future current environments can still be prepared and thus be changed. This insight forces modernist man to live twice, once in the present, and once preparing and anticipating future presents. The past environments have a closure of a different kind in the sense that they are behind us, face us no longer and can not be changed. However, reflecting on past experiences and using feedback from the past, we can learn from our past or just enjoy past experiences. Anticipating the future we can create our desired past in the present. This insight forces man to live trice. The anticipation of the future requires different capabilities than just physical; it requires the acknowledgement of expectations and chains of causes and effects. This will be elaborated in terms of risk management further below.

- Luggage, experience and memory

Although I always have a current environment, the specifics of the interaction change according to the specific environment I am in. In general, however, the very fact that I can survive in different environments proves that the various environments do have something in

common (ie. that which allows me to survive). The continuation of our experience in different environments allows us to compare those experiences. That means that a past experience will be compared to either another past experience or to the present experience. Experiences are stored to be compared later.

Memory and learning allow my senses to penetrate deeper into any environment. I don't have to find the way the second time. This is conditioned by the period in which I keep the transition through different horizons static, ie. keep the specific horizon stable, stay in the same place. On the other hand, memory allows us to compare different locations and classify or categorise and thus link different locations. Memory allows for comparison with past environments, which may be other places that have been visited or may be other times in the same place. Comparison is the basic building block for the knowledge of the traveller. Memory is the essential cement.

Memory is the internal storage capacity, determined per subject. Language, however, is an external storage capacity, determined by the social group. Language supports knowing as a transferable storage capacity for experience. In the development of language from spoken word to written word to digital word, an increase in mobility may be observed. In language, various people can share meaning and contribute the commonalities of the specific country to an interpersonal entity. It is the memory functionality, both internal and external that allows virtuality.

Memory is so pervasive in our life that it becomes unconscious. The journey behind us usually has become so dominating that it affects any new experience. Krishnamurti¹¹⁰ asserts that, in order to be able to live truly and authentic, one has to strive for "freedom from the known". Every experience is interpreted according to the background knowledge available. In order to have an authentic experience, knowledge, ideals and beliefs should be discarded. (p.122)" It is a brutal thing to have ideals. If you have any ideals, beliefs or principles you cannot possibly look at yourself directly. So can you be completely negative, completely quiet, neither thinking nor afraid, and yet be extraordinarily, passionately alive?" Maybe even more in actual (developed) society, where most of us had education with its overload of knowledge and ideas, this kind of authentic feeling seems far away, even unattainable. The present is dominated by

¹¹⁰ J. Krishnamurti, *Freedom from the known*, Krishnamurti Foundation India, Madras, 1969

the knowledge of the past.

Internal memory can be regarded as the personal luggage of the individual traveller; the repository of all experiences. Furthermore, we can distinct the physical memory, as the scarves on the body, as well as the mental memory, such as concepts learned or anxieties incurred.

For external memory, the traveller needs to have the keys; needs to be able to access it, usually by a combination of codes, protocols or previous training.

- Motion and comparison

Basically, it is motion that enables comparison. Things have to be different, have to be moved, in order to become different, in order to enable a sensible comparison between two similar but different situations. (Leeds, p. 72) "The forms, relations and patterns of recurrence that arise in the experience of passage become those "nonchanges in the midst of change" that orient the passenger in a world transformed by motion.

Motion, in other words, seems to be the medium of perception that abstracts and generalizes form and relations out of things and terms... The mental effects of passage- the development of observational skills, the concentration on forms and relations, the sense of distance between an observing self and a world of objects perceived first in their materiality, their externalities and surfaces, the subjectivity of the observer- are inseparable from the physical conditions of movement through space."

It is the motion of either the individual that moves from one environment to another, or the environment that changes due to import, or both simultaneously that is captured in our definition of travelling as change of environment above.

Furthermore, the intensity of the motion, also known as speed, determines the time available for acquaintance with the local environment. Travelling with high speed only allows to observe surfaces.

- Subjective motion in an objective world

The unit of the motion concerned is the traveller, the human being, the subject. That makes the knowledge of the traveller subjective. Subjective to the past journeys, which created the available experience (and testing of the knowledge), and subjective to the exact functioning of this specific physical body, memory and mind, as well as access to external memory functionality. But, this subjectivity does not mean that anything goes. That the traveller can fantasise whatever he likes. Knowledge is personal, but is proven (or rejected) with any action in the real world, the overarching environment.

Humans can only relate to each other because there is an objective reality, which they have to address. We can only meet in reality. Even if everybody says that the emperor has clothes, he can be naked and cold by the wind. In reality we do not only meet travel companions, but also others and the other. Next to other humans we meet the physical reality outside which enables social reality. The human and social condition is for a large part (still) determined by the specific laws of the planet Earth. Temperature, humidity, gravity, oxygen; all things that are needed for an orderly meeting. Also things that are virtually the same for all humans. No human can do without oxygen, no human can fly. Everyone has to adhere to these general laws on Earth, they are objective.

Physical matter seems to be as it is, but humans are able to change their mind, ignore, distort or forget, whatever motivates them. It seems as if every human action is directed (coloured) by a subjective intention. Those features are imprinted in all the artefacts that involve human action. Broader stated, human action leaves its footprint everywhere it goes. The human action also is powerful in the realm of what is important for humans, ie. we are able to change reality in (for us) important aspects. This is why a philosophy of travelling is risky; we put ourselves at stake because we will have to involve, play a role in our future. We can not assess future scenarios without describing our own role in it.

- Appropriation and alienation
Knowledge itself is a product of appropriation and alienation processes with the common element of the traveller. Knowledge, as human artefact, must be maintained or grow stale. In the philosophy of travelling, everything changes and should be regarded from a dynamic perspective; universal knowledge with undetermined freshness dates does not exist.

Knowledge within a specific place is driven by arrivers and departers. Personal knowledge is driven by the specific journeys made. All arrivers and departers build up their own personal knowledge by visiting the same places. Those places are uniquely influenced by the specific timing of people visiting it.

By interacting with the same environment, a person gets to know the environment by way of simple trial and error and the specific feedback he continuously receives being in that particular environment. As long as the traveller stays in the same place, he will have another chance to try and err. The person will be able to define concepts and actions that better and

better capture that particular environment he is focussing his attention on. That is, he will make the environment more and more his own, ie. he will appropriate it. For example, solving the regular bed & breakfast problem, the traveller is able to focus on deeper interests in the city he is in, e.g. visit the local museum to find out about the history of the place and thus develop deeper knowledge. When he stays long in a specific place, he will start recognising that environment as his own, his home. At that point, the environment has been maximally appropriated and is owned by our traveller (at home). That is, the environment is reflected in the appropriations of it (the virtual representations inside the traveller) satisfactorily.

However, the environment is autonomous and will never be fully appropriated in such a sense that it loses its autonomy. The environment will always be able to show us an unexpected dimension, a surprise. The appropriation is virtual, artificial, man-made and must be maintained by interaction or otherwise the concepts grow stale and will no longer refer to any reality. If the subject stops interacting with the environment, alienation processes start. Old relatives and friends will make new friends, once the traveller has left home. Both the traveller and friends left behind will develop themselves further and quite possibly, in different directions. Knowledge has a freshness date, which is closer for more specific knowledge, and should be refreshed by interaction.

This implies that the other remains autonomous; that the appropriation is partially in principle. It is a violence to appropriate the other, and is only successful in your mind, not with the other: the appropriation is virtual.

6.3.6 Characteristics of traveller's knowledge

The traveller is the continuation of various experiences of specific environments and is able to compare earlier with present environments (temporal differences), or compare locally different environments.

So there can be knowledge about one specific environment, such as particular states of being, actual levels of parameters, unique cultural artefacts, etc., and there can be knowledge about generals or commonalities, such as at night it gets cold and dark, things fall down, everybody needs to eat and drink and sleep, etc.

Specific knowledge is time and place bounded (a position which relates to the aggressive reaction to postmodernism). General knowledge resembles what Nozick calls invariances under all admissible transformations. General knowledge (by definition) is valid in various environments, and the general knowledge of an individual increases by the amount of journeys made and compared.

According to Leed¹¹¹ (p. 60) “The transformations that passage worked in the character of the traveller were thought to be a product of observation, comparison, the sharpening of judgement, the ability to formulate a general picture or representation of the world from observation.”

Following Simmel, Leed ascribes four characteristics to the stranger: freedom, objectivity, generality and abstractness. Freedom and objectivity are essentially linked. As the stranger is detached from his home community by virtue of his mobility, he is free of political stances. He may view the conflicts and situations in which the locals are mired objectively. Therefore, he is often invited as a judge, confessor or confidant.

The journeys themselves, solidified in the person of the traveller allow the traveller to compare various appearances of the common basic structures of reality. Every city to some extent shares the same problems, every kitchen is designed to perform some basic tasks. Visiting many different cities, or using many different kitchens, the traveller will be able to distinguish specific appearances from basic structures. As Leed put it (p. 67) “The sequential experience of individual objects – a house, a barn, a person, an animal- in a variety of contexts serves to isolate those objects from any *particular* context and to make the passenger aware of their persisting features, their formal and general characteristics, their identity independent of the accidents of their appearances.”

The traveller meets many different environments on his journey. But in all these different environments he learns to discover the universal structures, the universal patterns of relationships. More and more he recognises the basic structure of earlier environments in the new environments. He learns to discover how the elements relate basically. As Leed put it (p.70) “Another source of abstractness and generality of the passenger is the discovery of invariant relations *between* things in the flows of passage and within a range of contexts. These relations, as well as the form implicit in a variety of similar things, become a source of orientation for the passenger and an anchor in the flux of passage.”

6.4 Philosophy of travelling social analysis

Although the world is as it is (it has lived before us and will live after us), the importance of it is determined by what we experience of it, or how we feel in it, ie. the importance is in only those things that are noticed. Basically, the evaluation of (the selection of) the world (that is experienced) by humans is determined by the

¹¹¹ Leed, 1991, p. 63

orientation towards the world of humans. Orientation refers to the framework that is used to make sense of the world, the framework that is used to interpret a selection of the multitude of impressions and appearances offered by reality. Orientation selects and excludes aspects and issues of the outside world in exchange mechanisms, helping us to focus, perceive and interpret. Orientation is what helps us not to get lost.

Orientation is a basic issue for the traveller. It is as important as food and shelter, because, if lost, the traveller can find himself without food and shelter. The traveller puts himself at stake –being present in a new environment- and his orientation is what helps him survive.

There are many ways to make sure one doesn't get lost. The type of travelling strongly determines which of these possible ways are viable. In fact, one of the most primitive ways not to get lost, is to just stay at home and focus attention on a fixed centre repeatedly, in order to deal with the (natural) fluctuations that even happen to the sedentary. The relevance of the theory of travelling is that it may indicate changes in dominant orientations of people. For example, the virtual turn may cause a negligence of physical nature, or of the integrity of the body, or may cause other types of narrow-mindedness. Orientation is what makes travelling a more interesting issue than just changing environments. Travelling causes shifts in orientation. A clear example is the effect of acceleration of a train on orientation; if we go faster and faster, above a threshold, we only see stripes instead of things. In high speed, we can not focus on objects, but only on patterns, repeating characteristics in the view frame¹¹².

A social analysis according to the philosophy of travelling focuses on the main orientation in society. In turn, the thesis is that this orientation will be highly influenced by the major type of travelling employed in society. This in between step –orientation in between travelling and social order- allows us to get closer to a view on the social implications of the virtual turn in society. Since the age of virtuality is at its inception, we can not directly observe all implications of virtual travelling. Therefore, understanding in full requires conceptual intermediation.

6.4.1 Virtual travelling

Virtual travelling refers to interactions with an environment which is not in the same place or time as the relevant identity. Therefore, the interactions between identity and environment must be mediated by something. In fact, the act of travelling is here a virtual act because the interactions between environment and identity only take place *through a medium*, thus the identity and environment are

¹¹² In fact, in every speed we can also focus on objects or subjects that have the same speed vector, eg. travel companions.

not directly interacting, don't feel each other's resistance. In virtual travelling, the double interact is damaged in the sense that interaction is not immediate. The question rises if that (acting through a medium) has consequences for our understanding of the world. An example refers to the academic in his ivory tower, who only knows the world from his books. Is his knowledge adequate? What, in fact, does he know?

In the EC movement, *rocket scientists*¹¹³ - people who know more about formulas than about corporates which need and use finance- and their products enter discussions in Credit Committees and Executive Boards and influence credit decisions. The basic resource for these people is data, registered information about credit risks, to fuel their formulas and calculations. They interact with counterparties only via the numbers they receive and the policies they issue. They interact with counterparties only mediated, because they are in their own ivory tower, assuming normal distributions and the laws of statistics and power of words. They only see what can be measured, registered and regulated. Reality for them is a filtered one, mostly reproducing the registration-filter. That would not be a problem, if reality responded to their image of it perfectly, without surprises. But many surprises still appear unexpectedly from behind the filter, even for the most advanced banks. No bank has yet shown to produce significant higher risk/return ratios consistently, regardless of the large amount of energy spent on Credit Risk Portfolio Models (CRPM). Not one model has singled out as consistently superior.

The analysis in terms of the philosophy of travelling should reveal the character of the interaction that does take place in virtual travelling. The identity interacts with the medium, and the medium interacts with the environment. Both focus and ignore aspects of reality in their specific way. The identity in principle does not know how the medium has interacted with the environment, which allows for deception. He only knows the claim of the medium to specific experience without seeing a real backing of that claim. The reader has to rely on the integrity of the author. Words derive their real meaning also from the authority which issues these words. Usually, the reader doesn't even know whether the words he reads are actually issued by the author. Translations from one language to the other can result in other significant distortions of meaning. The reader has to trust the book in hand, or redo the work he is reading about, which usually is impossible.

¹¹³ Refers to the influx of NASA mathematicians into the finance arena in the 1970s, when the NASA budget was significantly reduced. These mathematicians applied their formula's to finance problems and thus solved major issues, like Black & Scholes option formula. Currently, still many physics students find their way into employment by banks.

The registration itself – the medium-, being the interpretation and translation of real situations into information, becomes a hidden key to the truth of data. Representation becomes a question. Virtual travelling leaves ample space for (mis)representation. The word doesn't represent itself, but refers to something else, somewhere else to determine the meaning of the word. There can be a lot of distance between the word and the thing. The reader can not check the word but must trust it or ignore it.

Given that risk management is concerned with future hazards, risk management is essentially virtual travelling, interacting with an environment which is not (yet) there. Risk management, hence, is mediated, is indirectly interacting with its subject of focus. If risk management relies on CRPM for its decisions, there is a double virtual travelling, in interacting with an environment which is not yet there based on a computer-model that needs data and other indirect representations.

The philosophy of travelling can reveal important aspects by investigating virtual travelling in general and focus on the medium used in credit risk management in particular. How much of the knowledge is directly fed by interactions with counterparties, and how fresh is that knowledge? Does it still refer to any reality, how are biases corrected? With Nozick, who makes the mapping and how much dynamic alteration through time is there?

Virtuality and its respective issues will be further elaborated in Chapter 10.

6.5 *Synthesis: the analysis toolbox*

From the assessment of the current philosophy of science debate and the contemporary standard approaches in chapter four, the following conceptual tools are available:

- The notion that theories must be explained from both their content and their context. This is reflected in respectively chapter 7 and 8;
- A general classification framework that analyses theories with respect to their social context, their assumed ontology, the epistemological principles applied and its methodologies. See § 7.2;
- Nozick's notion that a theory is rational to the extent that it counteracts its biases.

The philosophy of travelling perspective analyses knowledge in its developments based on Appropriation and Alienation of changing Environments. From the perspective of a specific environment, the analysis focuses on the departures, passages and arrivals in that specific place.

The concepts for analysing a theory consist of the following:

- Identity; what is the identity that knows? (or tries to); how does it relate to the world?; how is the Identity preserved under the violence of ever changing environments? Who is travelling?
- Border; what constitutes the actual border (place of exchange) between Identity and environment? What is actually exchanged and how? The border can be perceived as a gate, which limits transition. However, usually the border is not explicitly perceived, because we focus too much on the identity itself.
- Environment; is the source of the Other, a condition for Life and Meaning. In it we meet both humans, animals, plants and hard objects; both they (people) and it (matter) out-there. Where is the traveller travelling?
- Orientation; the Environment is much richer than we can explicitly be aware of (e.g. there are more colours than we can see). Even within the realm of our awareness, to be efficient and effective, we have to focus on certain perspectives on reality. In the course of life we learn how to do that and which focus helps us most: we develop a general orientation on the world, which is the way we approach the world in order to meet it. What does the traveller look for? How does he find his way?
- Kind of travelling; each kind of travelling is characterised by a distinct setting of the possible interactions which limit and allow knowledge development. Each type of travelling fosters a specific orientation. How important are the limitations of this way of travelling?

The basic questions from a philosophy of travelling perspective translate to: how are you travelling, who/what do you meet, and what's in your luggage? Relating this to virtual travelling and science we obtain:

1. What are the direct interactions between subject and object? What are the subject and the object? How are the objects appropriated and what forces cause alienation?
2. What is the medium in case of virtual travelling? Who makes the interpretations of real life situations and the translation and what risks are there for misrepresentation? How are interactions actually transferred so that travelling becomes virtual?
3. What is the transferable storage capacity? How are results of historical interactions stored? How are those results maintained, ie. how are processes of alienation counteracted and new appropriations organised? How are risks of mis-interpretation and –representation mitigated?

7 Cognitive aspects

After investigating the possible approaches to analyse EC theory, and subsequently the selection of

- 1) the standard approach,
- 2) Nozick's functional response to postmodernism, and
- 3) the Philosophy of Travelling

as content for our analytical toolbox, we are now well equipped to start analysing the content or the cognitive aspects of the theory.

After we have described the subject of investigation in order to pinpoint it, the next analysis is a classification of CRPM theory to make it comparable to other theories. Secondly, content is analysed by focusing on issues like risk, diversification, valuation and quantification. With these analyses, we can draw our epistemological conclusions regarding EC theory / CRPM.

In chapter eight, we analyse the social implications of EC theory. The social context of the theory is introduced in §7.2, but elaborated extensively in the next chapter.

7.1 *CRPM theory identification*

7.1.1 Introduction

EC theory is a capitalisation theory in the sense that it prescribes how to calculate the required amount of capital to buffer for a specific amount of risk. EC theory is not only applicable to credit risk, but can be used for virtually any type of risk that can be statistically modelled. In this chapter, first the general version of EC theory is elaborated. Next, the application of EC theory to credit risk is discussed. Finally, specifics of the Rabobank model for wholesale credit risk will be highlighted, in order to introduce the case for our clinical approach.

These three levels of description of EC theory will provide us with both a wide view as a deep view (a real live case) on CRPM. After developing a good view on our subject, we can subsequently start to analyse our subject in next chapters.

7.1.2 General EC theory

Economic capital is based on the amount of losses that need to be buffered for in order not to become insolvent. It represents the amount of capital –equity- which needs to be invested as risk bearing capital to support a portfolio of risks and returns. If a company is hit by a loss, the amount of loss is deducted from the equity of the company. Thus, the amount of available equity determines the amount of losses the company can carry and still survive. Therefore, the absolute amount of risk taken by the company should be in line with available equity. In this sense,

EC theory can be regarded as a theory about the adequate leverage (ratio of debt in the total finance) or as a capitalisation theory. The more debt, the higher this ratio, the lower the relative amount of equity available, the less risk the company should take.

Each type of risk¹¹⁴ can be capitalised for in this theory and this theory allows for mutual comparison of various and different risks. Economic capital is a universal measure for risk in a financial world. It is the amount of capital at risk of loss, according to a specific confidence interval, for a particular portfolio of risks, taking into account diversification – not all risks will materialise at the same time- and correlation – risks tend to influence each other. This is also referred to as a Value At Risk (VAR) model.

It is assumed that of all possible amounts of losses their likelihood of occurrence can be determined. In other words, a distribution of possible losses (probabilities versus amounts of loss) is assumed. If a bank wants to maintain a double A rating, it must hold capital according to a probability that it will not default itself, say to the 99.97% confidence level. If a bank wants to be better (have a higher rating) it accordingly needs more capital for the same portfolio.

In order to determine the portfolio loss distribution, each singular loss possibility is estimated and then valued in relationship to each other, ie. as a portfolio. A portfolio is a set of positions, considered as a whole, taking into account mutual dependencies between risk positions within the portfolio.

Risks that can be quantified by economic capital include ao. credit risk, market risk, operational risk, insurance risk, country risk, business risk. EC theory could be applied to virtually any risk that can be explicitly modelled into amounts at loss and likelihoods or probabilities of these losses, including the correlations with other types of losses

EC theory is economic in terms of indication of the amount of risk in a particular portfolio. This risk should be supported by capital, ie. equity. In this framework, the cost of debt (funding rate) is charged to the client with a (profit) margin to cover the costs of equity. EC can be translated to risk costs if the required rate of return for equity is multiplied with the amount of EC required.

From an internal source, ‘universal’ EC modelling principles and a recipe could be distilled as follows¹¹⁵:

¹¹⁴ Each risk, that is, each potential event that can have a negative effect on the Profit & Loss account of the company. If the company is not hit in its P&L by something, it does not make sense to create a capital buffer for it.

¹¹⁵ Rabobank internal presentation LGD-EAD workshop Corporate Clients, Nov. 7, 2002

EC principles:

- **Differentiation:** all equivalent risk should be quantified equivalently. This means that different risk levels should have different amounts of EC. All economic relevant differences should be taken into account. Treatment of capital should be the same when the risk is the same. E.g. a loan with collateral is safer than without c.p.
- **Standardisation:** EC makes risks comparable across business lines and risk categories. It allows the management of portfolios because risks can be aggregated. This is only possible if risks are quantified according to a standard, which is the best estimation of the likely loss (given default of the counterparty), and the probability of that loss, taking into account the interactions between various possible losses. E.g. a single A¹¹⁶ credit in Utrecht has the same risk as a single A credit in the US. All credits should be analysed for their likely losses, not their maximum losses.
- **Accuracy:** EC is used for capital allocation, pricing, credit approval and performance measurement. Therefore, it must be accurate, not over- or under-estimating. Regulators charge capital according to internal ratings, competitors use EC for pricing. Over- or underestimation of risks is uneconomical.
- **Conservativeness:** in case of uncertainties, one should not be too positive about outcomes, as to avoid negative surprises. If a collateral asset has been appraised five years ago, we must assume a possible decline in value since appraisal.
- **Completeness:** all risk drivers which can be material must be included in the calculations. In order to avoid surprises, all relevant factors must be assessed. E.g. perfect documents, but without the legal environment to enforce them, are worthless. Just looking at the presence of perfect documents without considering the legal enforceability would misjudge the position.
- **Consistency:** risk assessments should be consistent over time and across places. E.g. whether you or I rate that company, the results should be likewise.

These principles are conflicting. For example, differentiation and standardisation, or accuracy versus conservatism. If we want to express all unique peculiarities of each risk position, then our model would not be standardised. It would be

¹¹⁶ The “A” stands for a specific rating, which are often assigned a letter or number combination. AAA is better than A. BBB is worse than A, etc.

impossible to compare all these unique statements. Or, if a situation is very uncertain, we want to be on the safe side in our estimates, rather overstating than understating risks. However, accuracy will subsequently be sacrificed. Hence, EC modelling is a balancing act, which requires sound judgement.

In order to produce EC amounts for various risks, the following recipe can be used:

EC modelling recipe:

1. **Identify material risk drivers that cause losses**
E.g. good collateral mitigates losses.
2. **Within a risk driver, consider factors that determine variations in losses**
E.g. vintage of receivables as collateral determines recovery value. Recovery is dependent on legal enforceability.
3. **Quantify the likely loss amount in case a risk materialises**
E.g. If vintage of receivables < 30 days, then liquidation value = 80% of book value.
4. **Estimate the probability that this risk materialises.**
E.g. 10% of loans based on receivables is liquidated. 15% of insurance policies is not paid when expected due.
5. **Adjust for dependencies with other risks, given default.**
E.g. sensitivity of recovery for macro-economy, correlation of recovery for industry type.
6. **Upscale risk to required safety standard.**
E.g. capitalise for a 1 in 10,000 times event to support the AAA¹¹⁷ rating of the bank. Apply conservative but constructive risk appetite.

These principles and recipe are valid for all types of financial risks, present within a bank, such as credit, market, interest rate, operational, transfer, business or insurance risk. EC is a common denominator for risk. It allows the economical comparison of different risk types, or different business units that incur different risks. In that respect, EC is very useful on a level where decisions have to be made about different business lines, on a level where the available scarce equity has to be allocated over various risky portfolios. E.g. in a financial Group Board level which

¹¹⁷ a AAA rating is assumed to have a probability of default of 0.01% or 1 basis point. Only one out of every 10,000 AAA companies are expected to default in one year. The safety standard refers to the statistical term 'level of confidence'.

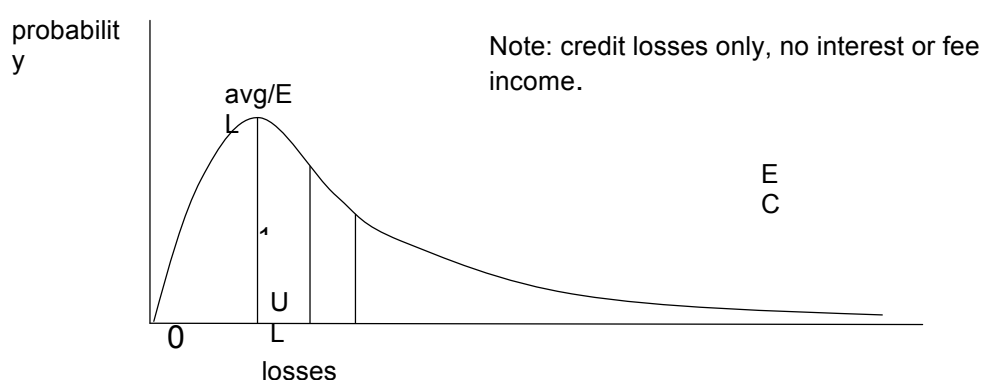
has to make decisions whether to invest more in the leasing unit, or more in the insurance unit or in the commercial banking activities. EC offers the common denominator and can be used to derive fair comparisons between businesses. In other words, EC provides a basis for fair valuation of risks.

7.1.3 EC applied to credit risk: Model of CRPM theory

CRPM is the application of EC theory to specific credit portfolios, typically belonging to banks. In this PhD we will limit ourselves to the application of CRPM to wholesale credit portfolios, consisting of large credit facilities to large corporates, banks or governments. Retail portfolios are thus excluded.

As stated above, EC is based on estimations of amounts of possible losses and the probabilities that these losses occur. The CRPM theory can be summarised in the picture of a loss distribution below. From the picture we can distil the three required components of the theory, being the average loss of a position, the volatility (σ) around this average, and the (cor-)relation with the rest of the portfolio.

The picture shows a large probability of small losses (EL), a volatility around this average loss (UL) and the measure of risk expressed in required capital (EC), the upscaled volatility



This picture is typical for a credit portfolio, where there are small chances of vary large losses and higher chances of smaller losses. The exact shape of the distribution is determined by the composition of the portfolio, and hence would change every day, due to new credits being added, other credits which mature or are hedged, and the changing of the macro-economy.

To my knowledge, no bank is able to actually measure and process all these changes simultaneously. Therefore, most banks work with an assumed shape of the distribution, taken from statistics such as a beta or T-student distribution.

Required Components:

There are three required components to be able to calculate the loss distribution and estimate the amount of EC required for a portfolio. Of course, within these three components there could be more distinctions, leading to a multiplication of the number of the required components. In my opinion, the distinction in three is the minimal.

- I. **Expected Loss or the cost of doing business. For a credit portfolio one will always expect to have some losses, on average. That average, or expected amount of losses should be regarded as a cost of doing business which should be charged to the clients and included in the pricing of products sold.**

EL is the basic building block for EC. EL is the product of the probability that the risk will occur, the exposure at the moment of occurrence of the risk, and the part of that exposure that will definitely be lost after work out processes¹¹⁸ have ended. EL should be equal to the long-term average historical losses in a stable portfolio. EL is the long-term average cost of being in that business. A grocer knows from experience that he has to throw away 1 out of every five tomatoes he sells, so he includes that in the price of the other four tomatoes he does sell. Similarly, EL is directly charged to the customer, and on a portfolio level held as a general provision to cover the specific losses of that portfolio. Hence, EL is not uncertain, ie. is not a risk. EL is expected and supposed to be included in the pricing so it doesn't use risk capital. EL can be calculated by multiplying three factors:

- Probability of default (PD) can not directly be measured but must be derived. PD indicates the likelihood that a debtor will default, ie. is an acute credit risk. Ong¹¹⁹ states two major routes to obtaining probabilities: 1) by empirically measuring the average default rates of a specific group of debtors, which requires a method to classify debtors in specific groups¹²⁰; or, 2) based on the options theory framework, which calculates PD based on the market value of the firm's assets, the level of its obligations and a kind of beta. A third possible method consists of

¹¹⁸ If a loan defaults, banks will try to liquidate available collateral, liquidate other assets of the debtor, or try to restructure the debt in order to recover maximally the possible losses in what is called the work out procedure.

¹¹⁹ Ong, 1999, p.64

¹²⁰ ie. groups which have similar default characteristics, eg. groups with similar public credit ratings. Rating Agencies essentially classify debtors.

simulation, eg. simulation of cashflows of a counterparty required for repayment.

- Exposure at default (EAD) can be measured directly (in the books of the lenders) for the current value of the claim, but must be estimated for the potential future increase in value due to further drawings under the credit facility when the debtor is approaching default.
- Loss given Default (LGD); although all collateral or other risk mitigation measures available are known from the moment the deal is originated onwards, the ongoing valuation of all risk mitigation can be quite difficult. Uncertainties involved include dependence of the value of assets on the creditworthiness of the debtor, the liquidity of the collateral at the moment of default, the legal enforceability of the collateral in a work out process, macro-economic stress at the moment of default, etc.

Note that all three components' definitions should be based on a consistent definition of default per specific portfolio. Between banks or portfolios, different definitions can be applied, ranging from an early definition, eg. a material breach of a covenant, to a late definition, eg. actual failure of repayment of principal or interest. If a bank applies an early definition, it will generally start the work out process earlier, and in general will be able to recover more value than in the case of a late default definition. Hence, an early definition of default results in high PDs and low LGDs. The amount of expected loss and EC, both products of PD, LGD and EAD should determine whether or not a bank will do a transaction. This should not depend on PD only.

II. Unexpected Loss on a standalone basis, or the volatility around the EL or average loss.

This component consists of a risk assessment method to quantify the volatility of losses due to that risk, on a standalone (eg. singular asset) basis, taking into account risk correlations concerning one obligor. This measure could yield the same result for all banks, but in general different banks will perceive the same risks different due to their experience with a certain market.

EL is expected and supposed to be included in the pricing so it doesn't use risk capital. The risk involved stems from uncertainties about the actual loss that could be made in a downside scenario. For credit risk, the largest losses have low probabilities, but huge

impacts on banks solvability. One can imagine that there still is a lot of uncertainty in work out processes. In some cases, available collateral seems to have disappeared or is contested. Actual losses can subsequently deviate significantly from expected losses.

Therefore, the risk to capital is the deviation from the mean losses, ie volatility. The volatility¹²¹ of losses is expressed as unexpected loss (UL). Or, in other words, UL is the estimated volatility of the potential loss in value of the asset around its expected loss, ie. is the standard deviation of the unconditional value of the asset at the horizon.¹²² Caouette et al.¹²³ refer to the same term of unexpected losses as maximum potential loss, or the maximum loss at a given level of confidence. In latter case, the volatility has already been scaled up to a required confidence and UL represents the amount of capital that should be held as a buffer. In that case $UL = EC$ at risk. Because one concept only needs one name, I shall refer to UL as the volatility (ie. 1σ), like Ong.

Saunders¹²⁴ describes four mostly used methods for calculating the volatility:

- based on historical asset returns;
- based on current asset values (ie. equity prices) (KMV);
- as a normally distributed set of macro economic factors and shocks (Mc Kinsey);
- as a combination of a Poisson and a gamma distribution.

III. **EC: Portfolio risk. The equity of the bank is usually not affected by one credit position, but by the blended effect of all credit positions in the portfolio. Therefore, it must be estimated how positions interact, how they change together.**

This component translates risk into required capital, taking into account portfolio correlations, portfolio composition and loss distribution, and confidence interval required. This measure should be different for all banks.

UL is the volatility, ie. standard deviation, which can be applied to a specific portfolio within a specific firm, ie. which must be customised to reflect portfolio correlations and desired levels of confidence. In other words, UL is a standard measure of risk, whereas from portfolio theory it is

¹²¹ volatility = $UL = 1$ standard deviation.

¹²² Ong, 1999, p.112

¹²³ J.B. Caouette, E.I. Altman, P. Narayanan, 1998, p240

¹²⁴ Saunders, 1999, p.103-123

known that portfolio diversification has a major impact on risk. For example, for some banks a specific asset can increase concentration risk because their portfolio already contains many of these assets, whereas for other banks this asset might be the first of its type they acquire. Therefore the correlations between defaults and loss rates and between defaults themselves must be taken into account in order to accurately aggregate individual positions into one portfolio level.

Furthermore, not every bank has the same aspirations in terms of the desired risk profile of their activities. Some banks will aim for ultimate conservatism and hold enough capital to cover for maximum losses on a 99,99% level of confidence; only 1 every 10.000 years¹²⁵ will this bank suffer losses which it can not survive. Other banks take more risk, ie. reserve less capital, and hence, require a lower capital multiplier.

For most banking books, in which most credit risk resides, proper or fair valuation is problematic. The ideal valuation, plain Marking to Market (MtM), for credit risk is not possible due to lack of uniformity and liquidity. This makes it hard to exactly hedge credit risk on the market and, hence, discover the objective market price. Therefore, these credit EC calculations are different from current market risk calculations, which MtM all cash flows. "Because economic capital is derived based on default probabilities and recovery rates, this approach is driven more by intrinsic value (the so-called model value) than by market value."¹²⁶

The EC framework is dynamic in essence, because it is risk sensitive. If the risk changes, the capital must change. Given the fact that time is one of the main risk factors in any Discounted Cash Flow model (needed for proper intrinsic valuation), EC will be different every second. But not only time will affect the EC required. Also the new inflow of credit assets caused by the account managers (so called origination of credits) will change EC and the value of the portfolio, just like changes in the macro-environment of the bank, such as inflation or exchange rates or economic cycles. Next to that, a systematical description of credit assets allows a commodisation¹²⁷ of credits, which in turn allows banks to sell or buy credit assets on the capital markets in order to hedge and steer the portfolio of risks. Finally, also existing credit assets will change due to changes in creditworthiness of debtors, changes in collateral values or commodity prices.

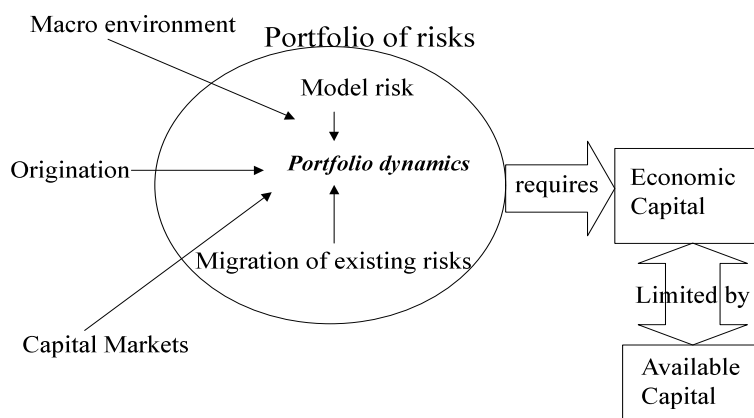
¹²⁵ Note that all 10000 years are assumed to have the same environment.

¹²⁶ J.B. Caouette, E.I. Altman, P. Narayanan, 1998, p243

¹²⁷ Commodisation refers to treating the credit like a commodity, an asset with a standard profile. Commodities can be traded with other parties on the financial or capital markets, because the standardisation provides insight to third parties in what the asset is like.

All these changes will affect the EC required for the portfolio, and hence affect the creditworthiness of the bank itself, because the available capital of the bank is rather static. See picture below:

Dynamics of EC based portfolio risk management



7.1.4 The case study: RI model of CRPM

In this paragraph, the case for our clinical approach will be presented in general terms. Later, for specific discussions, the case will be elaborated further as required.

Within RI, since September 2001, a project has started to implement a BIS II compliant EC framework, which is consistent with the Rabobank Group framework. In this period, RI has first focused on improving the rating models which are necessary for estimating PDs for each individual counterparty. Formerly, a rating model has been in existence, but this model was considered too subjective and not uniformly applied. Therefore, the outcome of this rating model could not consistently be mapped to PDs.

In order to improve ratings of various types of counterparties, first a segmentation of the portfolio has been made, dividing the portfolio in retail, Small and Medium sized Entities (SME) which are small corporates, in mid-caps, large-caps or multinationals, various types of financial institutions and types of governmental counterparties. Then, given the fact that the financial information of a counterparty

is closely linked with the governing accounting rules, and these accounting rules can vary per country, it was decided to create separate models per relevant country. Various methodologies have been applied to develop the new rating models, such as:

- Shadow bond rating; in this methodology, a proper rating should mimic whatever rating agencies have given as a rating to the same counterparties. By building a model that is able to do the same (shadow) whatever the rating agencies do, it also becomes possible to update a rating before rating agencies do. This methodology is only applicable for counterparties which have an external rating (ie. a rating given by rating agencies, such as Moody's or S&P). Usually that is only applicable to the larger counterparties, like multinationals.
- Good/bad analysis; in case there is no external rating to mimic, e.g. for smaller counterparties, regression techniques were applied to find the distinctive factors that make a company good or bad in terms of rating. In fact, regression techniques were used to find the distinctive factors for each class (rating) of debtors. For this exercise, a sample of defaulted clients of the bank and a sample of non-defaulted clients have been used.
- Expert judgement; in case the sample of defaulted clients is too small to make statistical reliable inferences, the bank had to rely on the input of experts to discover the drivers and factors that influence creditworthiness and have an effect on the PD.
- Cash flow simulation; in case of project finance, the bank has chosen to develop simulation models which take the important factors into account that determine the repayment capacity (e.g. estimate sales revenues and cost developments). By simulating many times, a distribution of possible outcomes in terms of the distinctive factors is produced which can subsequently be used to estimate a specific level of creditworthiness with a specific probability.

All these models have been tested on their relative accuracy, ie. whether the model produces the right ordering of counterparties in terms of their creditworthiness. Subsequently, the models needed to be calibrated. This means that absolute values in terms of PDs had to be established for each rating class. Currently, most of the models use *placeholder* calibrations, which is a first estimate that needs to be improved later when data for back-testing becomes available.

Once calibrated, all the different rating models become comparable in terms of the resulting PD, in fact ratings are expressed in PD.

The attention of the BIS II/EC program was focused on EAD and LGD after the rating projects were running satisfactory. A project was started to focus on the general corporate banking products and structures and a separate project was dedicated to Export-, Trade – and Commodity Finance, focusing on transactions that involve soft commodities, such as coffee, sugar, palm oil, etc. These commodities are traded on exchanges and have daily quoted prices, which provide a lot of information as to the value of the collateral. For the corporate banking part, these market prices are not available. Next to that, value of collateral is for a large part determined by the legal enforceability, which in turn is determined by the respective jurisdiction. It is clear that this differs per country, which requires an LGD parameter per jurisdiction. Hence, for a purely statistical approach quite a large amount of defaults must be available in the regression analysis, nicely distributed over the relevant countries (more than 25). It has been calculated that even if all counterparties of RI would default simultaneously, the amount of “data-points” is still marginal, hardly a reliable empirical base. Therefore, in the corporate banking project, expert based modelling has been the only feasible approach.

Only after metrics are developed to capture these basic components of EC (ie. PD, EAD, LGD), attention is now focused on improving volatility measures to estimate standalone UL and to improve the correlation measures in order to measure correlations properly. Up till now, benchmarks provided by external consultants have been used to calculate UL and EC. These benchmarks are not specific to the RI portfolio, and they don’t change when the portfolio composition is changing. In fact they do not measure, but assume. Recently started projects try to develop volatility, correlation and capital multiplier metrics that are applicable to the specific RI portfolio.

In summary, it may be concluded that the first 3 years attention was fully on establishing metrics that measure the first required component (EL). Only when that was well underway, attention is shifting to the second (UL) and third component (how to convert UL into EC).

Next to developing the conceptual model and the metrics, a lot of attention has been spent already on describing the requirements for a credit risk data collection, storage and processing IT system. Current estimate is that proper system development and implementation will take about four years from start of the project. This IT system must deliver all credit risk data, such as ratings per customer, facilities which are outstanding or the loan exposures the bank is running per counterparty, and the risk mitigations per facility of each counterparty. Once available, the developed metrics can be applied to the global exposure data to calculate EC properly.

Until such time, only top-down calculations, using benchmarks and assumptions, are possible.

Also see § 8.2.4.3. and the appendix in chapter 14 for further elaboration of the Rabobank econometric model.

7.2 Classification of CRPM theory

7.2.1 Introduction

In § 8.1, the subject of our analysis has been described on three levels of detail. These are respectively general EC theory, CRPM and the Rabobank model. Now we can start to analyse our subject. First, in §8.2, we will compare EC theory by classifying it according to four dimensions. In §8.3, issues regarding the content of the theory will be elaborated.

In this paragraph, EC theory / CRPM will be classified in terms of four criteria:

1. Context: which actors and factors drive the development of the theory?
2. Ontology: what kind of thing is EC?
3. Epistemology: how is knowledge of EC possible?
4. Methodology: what specific method is used in EC theory?

7.2.2 Social context / Context of justification

In this paragraph we try to understand the role of the context in the development of the use of Economic Capital over time, to become the major “movement” and the new standard for credit risk management (CRM), especially for wholesale banks. Several forces can be identified which together made the EC movement what it is today.

- From within the banks themselves, two forces have been active.
 - Credit Risk Management (CRM) itself has evolved over time, from old fashioned lending to increased competition, complexity and volumes, requiring increased accuracy of management tools.
 - On a higher perspective, business management itself has changed considerably during the years; in the 1990s, where a major part of the EC development took place, strong emphasis was put on shareholder value and the need to measure economic value added of business opportunities.
- Because banks are regulated entities, developments in the regulation of banks have played a major role as well.
- Finally, exogenous developments in technology, risk theory and financial markets enabled economic capital (EC) based credit risk management.

7.2.2.1 Description of user community

EC is embraced by several parties in the field of finance. It is considered important to identify the major propagators of EC concepts as they will

exert influence according to their interest. Each of these parties will be described and analysed according to the Information theory analysis. When EC is a medium to convert banking from a monetary discipline into an informational discipline, asymmetric information and other information problems will be very important. Key issues involve:

- Assumption of asymmetric information; agents on one side of the market have much better information than those on the other side. Borrowers know more than lenders about their repayment prospects. This can give rise to **adverse selection** on markets, due to imperfect information. Borrowers with weak repayment prospects crowd out everyone else from the market¹²⁸. Hypothetically, this information problem can either cause an entire market to collapse or contract it into an adverse selection of low-quality products. Therefore, economic agents may have strong incentives to offset the adverse effects of information problems on market efficiency. A proper credit assessment, resulting in a consistent and objective rating, used for calculation of EC can be a helpful tool to avoid this adverse selection.
- Better informed agents on a market can credibly transmit, “signal”, their information to the less informed, so as to avoid some of the problems associated with adverse selection. **Signalling** requires economic agents to take observable and costly measures to convince other agents of their ability or, more generally, of the value or quality of their products. A fundamental insight is that signalling cannot succeed unless the signalling cost differs sufficiently among the senders of information. An example concerns dividend payment by firms. Firms with “insider information” about high profitability pay dividends because the market interprets this as good news and therefore pays a higher price for the share. Another example concerns the costs of obtaining a credit rating and the expected lower credit risk premium paid on bonds issued because investors have better information. In latter case, the decrease of required risk premium must outweigh the costs of obtaining a rating. Note that it might even be impossible to issue bonds if no rating is available.
- Uninformed agents can take actions on a market with asymmetric information by creating incentives for the more informed agents to reveal information on their risk situation through so-called **screening**.

¹²⁸ Eg. weak borrowers will present themselves as better quality and hence, inflate the required risk premium for that rating bucket in the end (when higher default rates will have realised).

Eg. in an equilibrium with screening, insurance companies distinguish between different risk classes among their policy holders by offering them to choose from a menu of alternative contracts where lower premiums can be exchanged for higher deductibles. On credit markets with asymmetric information it can be shown that, in order to reduce losses from bad loans, it may be optimal for bankers to ration the volume of loans instead of raising the lending rate. Also analysed was the efficiency of financial markets in what is known as the Grossman-Stiglitz paradox: if a market were informationally efficient, ie. all relevant information is reflected in market prices, then no single agent would have sufficient incentives to acquire the information on which prices are based.

Major players identified are:

1. Rating agencies use EC concepts to evaluate securitisation programmes or CBO/CDO/CLO¹²⁹ transactions in which credits, possibly restructured, are offered as a portfolio to investors. Analysis in terms of EC is standard. Next to that, rating agencies also use EC concepts to evaluate banks themselves. In other words, available and required amounts of EC determine (ao.) the rating of a bank itself. Rating agencies sell their ratings to the rated parties, ie. they are being paid by the ones they assess. The value of the ratings is determined by the value investors in bank shares or in bank debts attribute to a rating. Currently, besides liquidity premia, pricing of debt instruments is mostly determined by their credit rating. Rating agencies uphold their status of objective assessment by extensive investigation of specific credit propositions and general research in developments of credit markets. Most banks' controllers are quite sensitive to the scrutiny of rating agencies. The agencies act as the signalling party on the financial debt markets; borrowers take observable and costly measures to convince investors of their repayment ability by asking for a rating. The current international financial markets are dominated by three large rating agencies.¹³⁰
2. The Regulators are guardians of the financial stability and level playing field of the international banking system and encourage the use of internal models for internal risk management. If a bank ao. can show that it uses its own model for important decisions, such as performance measurement and capital allocation, pricing and reserving, etc., the regulator will allow in the new BIS II Accord the same models for calculation of regulatory capital. The regulators, however,

¹²⁹ debt instruments which are backed by collateral, such as mortgages, receivables, etc.

Stands for Collateralised Bond/Debt/Loan Obligations.

¹³⁰ Ie. Standard & Poor's, Moody's, and Fitch IBCA/Duff Phelps.

anticipate big differences between the models banks use, so they will not allow full recognition of the models. Especially regarding assumptions about correlations of risks on portfolio level, BIS II is still hesitant. On the other hand, the regulator has experienced that a one size fits all approach, such as BIS I, is subject to a lot of regulatory arbitrage. BIS has experienced that “the internal-model (IM) capital standards for market risk provide a useful prototype for IM capital standards in the credit risk setting.”¹³¹

In the new BIS II proposals, BIS offers a way of screening: banks that have proven to have the most advanced risk management frameworks also receive the most lenient capital requirements. BIS II offers a menu which benefits the better organised banks. Being less informed than the banks under regulation, BIS requires demonstration of extensive convincing power of the models before the models will be recognised by the regulators. Track records, use tests, public disclosure, stress testing, etc. are explicitly required as signals for sound models. The public disclosure (*pillar three*) itself provides the Regulator with a screening by the public.

Next to that, most regulators/authorities offer a “safety net” to investors in bank liabilities, which may include deposit insurance, unconditional payment guarantees, access to discount windows, etc. This safety net should protect investors from failing banks. However, sometimes this can give rise to problems of moral hazard for bank managers, who know that the regulator protects the bank, hence they can take more risk. The regulator needs to protect this safety net by imposing strict and severe regulations and supervision of banks.

3. The competitors, amongst which banks themselves, but also non-bank financial institutions, such as insurers or asset managers, are more and more using EC to evaluate credit proposals and are capable to select those proposals which contribute positive value to the portfolio. Not only are they capable of more accurately pricing individual credits, they are also able to manage credit risk on a portfolio level. Hence their selection of credit risks will be superior compared to less-advanced banks. Latter banks will be subject to adverse selection and may hence gradually destroy value in their portfolio.
4. Creditors and investors in bank equity/debt, such as depositors, provide either equity or debt funding to a bank in exchange for a reward which is in line with the risk taken. The risk taken is indicated in the rating of the debt instruments of the issuing bank. For equity, those investors are looking at the amount of risk run and return generated by the institution versus the amount of available capital. Both types of analyses are more and more based on EC. Investors have asymmetrical information regarding the performance of a specific debt instrument of the institution as a whole, hence can be subject to adverse

¹³¹ Hirtle, Levonian, Saidenberg, Walker and Wright, 2001, p.19

selection and in some cases moral hazard problems of the management of the bank. To compensate for this asymmetry, investors rely on ratings by objective agencies and where these are lacking, will have to rely on trust and confidence in the management of the bank. Reputation is holy.

Where the regulator is concerned with the question whether banks have adequate capital compared to the risks involved, the shareholder is concerned whether his capital is efficiently used. Consequently the investor and the regulator have different needs for information (and the shareholder is paying for it).

7.2.2.2 Credit Risk Management

Traditionally, banks are concerned to get back the money paid in a type of loan-agreement. Banks would, therefore, only select creditworthy counterparties and limit the amount of money to be disbursed in amount and tenor for any particular counterparty. Usually applying a buy and hold strategy¹³² for the term of the credit, traditional CRM focuses on individual credit assessment by way of regular review and monitoring of each counterparty and checks for compliance with loan covenants until final repayment (or loss). A conservative initial assessment combined with ongoing review of creditworthiness and monitoring of exposure versus limits, eventually leading to *special asset management*¹³³, would ensure that losses were limited, ie. that exposures at loss would be recovered as properly as possible. Either the bank selects counterparties with such good creditworthiness that it is very likely that a sufficient creditworthiness is maintained during the term of the loan, or the bank structures the transaction such that in case of default of the counterparty, the bank relies on the sale of marketable collateral. If a counterparty's credit quality deteriorates significantly during the term of the loan, the bank should manoeuvre itself in an accordingly strong position by increasing the structure of the transaction.¹³⁴

With the entrance of derivative contracts – contracts concerning movements of market prices instead of direct cash payments- the replacement value of a contract determined the value of the transaction. Instead of money paid, future discounted cashflows determined the value; from money paid to Net Present Value of claim owed¹³⁵. On the financial markets the amount of the claim is daily revalued in

¹³² Buy and hold: after disbursement of the loan, the asset is kept on the books of the bank until final repayment or write off.

¹³³ when a loan turns bad (is likely to lead to a loss), it is treated specially, a.k.a. work out.

¹³⁴ Think of asking for more collateral, impose tighter covenants, increase pricing, etc.

¹³⁵ from accrual valuation towards daily MtM. See also § 8.3.3. for an elaboration of the issue of valuation.

combination with the quality thereof, ie. returns are adjusted (ie. discounted) for (future) risks. Risks, being tradable, receive a fresh price daily which can be compared to the actual price which the bank paid/received for the loan, to calculate return.

Also, financial markets offer the opportunity to hedge excess risks, on individual or aggregate / portfolio basis. This offers the opportunity to change the risk profile of the portfolio. Furthermore, derivative contracts allow the unbundling of risks, ie. allow to treat aspects of risks separately. Eg. the risks in a loan can be unbundled to interest rate, currency, transfer, credit margin, mismatch risks which can all be subject to individual derivative contracts. Initially focusing on interest and currency risks, credit risk now also has become a tradable commodity on these markets. Developments in packaging, restructuring and securitisation of credit assets has enabled an active credit portfolio management, turning away from the buy and hold strategies. This in turn, has allowed the separation between the origination function (ie. account management) and the portfolio management function (taking care of the risk/return profile of the portfolio as a whole).

Finally, the importance of financial markets – where transactions are not backed by physical production- has grown immensely in the last years. Caouette et al.¹³⁶ describe this: “In 1854, America’s GNP nearly equalled the payment volume: The turnover rate was 1,5...By 1983, when America’s GNP was \$3,547 billion and its estimated payment volume was \$129,200 billion, the turnover rate had reached 36. Just nine years later, in 1992, GNP had grown to \$6,560 billion, but payment volume had jumped to an estimated \$513,509 billion. The turnover rate, in other words had more than *doubled* to 78. Every turn in the exponentially growing turnover rate represents the application of credit.”

This means that the absolute amount of credit risk in transactions with counterparties has increased considerably because of the increase in transactions. Each transaction has two counterparties which cause credit risk that must be managed. The financial markets not only allow a more sophisticated and active credit risk management, they also cause a lot of credit risk in bank portfolios, fuelling the development of credit risk financial market products to hedge all that risk.

In this development, a bank is confronted with external (financial) market prices for credit risks. These prices are volatile and subject to market liquidity. Almost per definition, standard risks are cheapest and traded on very liquid markets, exotic risks are less liquid and trade at a premium. There is a liquidity premium for risks which have terms and conditions that deviate from standard.

Currently, the standard on the market is highly influenced by the rating agencies who provide an objective analysis of credit risks for investors. Many counterparties

¹³⁶ Caouette, Altman and Narayan, p.9

in the US or their debt receive a creditworthiness rating of the agencies, which enables investors to compare the risk of a specific position with alternatives. However, many non-US banks have very few customers who are rated by the agencies. Hence, rating agencies can only assess the method and performance of the internal credit risk management processes of such banks. Therefore, these banks have to provide insight in their risk management and prove the credit risk of their portfolio by (internal) historical default and loss data and their track record. This historical performance data is the key in accessing the capital markets for these type of banks. If a bank wants to sell the risk of a part of its portfolio, S&P and Moody's come in and check the historical performance of that portfolio by segmenting the portfolio and identifying the loss characteristics per segment. If the bank is not able to supply information about the type of credit risk and the quality of it, the portfolio is not sellable.

Next to that, many counterparties¹³⁷ in the credit market who are willing to take on credit risks of banks are less professional in credit risk management than banks. Therefore, those counterparties are relying much more on standard terms and conditions (eg. Isda¹³⁸) and rating agencies than banks themselves. The bank-to-bank credit market is considered to be still in its infancy. Hence, key in offloading credit risks is adherence to standard terms and conditions, or pay a price for deviating from the standards.

Summarising, traditional CRM is typically concerned about the individual debtor, and manages the risk on a one by one basis. As credit more and more becomes a commodity, which can be sold or bought after origination of the transaction, a buy-and-hold-to-maturity strategy is less viable. If credits can/will be sold before maturity, replacement value or discounted cashflow seem better valuation techniques. Liquidity, the ability to sell on the markets, requires MtM of credits, which means that risks must be comparable with market standards, ie. must be recorded in the same language as the market. CRM is essentially seeking a common language in the EC movement in order to securitise, split up and reassemble all risks associated with financing and to communicate with financial markets.

7.2.2.3 Shareholder value

In the 1990s the magic business term was shareholder value. Started earlier in the US, the concept became stronger advocated during the 1990s globally. In essence, it requires businesses to focus on maximising the value shareholders obtain from providing equity to the firm. From theory, shareholders require a risk premium

¹³⁷ Eg. pensionfunds, asset managers, etc.

¹³⁸ For International Swaps Dealer Association, which tries to standardise terms and conditions in derivatives transactions.

which is adequate for the risk taken, ie. the premium required for providing equity is related to the risk of the respective activity. Within banks, this has led to adherence to the concept of Risk-Adjusted-Return-on-Capital.¹³⁹ The concept of Raroc was introduced by Bankers Trust in the late 1970s. “Raroc allocates a capital charge to a transaction or a line of business at an amount equal to the maximum expected loss (at a 99% confidence level) over one year on an after-tax basis... The Raroc process estimates the asset value that may prevail in the worst-case scenario and then equates the capital cushion to be provided for the potential loss... Raroc is an improvement over the traditional approach in that it allows one to compare two businesses with different risk (volatility of returns) profiles.”

Raroc¹⁴⁰ is a concept which translates returns and risks from specific businesses into a unified concept which allows comparison. Calculation of Raroc requires 2 steps¹⁴¹:

1. risk adjustment of the returns; usually by deducting expected losses from returns.
2. calculation of economic capital, ie. equity investment of the shareholder, required.

Raroc is then 1/2, and is usually compared to a minimum hurdle, for example 15% pretax, which means that the shareholder wants at least a 15 % return on its equity investment on a risk adjusted basis.

If the cost of capital, ie. the required risk premium for the equity needed for a certain business activity, is deducted from the risk adjusted return, the economic value that is added to the firm can be calculated. A strong emphasis on shareholder value thus translates into strong emphasis on the calculation of economic capital and shareholder or economic value added, as the basis for capital allocation by the shareholder.

7.2.2.4 The regulator

With respect to the force of regulatory frameworks it is interesting to note that the history of capital requirements in the US reveals a remarkable, century-long decline [in capital levels].¹⁴² “In 1840, equity funded over 50% of banks’ assets, after which the ratio (equity to assets) fell fairly steadily for about 100 years until it settled in the 6% to 8% range from the mid-

¹³⁹ Caouette, E.I. Altman, P. Narayanan, 1998, p. 256

¹⁴⁰ Raroc as a term is sometimes mixed with rorac (return on risk adjusted capital) or rarorac (both return and capital are risk adjusted).

¹⁴¹ As EC is the capital that must be held, next to the amount of general provision, calculation of EC requires the prior calculation of expected losses.

¹⁴² From Ong, 1999, p.4

1940s to the 1980s. Prior to the start of the National Banking era of 1863, capital ratios were already declining significantly. As the efficiency of the U.S. financial system improved from geographic diversification, development of regional and national money markets, and introduction of clearing houses and other mutual guarantee associations, the probability of bank failures declined.”

However, after the collapse of Bretton Woods, which led to floating currencies, hence high currency and interest rate volatility¹⁴³, the banking environment has become more risky. Everyone remembers the soaring inflation in the 1970s, Latin America crises in the 1980s, the Savings and Loan crisis in the US, etc.

¹⁴⁴“...around the globe, during the same period between the collapse of the Bretton Woods agreement and the mid 1980s, a banking industry which was primarily protected and restricted and not accustomed to fierce competition suddenly found itself relieved of constraints, regulations and governmental protection. Predictably, the results were catastrophic. The ominous confluence of several unfortunate factors –deregulation, the relative calmness of the 1960s, the opening of new markets and the intense competition for higher profit margins – let loose a massive offshore expansion of credit extensions and aggressive lending among many banks in G10 countries, particularly Japan.”

The 1988 BIS Accord was the first general attempt to halt the declining capital ratios of banks by imposing specified minimum numerical capital-to-asset ratios. The goals of this Accord were to strengthen the soundness and stability of the international banking system and to promote a fair and high degree of consistency in its application to banks in different countries with a view to diminishing an existing source of competitive inequality among international banks, hence create a level playing field for internationally operating banks. However, anomalies in the 1988 Accord have been universally exploited by big banking institutions through clever innovations in the capital markets with the use of asset securitisation and credit derivatives, etc.

In effect, banks have been able to lower their risk-based capital requirements significantly without actually reducing the material credit risk embedded in their banking portfolios. One of the biggest flaws in the 1988

¹⁴³ Of course a large part of the interest rate volatility can be explained by the oil crises.

¹⁴⁴ *idem*, p.12

Accord was the lack of diversification of weights for counterparty risk; each corporate required a capital charge of 8%, regardless of its quality. Banks then started to offload the risks which required too much regulatory capital from an economic point of view, ie. offload the best credit quality assets via securitisation.

The Federal Reserve¹⁴⁵ in 1998 identified two key consequences of the current (BIS I) regulation:

- The regulatory measures of capital may not represent a bank's true capacity to absorb unexpected losses.
- The denominator of the risk-based capital ratios (ie. the total of risk-weighted assets) may not be an accurate measure of total risk.

In its July 1999 papers, BIS made clear that the current accord should be revised and that it was very likely that the new Accord would allow internal models for capital calculation. This has triggered an acceleration of the development of internal models within most banks.

When the new regulations intend to be more sensitive to the major risks in financing, and given the fact that external ratings predominantly exist in Anglo-Saxon markets, the Basle Committee is forced to look at internal risk assessments as the only option. This contributes to further banking deregulation: given the complexity of banking and scale of regulatory arbitrage, it is clear that every new centralised system would be arbitrated quickly, due to the innovation capacity of international banks. Regulators more and more have to rely on bank internal assessments. In their '99 paper they indicated that this also means more emphasis on regulator's discretionary power (effectuated in the so called second pillar of BIS II) and on public disclosure or the discipline of the markets (effectuated in the so called third pillar of BIS II).

7.2.2.5 The exogenous developments enabling EC based CRM

Both the credit risk manager, as the shareholder or management of the bank, as the regulator require better tools to measure and manage credit risk more accurately. Several developments in other areas than CRM have helped to make available these requested tools. Aguais, Forest & Rosen¹⁴⁶ mention the following reasons that force/enable banks to use more advanced credit risk measurement techniques:

- Evolution of credit markets; developments of stronger bond and secondary loan markets and the convergence between the two. Next to that, the growing

¹⁴⁵ Federal Reserve System Task Force on Internal Credit Models, 1998

¹⁴⁶ S. Aguais, L. Forest, D. Rosen, 2000

credit derivatives market has resulted in enhanced liquidity that supports transfer of credit risks.

- Advances in credit risk models; a growing amount of research has resulted in a better understanding of credit risk and development of models.
- Integration of credit and market risk; the advent of credit derivatives to support the transfer of credit risk and the convergence of credit markets are compelling financial institutions to manage the risks in the banking and trading books in a more unified manner (ie. integrating credit and market risk).
- Trends in regulation and best practice; although MtM is not yet required¹⁴⁷, both regulatory trends and best practices point in that direction in the long term. The new BIS II proposals will allow banks to calculate required solvency based on their internal assessment of the risks, favouring and stimulating internal model approaches.
- Improvements in technology like computational technology allows the application and delivery of more sophisticated computational tools to price and manage credit risk. Credit risk models require vast amounts of data and many calculations on them, translating in increasing requirements for bytes storage and Hz processing speed. Furthermore, the availability of Internet tools provides an effective means to distribute on-line credit information and valuation tools to a large number of users.

Caouette et al.¹⁴⁸ consider the following forces which prompted the aforementioned innovations in CRM:

- Deregulation, which has stimulated financial innovation and enabled new entrants to provide services.
- The broadening of the credit markets to encompass new borrowing sectors, both domestically and internationally.
- A continuing shift from balance sheet lending to cash flow lending.
- An increase in Off Balance sheet risks.
- Shrinking margins on loans, which have forced banks to explore less costly ways of measuring and managing credit risk.
- Securitisation, which has prompted the development of more efficient (and standardised) credit tools.
- Advances in finance theory, which have provided new ways of looking at credit risk.

¹⁴⁷ Just recently, however, IAS, the international accounting standards committee, has issued new standards that are implemented by national regulators that require some kind of fair valuation of the banking book. These new standards are also known as the IFRS, the international financial reporting standards.

¹⁴⁸ J.B. Caouette, E.I. Altman, P. Narayanan, 1998, p.102

7.2.2.6 Summary

In summary, banks evolved from a house with a safekeeping function, where the merchant could store his excess money, to a function as transformer – *exchange* – of money to a stage where information might be more important than the money itself. In order to perform their redistribution function to select users of money, banks must be able to assess the risks associated with financing. As risk management became more sophisticated, banks were natural counterparties for firms which want to focus on their core competencies and hedge other (eg. currency or interest rate mismatch) risks. However, for banks their core competence is finance and risk/return redistribution.

In banking, money is made with money. The shareholder increasingly requires an adequate return for the risk taken by providing equity. Emphasis on shareholder value stimulated the adoption of EC principles to calculate shareholder value added. With EC, the shareholder can manage his capital more efficient and earn more.

However, to manage the risks incurred in financing, banks need other counterparties to transfer the risks. This results in highly increased numbers of counterparties for banks, all carrying the risk that the counterparty might not perform on his contractual obligations. And given the size of the international banks and globalisation of financial markets, considerable systemic risk for the financial system has emerged. If one big party fails on its obligations, the system is shocked. E.g. Long Term Capital Management which was a hedge fund with in the end a basis mismatch with such a size and so many important parties involved that the Fed had to force a rescue program. Therefore regulators are very concerned with the way banks operate and their possible negative impact on society and stimulate advanced risk management, which again boils down to implementation of EC. With EC, the Regulators can control banks better.

Whether the driving force of shareholder value and regulatory purposes coincide well remains an open question until BIS II is finalised and implemented.

For efficient and effective redistribution of risks, all the suppliers and buyers of risk need common and standardised concepts, like a common currency or language, in order to be able to transfer the risks from one party to the other. These concepts need to be supported by physical operational processes, such as settlement systems (eg. clearing houses), and legal environments to make sure that contracts are valid in the real world.

EC concepts, such as EL, EC and RAROC, provide a powerful tool to support sophisticated CRM, and consequently have a potential for reshaping the world of finance. The developments, which basically enabled the growth of the EC

movement and focused regulators and credit risk managers on the possibilities to use internal models for bank-regulation/-management, consisted of:

1. Technology; webtechnology, database technology, datamining technology, cheap memory and computing power and speed have made it possible to collect, clean and process the vast amounts of credit risk related data required for quantification of credit risk and calculation of the portfolio risk profile. Technology is required for computing power (eg. in Monte Carlo simulations), for storage of actual positions and historical data, for collecting and disseminating information regarding individual positions and portfolio profile. Internet technology is viewed as very helpful in allowing central and decentral access to information.
2. Financial Theory; Modern Portfolio Theory, Arbitrage Pricing Theory, the concept of Raroc and Economic Value Added combined with statistics and mathematical modelling have enabled a quantification of credit assets and portfolios.
3. Financial Markets; both the application of financial markets methods & standards to evaluate credit risk as well as the ability to do transactions and hence change the portfolio profile contributed significantly to the emergence of EC portfolio models. Doing these transactions also enables a bank to compare loans with market prices for risks inherent in those loans, hence adding to convergence between fixed income markets and traditional corporate lending. As Kuritzkes¹⁴⁹ puts it: "Perhaps the most important of these forces [driving the shift to active portfolio management] is the phenomenon of rising liquidity across the credit spectrum. Rising volumes in loan sales, syndication and trading are expanding banks' access to the secondary market, particularly for high quality, large corporate debt. In turn, portfolio managers are gaining increasing leeway to customise balance sheets through sales and purchases of loans, bonds, commercial paper and other credit instruments." Adding to this the growing credit derivatives market and the increased volume in structured finance transactions, such as securitisations and other asset backed securities (eg. CBOs), it is clear that liquidity is rising sharply.

¹⁴⁹ Kuritzkes, 1998

7.2.2.7 Conclusions regarding the context

The EC movement operates in a context where different players have different and possibly conflicting goals for implementation of EC. The first classification of the type of context of the EC movement would be a regulated business context.

Although the EC movement uses scientific theories, especially from corporate finance concerning the adequate capital structure and from statistics concerning the estimation of the generic parameters, the development of EC theory will be driven by different forces than purely scientific forces. EC theory is justified in a context where profit maximisation is more important than truth.

The financial markets are important in terms of being the source, the fuel and part of the stage where the EC movement plays. Further standardisation of concepts and contracts is cause and consequence. Finally, the EC movement depends heavily on information and communication technology and financial theory.

Social implications of the emergence of the EC movement will be discussed further in chapter eight.

7.2.3 Ontology

7.2.3.1 What is ontology?

Ontology is a description of the structure of reality. In a more philosophical or technical perspective, ontology is the knowledge of Being as Being, it provides insight into the existential characteristics of those things that are. Existential characteristics could be described as attributes of Being.

Ontology is a fundament for epistemology in the sense that we first need to have an idea of the things that exist, and what existence means, in order to know how to develop knowledge of specific subjects.

Ontology provides the boundaries between all possible worlds and reality.

Fantasies are different from reality, because fantasy does not have a (fixed) ontological structure as it is not part of Being.

Van den Bersselaar¹⁵⁰ illustrates the ontological question with questions like: What is the nature of the subject, can it be observed by the senses, is it a general situation or a unique event, and is it constant or changing?

When a description of the social context introduces the actors and their specific interests (see above), ontology introduces the objective stage on which the actors will perform their play. In that sense, social context and ontology constitute the two sides of the same coin that allows knowledge. If the stage is a beach, the play can not revolve around office-life. But if the actors develop a play assuming a desert, a specific aspect (e.g. sand) of the stage becomes highlighted – in focus –, automatically forcing a negligence of other aspects of the stage/reality (e.g. the water in the sea).

Concluding, this ontology will provide essential insight into the nature of the entities, structures and processes described by EC theory. Questions like: what is the nature of credit risk; how can it be observed; is it dynamic? will be investigated.

EC is a capital buffer for credit risk the bank is running due to its credit portfolio. The ontology of EC is therefore largely parallel to that of credit risk, albeit it that EC is quantified credit risk. EC is quantified risk in the sense that it expresses the right amount of capital as a buffer for the risk. Therefore, we will first look into the ontological classification of capital before we turn to credit and risk.

¹⁵⁰ Van den Bersselaar, p. 17

7.2.3.2 Capital ontology

Capital has many appearances. It refers to an amount of money which has the capacity to earn more, but also to an accounting term which has a precise definition, or a regulatory term that defines capital as a buffer against unforeseen losses (ie. risks). It also is a source of finance or a measure of commitment of the shareholder. It can be internally generated and measured by the quality of assets, or it can be provided from outside of the company.

Sources of capital

In essence capital originates from two sources:

1. externally: the money of the owner which has been put into the company, and
2. internally: the profits which are generated by the company.
 - a. Past and retained profits (ie. not disbursed in terms of dividend), and
 - b. Future profits. The prospect of future profits determines the value of the assets of the company on the Balance Sheet. Any excess value (over debt finance) is attributed to equity on the Balance Sheet, since equity is the Net Asset Value of a company.

In this perspective, it has two different environments from where it originates, of which the first is exogenous to the company and is originated “somewhere else”. This is the starting capital and any subsequent further issues of shares. The source of the capital that is paid to the company by the shareholder is not-described and can be widely varying, from the most noble to the very darkest sources. The second origin is endogenous and produced by the company itself in terms of its past (retained) performance or in terms of its future profits. The second source is directly influenced by the performance of the company itself, for example the way it has anticipated market demands, etc. Or in the ability of a company to generate cash with specific assets: in a perfect market, an asset is valued by all future cash flows it is able to generate. Added value above costs of finance are added to the equity (the value of capital on the Balance Sheet) of a company.

Regulatory capital

Banks are regulated entities, which means that they must live by the rules set by the national banking regulator (e.g. DNB (Netherlands), Federal Reserve Bank (US)). Therefore, the regulator’s definition of capital is of great importance for banks.

¹⁵¹Most central banks of developed countries have adopted the BIS recommendations since 1988. In these regulations, regulatory capital is defined as tier 1 capital, also known as core capital, and tier 2 capital, also known as

¹⁵¹ See Bos, J.J., p. 102

additional capital which can be divided into upper and lower tier 2 and tier 3 capital. Tier 1 consists of paid share capital, reserves, the balance of the Profit & Loss account and general banking provisions. Upper tier 2 consists of cumulative preference shares with indefinite tenor and revaluation reserves, while lower tier 2 consists of long term subordinated debt. Under specific conditions, short term subordinated debt can be regarded as tier 3.

Note that the balance of the profit and loss account is included in tier 1. This means that the profits already generated in a period may be used to buffer for any future risks. In practice this is not so obvious. For example, within many banks, performance of credit portfolios is measured in terms of Return on Solvency in the BIS I era. The calculation of solvency always assumed the well-known 8% of outstanding exposure, regardless of the profits already made. When accrued profits were taken into account, as credits mature they become more and more profitable – all other things equal.

Capital is a source of finance and a risk buffer

Capital has two functions¹⁵²:

- It is a buffer against unidentified, unexpected losses.
- It is a source of finance and can be used to finance assets.

In case unforeseen losses arise for which no earlier provision has been made (this in contrast to expected losses which have been anticipated in the price setting of the products), the loss will be carried to the equity item on the Balance Sheet via the Profit & Loss account balance. Capital is also originated by retaining profits. If profits are negative, the available capital is reduced by the amount of profit – a negative retention. In normal words, unforeseen losses are directly deducted from capital/equity. This is easily illustrated by the case in which an asset is financed with equity. If we take the respective asset to be a loan, it is clear that, in case the loan will not be repaid (unforeseen loss), we will lose the equity involved. In case the loan would partly be financed with debt, still all loss would be carried by the equity. The debt-holder will have a claim on the equity-provider (the bank), not on the debtor of the bank. As stated above, the regulator includes the Profit & Loss account balance in its definition of capital. Then it is clear that if the balance is negative, the amount of loss is deducted from capital.

Whether capital could be used as a source of finance for risky assets is not completely clear. Some banks do, some don't. There can be two distinct ways to deal with capital. Bank A could finance its assets (loans) by debt purely and keep the equity that underpins these assets as risk buffer separate. Bank A would invest

¹⁵² Bos, J.J., 1999, p.105 - 112

its equity in risk free assets (such as government bonds) that can be easily sold in case necessary. Bank B would use e.g. 8% equity and 92% debt to finance a loan, exactly as the regulatory (BIS) rules stipulate. Bank B would miss the risk free return of the separate equity investment, but would also miss the interest payment over the extra 8% debt. Given that the bank itself would not be considered risk free, Bank B should be the better option. Nevertheless there are still banks that invest their equity in risk free assets.

Less than 100% equity (capital) finance produces financial risk.

Equity holders are exposed to two types of risk¹⁵³:

- 1) the **business** risk of the real assets held by the firm; and
- 2) the **financial** risk to the extent that the firm issues debt to finance its real investments. Financial risk comes only into existence when the company decides not to use 100% equity finance. In such a case (the usual case), the company has fixed obligations as to its future performance. The debt-holder wants to have fixed future cash flows (repayments and interests) irrespective of the future performance of the company. Given that the company's profits are uncertain, this fixed repayment schedule causes the financial risk.

Hence, it is not capital itself that produces financial risk. Capital serves as a buffer (first loss protection) against financial risk due to debt financing (so called leverage).

Shareholder capital is the only commitment to the company of the shareholder.

In a pure shareholder perspective, the shareholder would not have any other interaction with the company than as provider of equity. He would attend annual shareholder meetings to manage his investment optimally, with a focus on maximising return, either in value growth of his share (retaining all profits in the company) or in dividend growth (disbursing all profits completely as dividend). He is entitled to all excess income because he carries the ultimate risk, being the last one to be paid in case of financial problems. His income is most uncertain. In order to indeed carry the ultimate risk, the projects of the shareholder do need to be backed by equity in accordance to the risk incurred in the project. Imagine a company that is 100% financed by debt. The shareholder would not suffer from any losses because he did not provide any buffer against losses. If, as a regular shareholder, he would be entitled to any excess income, this would be a one-side bet. No bank would provide the debt for such a project, where the bank can lose and the shareholder can only win. If a shareholder who takes initiative doesn't want to put his money into a project, then why should a banker do? The personal stake reflects trust in the project.

¹⁵³ Brealey and Myers, 1996, p.213

Acharya, Hasan and Sauders¹⁵⁴ refer to agency conflicts that can hinder optimal monitoring of a portfolio of risks in order to endogenously enhance the value of the portfolio. If the bank's debt level is extremely high so that all benefits from monitoring accrue only to creditors, bankowners (equityholders) have little incentive to monitor. In general, the underinvestment in monitoring will be more severe, the greater its debt or leverage or in banking terms, the lower its capital ratio.

The equity in a company thus also serves to indicate the level of commitment of the owners of the company. It is assumed that the more they are financially linked to the performance of the company, the better they will manage and monitor the company.

The value of capital

Capital is directly represented as shares. Shares can be public (quoted on an exchange) or private. For public quoted shares, the idea is that the amount of outstanding shares times the quoted share price represents the value of the company. As said above, the value of capital (equity on the Balance Sheet) is both exogenous (cash provided by the shareholder when issuing shares), and endogenous, as accumulated internally generated wealth. The value of the endogenous capital is determined by the quality of assets, ie. their capacity to generate cash flows.

There are broadly speaking two approaches regarding the valuation of endogenous capital or profits within banks:

1. Accrual Accounting view, which focuses on realised profits and likely losses within the one year horizon. This is the official view that is the basis for taxes or regulations (concerning loan portfolios or the banking book)¹⁵⁵;
2. Market valuation, which is the view held by the market participants on the stock markets where the shares of the company are traded.

The largest difference compared to the accounting view is in the valuation of future profits, both in terms of different techniques, as in different horizons. In some cases, completely different results can emerge in the two approaches. Commonly known issues concern the hiding of market losses in investment books by transferring assets from MtM valued books towards accrual valued books.

¹⁵⁴ Acharya, Hasan and Sauders, sept 2002, p.2

¹⁵⁵ According to Bos (1999, p. 80) accrual accounting is more applicable for determination of profit and loss than for valuation purposes. However, accrual accounting also stipulates how to measure the value of assets (historic cost price). Next to that, likely losses may be deducted from the value by way of generating a specific provision, or even general provisions. So, in effect, accrual accounting stipulates historic cost price minus likely future losses.

Capital theory

According to Cools¹⁵⁶ “Prior to 1958 a distinct theory on capital structure did not exist. The dominant view within the finance community was that there exists some optimal capital structure¹⁵⁷, merely because most US firms had an average leverage ratio of maybe 35% with a standard deviation of, let’s say 10 percent points.”

According to Cools, after 1958 Modigliani and Miller had introduced the MM research programme, which states that the value of the firm is only determined by the riskiness and expected cash flows from operations. As Cools put it, the first encompassing theorem is the MM irrelevance theorem, arguing that capital structure does not affect the value of the firm.

After 1958, several theories (within the MM research programme) have been launched to explain the capital structure choices of companies, such as Markowitz’ portfolio theory, CAPM¹⁵⁸, Sharpe ratio, option pricing theory and Agency theory¹⁵⁹.

It is remarkable that it has taken so long until a scientific explanation of proper capitalisation is developed. For credit risk portfolios, it has even taken until the 1990s until a capitalisation theory was developed.

7.2.3.3 Credit ontology

In this section we will investigate the nature of the subject credit risk. EC is a buffer for credit risk the bank is running due to its credit portfolio. Credit risk is concerned with losses due to counterparty defaults on contractual obligations towards the bank. Credit risk is defined by the context of where this concept is used / applied. The credit risk we will look into is contained in portfolios of financial assets within a banking wholesale finance context. It is the corporate credit risk in banking portfolios we are after. The banking finance context will be described in the last section in this ontology paragraph.

¹⁵⁶ Cools, 1993, p. 52

¹⁵⁷ Cools refers to capital structure as the mix of equity and debt used to finance the company.

¹⁵⁸ for Capital Asset Pricing Model.

¹⁵⁹ See oa. Duffhues 1994, p. 65....

Senior to shareholders, but limited upside.

Credit risk is characterised by the senior position of lenders compared to equity-holders. In case of financial problems, lenders will receive any value available until full repayment before equity-holders. In case losses are incurred in the operations of the borrower, the equity-holders will lose value, not the lenders. If, however, losses are larger than available equity, then the borrower will default and also stop paying the lender. In the worst case scenario, the lender could lose 100% of the funds provided.

For this subordinate position in loss-scenarios however, equity-holders receive any upside or excess income after paying limited costs for debt finance. The lender only receives a limited and fixed margin of some percents for offering sources of funds.

It is clear that the positions of lenders and equity-holders (or owners of the firm) are not symmetrical. In the bad case, both lose the funds provided to the firm. In good cases, the lender will only receive a limited margin, but the equity-holder could earn limitless.

This might be especially important in cases where the healthiness of the company is impaired and the management has to decide whether to limit losses and gains, or to make that one more gamble between nothing or double. The bank would choose to limit losses, the equity-holder would take the gamble.

Money

An important entity within credit risk is “Money”. Traditional lending started when a party disbursed money (i.e. cash) to a counterparty under a contractual obligation of latter to repay within a specific horizon. It is the money aspect that creates the distinction between **financial claims** and other claims toward counterparties.

Counterparties can have all sorts of obligations towards the bank, such as moral obligations, obligations to provide information, to provide resources in the case of an employee-counterparty. Credit risk, however, is only concerned with financial claims to, or financial obligations of a counterparty.

Currently, also credit risk can be incurred even if no disbursement of money is made yet. In the case of derivatives, two parties can commit to a contract that can grow in value for one of the parties. E.g. if the bank owns an option, this option can have a value, while at the time of signing the contract the total value of the option was nil¹⁶⁰.

¹⁶⁰ This refers to the moment when the deal is agreed. The next thing to do for the bank is to pay a small premium for the right to exercise the option. But later, this premium might be fully uncorrelated to the total value of the claim, due to movement of the risk driver that is underlying the option. E.g. if interest rates move suddenly much more than expected, call

The point here is that value of credit risk is expressed in terms of money at stake, ie. money owed to the bank, instead of money disbursed. Because of timing and uncertainty differentials between various cashflows, ie. flows of money, the value of the money may differ from its monetary or nominal amount. This essentially links the value of uncertain money to interest rate, which is the rate at which future cash flows should be discounted to derive current value of future cash flows.

Value

Credit risk is concerned with financial claims, ie. claims concerning money. However, due to **risk of not being repaid**, the value of a claim can differ from the money involved. Technically, this translates into a difference between the notional amount of exposure (the amount at stake) and the value of that amount. If a well-known liar and cheater owns me money, the value of that claim is lower than the notional of it, due to the likelihood that I will not receive the notional in full. Furthermore, **time has a value** in cases money is concerned. A dollar now is worth more than a dollar in a year's time. This is caused by the fact that money can be used for a number of alternatives. This translates into the possibility that I invest my dollar today in order to have more than a dollar in a year's time. Consequently, a bank appreciates a dollar now more than a dollar in a year's time because in the meanwhile, the bank could lend the dollar to another customer and earn income on that.

Given that credit risk is concerned with the expectation of a sum of money within a limited horizon, time is an essential aspect of the obligation or claim. If the horizon is exceeded, the counterparty is in default. This is illustrated by the component of the definition of default, which says that a customer is in default when he is more than 90 days overdue on payment of principal or interest.

Furthermore, risk tends to decrease as time progresses. Certainty of events is largest in the present and decreases as events are farther into the future. And once we get to a particular point in time in the future when the event is due, the uncertainty around the event will have disappeared. For example, a 10 year bullet loan which will repay fully at the end of the contract is very risky today, but not after 10 years, when we know whether the loan has defaulted or repaid. Economic capital for risk in a specified time bucket will decrease as time progresses.

Concluding, value is determined by the risk that the counterparty will not have the required cash to repay and by the timing of repayment.

interest rate options will generate a value that is fully determined by the move of the interest and not by the premium paid.

7.2.3.4 Risk ontology

7.2.3.4.1 General Risk concepts

Any risk concept comprises of two components:

- III. Risk identification; as risk concerns the negative impact of future, invisible and rare events, a theoretic concept is required that explains the existence of a probable future event and describes the factors that contribute to the increase of the probability or severity of the event. In other words, cognitive causal relationships must be determined which explain specific developments over time (e.g. credit quality deterioration of your debtors). This component is driven by knowledge about the event itself, about the indicator that the event is happening, the factors that drive the probability of the event, or factors that mitigate the negative effects of the event. Only if such knowledge exists, risk exists. Risk in this sense concerns anticipated hazards. If there is no anticipation, there is no risk. In that sense, knowledge of causal relationships is an ontological basis for risk.
- IV. Normative statement; risk refers to hazards or negative effects of events. For example, the risk of cholesterol concerns the idea that cholesterol causes malfunctions of the vascular system, which is bad. But the vascular system is bound to die anyway, at the end of somebody's life. Can old persons eat more cholesterol? A normative statement is required in order to indicate how acceptable a certain risk is. Risks that are very acceptable are no risks. The very small probability that the sky will come tumbling down, is not considered a risk anymore. This is not because the actual risk of it has diminished, but just because people see things differently now, just because people have shifted their norms and values, their beliefs and superstitions. In that sense, norms and values, beliefs and superstitions are also ontological bases for risk.

7.2.3.4.2 Credit risk

Invisible

Credit risk is concerned with events that did not yet happen. It is concerned with possible future losses, ie. with losses that still have to happen. In that sense, credit risk can not directly be observed. Although probably all the factors which will cause a default are already present, it is currently not clear which of all possible factors will separate out and become the decisive factor that kills the company. Banks will never start to lend to a party which they don't trust, ie. of which they think that their loan will not be repaid orderly. Even for the skilled observer, events that happen in the future are not yet visible.

Rare

Credit events, which can result in losses due to the conduct of the counterparty who doesn't fulfil his obligations, are rare events. Average write off percentages of most banks are fractions of the size of the complete portfolio; by far most loans pay back *on par*.

In order to quantify the rarity, we turn to the case study. Note that the case study, ie. the Rabobank is known for its low losses, which might provide a somewhat biased picture of the banking industry. For RI in 2002 the percentage of loans in default amounted to 0.98% of the outstanding loans. Most of these defaults (up to 80%) will not result in any losses. That means that less than 20 basis points (0.2%) of outstanding loans will result in loss scenarios.

Laymen could wonder: What are we worrying about? Only 20 out of 10,000 cases go wrong. However, in a loss case, not only income is affected, but possession as well. In some cases, if the bank does not receive repayment of a notional loan, it might lose a hundred times the projected income on that loan. (also see below).

Furthermore, the rarity of credit losses also restricts growth of knowledge seriously. How much can you learn from events that only happen 20 out of 10,000 times? Credit cycles are said to last between 8 or 12 years. Some economic cycles (e.g. Kondratieff) last decennia. Within credit risk management careers, only 15 years or more of experience is considered a senior level.

Next to that, credit events are a-selective. The fact that no defaults occurred in the internet sector prior to 2000 does not mean that no defaults will occur after 2000. Risk builds up cautiously until some threshold is reached and one trigger triggers the other triggers until the counterparty is bankrupt. But currently it is unclear what will drive the new defaults and who will be affected. Back-testing as a method to improve knowledge is difficult if every credit loss is unique and rare.

High impact

Credit risk is characterised by low upside, high downside risk. A bank can hardly make more return than expected¹⁶¹, has a large expectancy of being repaid orderly, and has a small probability to lose a very large amount. In order to make an income on loans, banks have to invest 50-100 times that income. For example, 2001 estimations for RI indicate 45,000 million Euro corporate credit assets (value of the loans to corporates on the Balance Sheet), which is the high amount at risk. RI made as income 350 million, which is not completely caused by mentioned assets. So overstating the income on these assets somewhat, we find that less than 1% is earned on these assets on average, while in principle the full amount of 45,000 million is at risk. If more than 80 basis points (0.8%) of all loans (ie. of all notionals) on the BS would be lost, the bank would not make any profit. The fact that only so few loans, if lost, could cause the complete year profit to vanish shows the high impact of credit risk.

Appearance

All counterparties look good when they appear before the bank and apply for a loan. Men wear suits, companies clean their balance sheets when visiting the bank. But not all suits are credible, some of them will not repay.

After providing the funds, the bank usually relies fully on the information as reported by the client. As elaborated above, this kind of virtual travelling is wide open to deception and fraud.

Furthermore, credit information (such as current creditworthiness status of counterparties of loan portfolios) usually is kept in the heads of credit officials involved and only minimally reflected in paper files, and only systematically recorded for reporting purposes. This information is currently completely backward looking. The two main external reporting lines are accounting based P&L and BS reporting for shareholder or tax purposes, and the bank regulation reporting to the central banks. Accounting figures only appear half a year after the close of the respective year. Such vintage information is major input for credit risk assessment, ie. opinions on the financial health of the counterparty for the relevant future horizon.

As the financial effect is only a portion of the total activity in a credit event, the largest part remains unregistered and inaccessible for researchers. And even if the whole process of credit deterioration of the counterparty until bankruptcy and final write off by the bank would be described in work out files, this information will most probably not be sufficiently rich to serve the new information requirements of

¹⁶¹ Think of an increase of credit quality in case of fixed rate bonds, or the possibility to do cross selling in a growing finance relationship.

upcoming advanced credit models. Currently, registration serves mostly to give accountability for past performance, not for future predictions.

7.2.3.4.3 Banking Finance context

From an economic point of view, a bank is a Balance Sheet (BS) and makes its business by using its BS. The bank stores assets left, to be balanced by funding through liabilities on the right. Assets comprise of many small loans as a portfolio of loans. These loans appear on the BS of the borrower as debt-liability. These loans are funded by a small part of equity (the bank's own money) and a larger part of debt (money of other institutions and/or from customers). The ratio between the two is the leverage, the multiple of debt funding compared to equity funding. In an EC framework the amount of risk caused by the loan portfolio should be in balance with the available equity.

A simplified BS is shown in the picture below:

The bank is a BS

Assets	Liabilities
Building	Equity
Loans	Debt
Cash	

The bank makes its money for one reason because it can borrow money cheaper than a counterparty to the loan. There are several reasons for this price advantage, ao. size, reliability, warehousing function, reputation, professional transformation function skills, etc.

Next to this efficiency premium, the bank is entitled to the loan margin because it takes the risk that the loan will not be paid back, or the counterparty in some other way will not honour its contractual obligations, when it owes the bank. This is credit or counterparty risk.

On the liability side, the bank can fund itself with equity or debt. Once obtained, funding is not a risk for the bank, but a credit risk to the lenders to the bank.

However, if no one were prepared to renew maturing funding (a liquidity crisis), the bank would have problems (it would default itself). Rating agencies or analysts provide opinions regarding the strength of the bank taking into account the adequate capitalisation according to their EC models. Equity can be raised by

issuing new shares. Debt can be raised in the interbank market (borrowing from other banks) or by attracting deposits or savings money from customers.

CRPM models focus on the credit asset side of the BS and try to model the risk and return of credit asset portfolios, consisting of individual transaction with individual customers, who rely on the bank for wholesale finance, consisting of working capital, capital expenditure, capitalisation, merger & acquisition and hedging products.

Because of this function of storing savings, and because of the role of banks in the financial system, the Regulator is concerned with the stability of the financial system and hence regulates the conduct of banks. In first instance this is achieved by requiring a minimum level of equity relative to loans¹⁶² of 8%. To ensure the soundness of banks this minimum capital level is subsequently supported by supervisory review of bank's systems and procedures.

The ontological field of CRPM theory and applications is centred around Banks, which have balance sheets with credit assets from customers, liabilities for funding and equity as a buffer against risks, next to a building with a lot of marble to host bank clients and employees. For funding and hedging purposes, the Bank relies on the Capital Markets. Tax or accounting principles govern banks and dictate how to calculate value, next to Regulators who supervise the health of individual banks and the financial system and dictate how to calculate the required amount of capital (ie. regulatory capital charge) for the specific portfolio. All of these parties are influenced by the Macro Environment, which causes correlated movements. The Macro-Environment comprises of the specific and well known economy in which the bank and its counterparties operate, but also of the larger environment (global effects) which influences the specific economy.

7.2.3.5 Ontological classification summary

EC is a quantification of credit risk in the sense that first is a buffer against latter. It only expresses risks that can be quantified. Credit risk is the risk involved by lending or, more broadly stated, owning a fixed financial claim that is senior to the shareholders of the customers of the bank. It is likely, that in case of looming crisis, these two perspectives (owner vs. lender) are conflicting.

Credit risk is concerned with risk in claims to future fixed cash flows, hence with time value of money and with riskiness, ie. possible disturbances that affect the

¹⁶² Actually it is relative to risk weighted assets, which comprises more classes than loans, and even in case of loans could attribute a risk weight of zero to a loan to an OECD government.

expected cash flow negatively. The subject risk is invisible, unexpected, often disguised, a rare event with possible high impact.

EC is important for banks to manage their balance sheets, their reason for existence. They are important players on the financial markets and important for the real economy, providing leverage to corporates and investment opportunities for savers. Banks play a pivotal role in the economy. Regulators, such as DNB, therefore are closely monitoring actions of the bank and actively issuing prescriptive policies, to hold banks accountable to their role.

After this ontological analysis we can now turn to the epistemology and methodology actually used in the EC assessments. One would expect that these would be in line (“commensurate”) with the ontological findings.

7.2.4 Epistemology / Methodology

7.2.4.1 Introduction

Epistemology is the knowledge about knowledge. It should specify how we get to know our subject. How is knowledge possible of something that is outside us. The description of philosophy in science in chapter four also shows how various epistemologies were in vogue in different times.

For example, in modern times, positivist or empirical approaches were the standard. One could know the object by putting it to severe physical tests of interesting hypotheses. If a statement about empirical reality withstands many severe tests, it is likely that it is close to the truth, although never certain. That depends on the next tests. This epistemological approach did not seem feasible in the social studies.

A methodology is a specific method to get to know. It is a practical elaboration and prescription how to get to know, based on epistemological principles. A methodology could specify another methodology in order to get full knowledge. Or stated differently, every methodology has its specific scope and results.

Methodologies include for example mathematics, econometrics and economy which could be combined with credit risk knowledge to construct Credit Risk Portfolio models.

The EC movement and related developments create a shift in the main epistemological principles in use within credit risk management of the bank. In the old paradigm, credit risk knowledge was a kind of skill, only acquired after many years in the business. It involved a high degree of judgement and in that respect was quite subjective. Furthermore, credit risk management was decentralised to a great extent, which resulted in non-uniform application of concepts and measures.

The shift caused by the broader EC movement is characterised by two new epistemological principles:

- I. Financial markets as a price discovery mechanism for credit risks. Similar to other sections of the financial markets, objective price discovery of specific assets is driven by the demand and supply of these assets in perfect markets. Many equally informed participants interact as buyers and sellers and in their joint activity, an objective price for any risk can be established. As this is also the price for which you could actually buy or sell the good, this price is considered superior to any other valuation technique.
- II. Empiricism and mathematical logic have been introduced by the statisticians. A real quest for data has emerged. All defaulted credit

assets must be utterly registered in the hope to gather sufficient information for back-testing and validation of the credit portfolio models¹⁶³. Senior credit risk managers are confronted with results from regression analysis and multivariate distributed models

The EC movement, specifically where it concerns wholesale credit risk management, relies on various epistemological or methodological disciplines. Again, we will use the Rabobank case to analyse the various epistemological or methodological principles being applied in the EC movement. Undoubtedly, using the Rabobank case will show some features typical for the Rabobank, but will also show a large overlap with approaches used by other banks. However, there is no empirical support for the overlap because in this research other banks have not been consulted.

Within the Rabobank projects we can observe the following set of epistemological principles being used:

1. Statistics or empiricism; based on principles of a loss distribution, on probabilities and consequences in terms of loss amounts, on volatilities, correlations, co-variances and confidence levels, CRPM is fundamentally stated in statistical terms. The heavy weight of statistics also translates in a huge quest for data: classified, categorised registration of credit risk. True means backed by objective data.
2. Econometrics; in order to link the statistical terms to economically interesting questions, econometric models have been built, purchased, and implemented, such as Moodys Riscalc, Credit Metrics or KMV, complemented with internally developed models. These models are true by assumption and logic. They help the advanced credit manager in allocating his risk capital.
3. Financial markets; dependent on price curves, market quotes, liquidity, external ratings, standardisation of finance products and master agreements, structuring skills, calculation and valuation techniques, and last but not least, an actual possibility to trade credit risk, CRPM can be considered as a side-product or off-spring of financial markets. Financial markets are also important for their price discovery function. The market is an epistemological tool, with similarities of common sense knowledge (see below). True means traded.
4. Expert opinion; although the above approaches all rely on the availability of data or standardised information about the risks, this is usually not available in the frequencies needed for proper statistical robustness. Most of the current

¹⁶³ BIS II requires a bank to have available seven years of default data regarding all credit assets in its portfolio. Some banks only started after 2001 to implement BIS II and organise compliance with it. These banks have to retro-actively collect default data, ie. go back in history, in order to be compliant at the planned implementation date of Jan. 2008.

projects (such as rating or LGD projects) running within Rabobank start with an expert opinion based framework, to be back-tested, feed backed upon by application in practice and improved in due time, when more data and experience becomes available. True means common sense.

5. Tacit Knowledge; Polanyi learns us that the particular knowledge of the real world often remains tacit and that knowledge can have the structure of a skill, requiring lots of personal ambitions, beliefs and experiences. He shows an ontological layering of reality in particulars and comprehensive entities and introduces the principle of marginal control. The body needs to be extended (“indwelling”) to include the particulars in order to know the distal. Translating this to credit risk, it means that the particulars we are trying to measure regarding the credit risk in our portfolio can never only by themselves bring into existence the comprehension of the actual credit risk which is an apriori-unknown blend of all the particulars. Only when the particulars form part of the body, and by repetitive interaction with the subject of knowledge which allows the construction of the skill, it is possible to master credit risk. Credit Committee members appear to master this type of skill and have the required knowledge of counterparties. Truth is the result of a skill.

7.2.4.2 Statistics / empiricism

Statistics provide interesting and useful algorithms to provide information about groups of entities which are both similar enough to be compared (similar constitutions), and are different enough to make statistical distinctions (different magnitudes). Statistics apply well to similar qualities with different quantities, eg. the length of a soldier.

In order to create some perspectives on the theory of statistics itself, we can distinct various approaches to one of the cornerstone concepts of statistics; the concept of probability. Kyburg and Smokler¹⁶⁴ show that there are distinct sorts of meaning of probability. One sense of the word is chance, or long run frequency, which is empirical, objective and independent of what one knows. It is the real probability. Another sense is actual, refined or justified degree of belief. This is the known probability, or the one that is used in applications of statistics to the real world, it is the one that fuels our models.

Mathematically, probability has a definite meaning; it is simply a non-negative, additive set function, whose maximum value is unity. However, this undefined term in a formal system, this abstract concept doesn't help us in understanding how the notion of probability can be used in e.g. insurance or risk management in banks. This abstract concept must be connected to the real world to become

¹⁶⁴ Kyburg and Smokler, 1964, p. 3-22

relevant in action. There are essentially three types of connection that have been proposed:

1. the **empirical**: the empirical or frequentist conception of probability identifies probability with the limit of a relative frequency (there are so many As in B). According to the authors¹⁶⁵: “The important point is that a probability statement is taken as making an assertion about the world. It may be right or wrong –and it is generally held that we never really know with certainty which it is – but it is a statement, like a statement about lengths or weights, which is either true or false, and for which the evidence is chiefly observational. In order to find out whether or not a probability statement is true, we must make an empirical investigation, and usually this will be a non-terminating investigation of the sort whose results are said (in a non-empirical sense) to be only “probable”.”
2. the **logical**; the logical approach denies that probabilities are empirical statements at all. In extreme, this view holds that probabilities represent logical relations between a proposition and a body of knowledge, between one statement and another statement (or set of statements) representing evidence. Probability statements are as formal as arithmetic statements. Within a given statement and body of evidence, there is only one probability that correctly represents the situation.
3. the **subjective**; the subjective view holds that probability represents a relation between statements and evidence, but not necessarily a logical one. The value of a probability represents a degree of belief of a person, and, hence is never uniquely defined, according to Kyburg and Smokler. However, they also state¹⁶⁶ that “Of course, in the case in which the evidence logically entails the statement in question or entails its denial, the criteria of ordinary deductive logic are applicable.” That must mean that subjective probabilities in their view should only be applied in those cases where it is impossible to do proper counting (to get the right frequencies via empirical investigation) or to apply logical reasoning and provide definite meanings of probabilities.

This subjective theory is a logical theory in the sense that only certain combinations of belief in related propositions are admissible. For example, it is not admissible to wish to lose objects with positive utility under all possible conditions. The person’s body of belief should be coherent and consistent. Respectively this means that the distribution of degrees of belief should obey the conventional rules of the calculus of probabilities (e.g. there should be no bet that always loses), and if the evidence entails

¹⁶⁵ Kyburg and Smokler, p. 5

¹⁶⁶ Kyburg and Smokler, p. 17

the statement the person should have the highest degree of belief in that statement.

According to Oldenburg¹⁶⁷ “Most of the important theoretical results in financial economics which involve preferences are based on expected utility theory, which presupposes that individuals make rational choices according to a time separated utility function.”

This means that the theory assumes specific behaviour, how people *should* act. The theory is predominantly of a normative character. Behavioural finance is a new area of research which tries to provide theories that more accurately describe how people *do* act.

Daniel Kahneman and Amos Tversky in 1979-1981 have proven in empirical experiments that human behaviour may be subject to structural deviations of the rational model. According to Oldenburg¹⁶⁸: “Among the most important fallacies which have been reported are that people treat losses and gains differently and that they are highly sensitive to the format in which a problem is presented to them.” People tend to evaluate gains and losses with respect to some reference point, rather than evaluate based on final assets. It seems that people react more to changes in wealth than to expectations of final wealth. A loss is treated differently when previously a gain was made compared to a previous loss. A certain outcome may imply abject poverty for one person or great riches for another, depending on current assets. Also, apparently, individuals are limited in their ability to comprehend and evaluate extreme probabilities, which results in either ignoring or overweighting of highly unlikely events. Next to that, people tend to be loss averse, instead of purely risk averse. A loss (negative change of wealth) represents more value/utility than a profit (positive change in wealth). Finally, people are sensitive to the evaluation frequency in their decisions. That is, an investor might be more concerned with the period to the next moment of evaluation, than with his real investment horizon. For example, pension fund investors are evaluated quarterly and have to show good results per quarter, while their real horizon may be more than 30 years.

These empirical findings conflict with the basic assumptions of expected utility theory, such as:

- Cancellation: this principle states that any state of the world that yields the same outcome regardless of the actual choice that will be made, may be cancelled or eliminated; the choice of states depends only on those states where these prospects yield different outcomes.

¹⁶⁷ Oldenkamp, 1999, p. 33

¹⁶⁸ Oldenkamp, p. 34

- Transitivity: this assumption is needed to represent preferences on an ordinal scale. If A is better than B, and B is better than C, then also A must be better than C.
- Dominance: this assumption states that if a choice is better in at least one state of the world and at least as good in all other states, then that choice should be preferred over all others.
- Invariance: this assumption states that different descriptions of the same set of possible prospects yields the same choice.

Actual behaviour of people shows a deviation from each of these assumptions required for conventional statistical models. The assumptions cause a bias between model results and actual behaviour.

In mainstream statistics, in order to provide interesting, reliable and accurate results, statisticians require data, samples, population demarcations, etc. Statistical knowledge, therefore, is dependent knowledge, conditional knowledge. Statistical conclusions depend on the availability (in terms of quantity, quality and relevance) of data.

Nozick¹⁶⁹ elaborates on this also: “The probability of a statement or of an event [eg. Default event] provides an example of something that is relative. The probability of a statement is relative to evidence. That probability will vary with different evidence, and that probability is not detachable from the evidence as something that holds as a freestanding fact. And the probability of an event having a certain property is relative to a reference class. Different classes into which that event falls will show differing percentages of events having the property in question. To speak of the probability (period) of a statement or of an event, we have to take as given or to hold constant the evidence or the reference class. Indeed, this is not enough. Rather, we must speak explicitly of the probability of a statement relative to given evidence or the probability of an event relative to its being a certain type.”

With this in mind, we should consider the many different individuals involved in the credit process, the many different registration methods, the division of work between credit analysts, who “know” how the counterparty is doing, and credit control staff who keep the records and files tidy and up to date. Latter officials are usually the ones who have to provide the basic data for the statistical modelling to a central unit. This central unit consists of econometricians and mathematicians. They transform the data into intelligible graphs and reports for senior management who takes this information into account in making strategic and tactical decisions.

¹⁶⁹ Nozick, p.17

For the final users of the statistical information, all Nozick's conditions will be out of horizon, sublimated in the formal end report.

Cools¹⁷⁰ explains about the rhetoric of economics when he states that facts do not speak for themselves. "Statistics, for example, appear as hard numbers but are artefacts contingent upon theory, concept formation, collection technique, and statistical processing techniques. That only statistically significant results get published has long been a scandal among statistical purists: they fear, for example, with some reason that at the five percent level of significance something like five percent of the computer runs will be successful. Moreover, statistical significance seems to give a standard measurement by which to judge whether a hypothesis is true or false, that is independent of any tiresome consideration of how true a hypothesis must be to be economically true enough... The standard used is the irrelevant one of statistical significance... There is no 'absolute sense' in which a description is good or bad. The sense must be comparative to a standard, and the standard must be argued economically. Significance in statistics, however useful as an input into economic significance, is not the same thing as economic significance."¹⁷¹

An example within CRPM theory of the above criticism of Cools involves the use of normal distributions to model credit portfolio losses. Normal distributions work quite well around the mean, but not in the far tail of the distribution. However, capital is held for losses in the far tail of the distribution. It thus seems that the normal distribution, however easy to calculate with, counteracts the purpose of the calculations.¹⁷²

¹⁷⁰ Cools, p. 28

¹⁷¹ Mc Closkey (1985, p202) notes: "The appeal is part of the rhetoric of statistics. The British inventors of statistics, as recipients of classical educations, were skillful in naming their ideas. As William Kruskal, a statistician of note, has argued: "Suppose that Sir R.A. Fischer – a master of public relations- had not taken over from ordinary English such evocative words as 'significant', 'efficient', and 'consistent' and made them into precisely defined terms of statistical theory. He might, after all, have used utterly dull terms for those properties of estimators, calling them characteristics A, B and C ... Would this work have had the same smashing influence that it did? I think not, or at least not as rapidly."

¹⁷² From an RI internal memo dd. Dec 10 2002: "For the modelling of correlations, OWC (the bank's consultant for CRPM) assumes a multivariate normal distribution for the ease of calculation. The problem with this approach is that it rests on two assumptions which have empirically proven wrong:

1. The normal distribution underestimates the probability of default of each borrower (the tails are too thin).
2. The multivariate normal distribution assumes independence of defaults for each borrower (because the correlation between extreme shocks to asset values

Although convenient for statisticians, the application of normal distributions should disturb their message, but this is hidden by the rhetoric power of the statistical language. In the EC framework we are currently implementing, the public assumption is that we reserve enough capital for a 1 in 10.000 years event. On first instance, this sounds very safe. But it could mean that we are hit by extreme losses three years in a row, which could kill the bank. The only thing the bank can subsequently retrieve from the statisticians is the remark that these three years would only appear once every zillion year according to their normality assumptions, but unluckily enough that happened right now.

The fourth remark regarding statistics stems from an analogy with Quantum mechanics. Nozick¹⁷³ shows that the discovery of Quantum Mechanics (QM) makes it very plausible that truth is relative:

“Quantum mechanics has led us to maintain that truth is relative to a time. And the considerations that led to this conclusion, when consistently pursued, lead to the further view that truth is relative to a time and place. Truth is relative to spatiotemporal position. Spatiotemporal position is a surprising and unexpected factor in the context of truth, and all spatiotemporal positions are equally good. So the present view counts as *relativism about truth*. It might be called the *Copenhagen Interpretation of truth*.¹⁷⁴”

QM brings forward this relativism because of several effects discovered in QM, such as the:

- Influence of measurement; because we are measuring, we are playing a role in the phenomena to be measured. On the level of particles, this may lead to a change in the behaviour of the particles.
- Disappearance of evidence; ao. due to the role of measurement in a process, but also due to peculiarities of processes, some states of the process might be changed after first observations in a irreversible way, destroying the evidence.

Both effects may sound relevant only on the level of the smallest particles where QM is valid. However, as higher level phenomena consist of particles, laws of QM may well apply, at least to all physical facts according to Nozick¹⁷⁵.

disappears in case of the Normal dependency). Especially in cases of collective debtor events, affecting more than one borrower, borrowers behave collectively, ie. change in credit quality collectively or correlated, instead of independent.”

¹⁷³ Nozick, p. 43

¹⁷⁴ After the Copenhagen based physicist Niels Bohr who holds a similar interpretation of QM.

¹⁷⁵ Nozick, p. 35

Next to that, also sociologists / anthropologists have accepted the role of the participating observer already a long time ago. In terms of the PoT, the traveller himself is part of the environment, has both an active and passive presence. Furthermore, it is clear that the bank does play a role itself in generating credit losses, even if the bank does not select any new credits, ie. considering the existing portfolio. In general, it is believed within the bank that early involvement of the bank in case of credit quality deterioration will help the bank in reducing its losses. Finally, a large problem of all banks implementing CRPM models is the accurate calibration of parameters. Although all evidence was available once to the bank, a lot of information required for calibration was not properly recorded, leading to all sorts of shortcuts, workarounds and other less accurate solutions for the calibration problems. Similar to the levels of particles in QM studies, also in credit risk management evidence tends to get lost, tends to disappear over time, ao. due to registration procedures, such as clearing files of old data.

For any specific asset, one can assume that at least one employee once knew exactly what happened, ie. that full information has been available to the bank. For example, the account manager once knew what he has discussed with the client, the credit risk analyst once knew the right financial figures of the client, as well as its estimated recovery value and the eventual final amount lost on the position. However, this information is lost later because it was not properly recorded according to a central standard and maintained. Evidence, once available to the bank, has disappeared.

Use of statistics for specific risk

It can be questioned whether concepts like average and standard deviation are applicable to specific risk. Taking one extreme of portfolio composition, it becomes clear that the statistical concepts have nothing to offer here.

Eg. when I have a portfolio with only a black customer and a white customer, both can have good track records, while both deviate significant from the average attribute of good customers, ie. grey. The average of the portfolio – grey – does not exist, while both existing customers will have a very large standard deviation, ie. are looked upon as very risky, while they have been showing good track records up till now.

Furthermore, as specific risk entails the risk which is specific to a particular counterparty (also called idiosyncratic risk) it can be questioned whether this can be compared to the idiosyncratic risk of other counterparties to derive statistical measures of risk. For example, an internal investigation into the predictability of the rating of counterparties¹⁷⁶ for defaults revealed that by far most defaults were

¹⁷⁶ The Financial Risk Score, FRS, as used formerly in RI and DLL to be precise. The FRS provides a rating for the creditworthiness of the (corporate) counterparty.

caused by fraud. This was never factored in the rating and, hence, is not measured. Furthermore, if fraud is so prevalent, one could question the financial numbers that were used to make the required estimations of solvency, liquidity and profitability, which are required to derive a rating.

As stated above, statistics are useful for groups of entities which are both similar enough to be compared (similar constitutions), and are different enough to make statistical distinctions (different magnitudes). To apply them to debtors assumes that debtors are all similar enough. This is not a rational assumption, because we don't have the data to back that up, and traditionally we know that every debtor was treated unique (the tailored suit approach).

Given the enormous variance in conditions and characteristics of credit risk positions in wholesale banking finance (translating in many differences in magnitudes), the amount of required but missing data and the importance of the actual behaviour of people in business context applications of statistical theory (such as EC), the subjective approach to probabilities seems most adequate. If we can not simply count the required evidence or if we can not definitely determine logical relationships, then we have to resort to degrees of belief and accept the fact that people do not behave as they should, do not obey the rational model, but show loss aversion and misconceptions of probability.

Given the ontological features of wholesale finance credit risk, as discussed in § 8.2.3, especially the lack of similarity and large differences in magnitudes, I have serious doubts about the quality of the connection of statistics to the real world, especially when the empirical connection is prescribed, as is in mainstream thinking today. It is evident that the Law of Large Numbers does not apply in wholesale finance. Improvements with respect to the quality of this connection ("the calibrations") will increase the relevance for actions of these models considerably.

7.2.4.3 Econometrics

Econometrics can be defined as the statistical application of economy.

Econometrists built statistical models for economic issues. In fact, econometrics is focused on the connection of mathematics with the real world. In order to analyse econometrics, we will focus on the Rabobank Group econometric model for EC and benefit from an internal analysis.

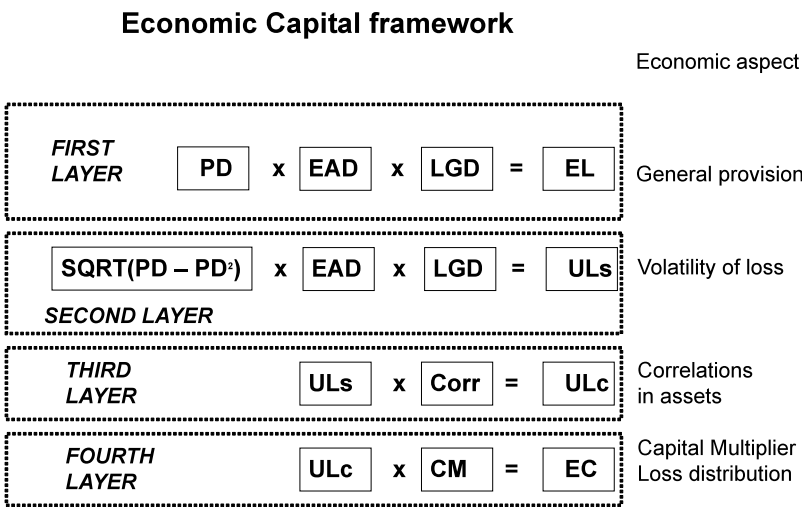
During 2002, the contours of the Rabobank Group policies and standards have become clear in the sense that a Group Credit Risk Methodological document has been issued, to which Business Units (BUs) must adhere while building their specific frameworks. This Group model is also used to calculate Economic Capital and Raroc on a BU level.

Modelling & Research (M&R, a risk management department within Rabo) has analysed the credit risk framework for Rabobank Group as proposed by Oliver Wyman & Co (the consultant) in its paper of February 2001. M&R consists of employees experienced in econometric modelling of financial risks, especially market risks, and employees experienced in credit risk portfolio management from the former portfolio management desk within the former International Credit Department. This analysis will provide a birds-eye overview of the most important comments on the current Credit Risk Model for Rabobank Group

Focus

For this analysis, the EC framework was divided into four layers, which represent different moments of the credit loss distribution.

See the picture below for a definition of the layers:



The analysis is focused on three aspects of the implementation of the EC framework:

1. The first layer of risk factors in the model. The first layer consists of elementary credit risk measurement concepts, such as ratings and probabilities of default, estimations of future exposure amounts (EAD), and estimations of the potential losses in case of default (LGD). The product of these three concepts is called expected loss, and indicates the

most likely loss of a portfolio of credit exposures. The first layer already receives a lot of attention in various rating improvement projects and several EAD/LGD modelling projects. Flaws in the current model include the restriction to a one year horizon and corresponding negligence of long term risk profiles and time value. Furthermore, the current modelling of derivatives exposure raises some critical comments in terms of unexpected exposure and correlations between risk components. Latter has become more important because recently it has been determined that also the counterparty risk in the trading books will be measured by an internal rating based approach and probably also the credit risk in the Credit trading books.

2. The second, third and fourth layer of risk factors in the model. These layers consist of concepts of volatility of losses, correlations between exposures and capital multipliers, of which the product is the economic capital required for the portfolio. Actually all components of the second layer do not measure what they should measure. Either they are currently modelled as benchmarks, provided by the consultant, or they are modelled in a very limited way.
3. The third aspect concerns the embedding of the EC framework in the organisation, ie. the implementation of EC in day to day credit risk management. Comments concern back-testing of parameters, definition of credit risk appetite (portfolio limit setting) and allocation of limits.

Risk management consists of risk control, risk allocation and risk evaluation. Items 1 and 2 above refer to risk control, which is the measurement and monitoring of risk. Item 3 refers to risk allocation (the allocation of risk limits) and risk evaluation (the assessment of the risk return trade off). See appendix for a full analysis of the econometric model.

Conclusion: it is clear that the connection to the real world created in Rabobank's framework is far from ideal. Many important parameters in the model are not sensitive to the risk components they are supposed to measure. This does not deliver a risk sensitive measure of the credit risk of the portfolio, especially where it concerns the portfolio aspects.

However, first feedback from implementations of the current version of the framework indicate that already this version of the portfolio model is a big step forward and certainly helps in structuring and improvement of credit risk measurement, registration and reporting. The implemented model is a relative improvement but not absolutely reliable, and does not deliver what it promises. However, further versions will be improved by the steep learning curve that the bank is undergoing.

7.2.4.4 Financial Markets

As mentioned above, financial markets create a lot of credit risk, but also offer more and more opportunities to sell or buy specific credit risk or parts of it. Credit derivatives, Total return swaps, securitisations all provide the opportunity to actively manage credit risk positions. Credit risk is thus turned into a tradable commodity. It is even possible to create synthetic credit risk positions, as simply as just agreeing to a derivatives contract with a counterparty.

In summary financial markets provides an epistemological/methodological source for the EC movement concerning the following issues:

- 1 Theories and techniques used by financial market participants, especially in the field of risk-return assessments of both singular positions as well as for portfolios of risks, must be applied in order to communicate with the financial markets. Given the drive towards commoditisation and securitisation of banking book credit assets, traditional loan portfolio managers have to start learning to speak the new language of capital structure theory, discounted cash flow, arbitrage pricing, CAPM, etc.
- 2 Price discovery of the market by the joint interaction between buyers and sellers of assets. By the laws of the perfect market, the right price for a risky asset will be established as the effect of market activity, ie. buying and selling. This price is right because one could actually buy or sell the asset for that price. If the price would be too low, everyone wants to buy it and automatically the price will rise. This invisible hand tells us what the right price for a specific loan is, as long as it is traded. But by establishing reference prices, the market prices have a wider impact than purely for those assets that are actually traded. This price discovery function basically compares assets with available alternatives, not with the costs for creating the asset.

Although the market price is considered superior by many experts, this solution to the valuation problem is not always possible. In order to be tradable, the asset must have a significant size, to make up for all the costs involved in issuing an asset on the financial markets, such as prospectus, rating, administration costs, etc. The required scale of the asset limits the application of market prices to large assets, typically not the midcap companies that are served by banks. This is logical, because larger companies don't need banks; they can get finance on the financial markets.

Furthermore, it should be noted that the price on the financial markets is assumed unpredictable. Ie. there is no theory which is able to predict the price of an asset accurately when the market is perfect, where all information is already incorporated in the price.

7.2.4.5 Expert Opinion

7.2.4.5.1 *Expert opinion as last resort*

Banks are economic entities and have organised the registration of credit risks accordingly. Referring to the enormous costs of IT development and maintenance, this means that only that is registered which is required. Requirements stem either from the regulator, the tax inspector or investors in the bank. Subsequently, registration is limited to regulatory, fiscal or commercial reporting requirements. Other information or knowledge is kept in the joint heads of the officials of the bank: credit analyst teams, members of credit committees, members of the board, etc. Information or knowledge that is not required for formal reporting can be considered stored in the culture of the company, if stored at all.

Due to the early phase of development and implementation of CRPM frameworks in banks, and given the illiquid nature (in other words non-public nature) of credit risk portfolios of banks, banks have only started to organise for the new requirements for additional credit risk data, such as statistical historical data regarding number, amount, type and other loss characteristics of defaulted loans¹⁷⁷. Consequently, data to validate, back test or even run CRPM frameworks is scarce, or even non-existent. In these cases, the knowledge stored in the culture of the company can be a last resort. Expertise of the bank, ie. the application of expert opinion, therefore is an important source of knowledge regarding credit risk.

For example, the EAD – LGD modelling project within Rabobank International in 2001-2003, started with a purely statistical approach. The idea was to use data and regression analysis to find the major differentiating risk drivers and classifications, as well as the exact level of the corresponding parameters. After the evaluation of the first attempt to obtain 5 years of credit loss data, it was concluded that information provided by the offices regarding all default cases in 5 years was in a bad shape and was absolutely not adequate in quantitative and qualitative respects to allow a statistical approach. Rabobank International has about 1200 clients in more than twenty countries, offers more than 10 products and accepts more than twenty risk mitigation types in various levels of coverage. The final loss in case of a defaulted loan is very dependent on the jurisdiction, for example in terms of creditor protection and bankruptcy laws. Parameters and maybe even risk drivers or categories are expected to vary per country. They also vary per risk mitigation type, such as collateral, guarantees, credit insurance, credit derivatives, securitisations, and within each type there are several classes, such as fixed assets,

¹⁷⁷ In this respect we can mention the initiative of the RMA (Risk Management Association) which has in 2001 started a shared database for European loss data with many participating banks.

receivables, inventory, intangibles which can serve as collateral, dependent on their value.

If Rabobank wants to have a credit model that can reflect current credit assessment and structuring practices in terms of the granularity of the model, expert opinion had to be accepted as the main source of knowledge. In the EAD – LGD project this was translated into expert workshops for the various regions in which the framework and the parameters were discussed and modified according to the discussions (a prototyping approach). This required a translation of model implications in real world terms in order for the project group to discuss with the experts. On the other side of the table the experts also needed to translate the real world consequences into model implications. In fact, both sides were seeking how to create the connection of the model to the real world.

On both sides, this approach created surprises, or new knowledge and insights. The result of the workshop is an acceptable first model that will be further fine-tuned during pilot applications of the model to real world credit applications. Again experts will be used then to evaluate the results.

Of course, also registration of defaults is improved with a temporary measure, awaiting the period to develop a permanent solution, even retroactively. This is a regulatory demand. But the expectation is that the internal default data can only support our framework, not validate it.

Expert opinion

In day to day life, people have to make decisions and perform actions, even if no scientific theory is available or possible. Within each community common knowledge is developed concerning the common activities that links actors/members to the same community to help in making the decisions and perform the day-to-day actions. People look for whatever tool available, they use any kind of source for knowledge, as long as it helps them in the best possible way. This knowledge is personal, in the sense that it is the joint product of persons in the community, and this knowledge can not be precisely delineated because of the very same fact. Common sense based knowledge is the product of various persons in the community, who will agree on fundamental issues, but disagree on details or new issues. Being personal, the most advanced in common sense knowledge often is the one with the most experience in that particular community, as that one has had most time to discuss with others and thus create and tap common sense knowledge. This contrasts with the specialised knowledge in science, where one can ignore factors or assume full information, and live in an idealised (special) world. Scientific statements regarding a specific community can be developed outside that community. In that respect, common sense knowledge does not suffer from connectivity problems (as statisticians do) because common sense knowledge is originated based on a firm connection with reality, ie. being firmly grounded in the applicable community. This contrasts with the isolationist approach of modernist

science. Furthermore, modernist science can only be applied to things that can be empirically tested. Day-to-day life provides many important situations where this is not the case.

Expert opinion is epistemologically based on the common sense method for gaining knowledge. Expert opinion refers to the opinion of those that are most advanced in a common sense knowledge. Below, we will investigate the criteria or principles of common sense knowledge.

7.2.4.5.2 Expert opinion is common sense knowledge

The philosopher Thomas Reid (1710 - 1796) was one of the first modernist philosophers who studied common sense knowledge in an attempt to counteract the scepticism of his days. Reid wants to counteract the cogito-ergo-sum verdict of Descartes (1596-1650), which is unjust hard in saying that all knowledge is suspicious, until proven irrevocably right. In modern civilizations, one is not-guilty until proven otherwise beyond doubt. By stressing and only accepting the spiritual part of mankind (inside his cogito, his doubts and reasoning), Descartes ignored the material part of it, ignored the link to reality, and opened the door to the scepticism of Hume which subsequently denied any link between ideas, images and reality. In the end, he could deny the existence of himself. Note that Nietzsche also opposed to the modernist rejection of the material part of humans, ie. to the rejection of the body (see §7.3.1.).

Wolterstorff¹⁷⁸ thinks the alternative to the scepticism of Hume that Reid offers is in the justifying conditions for knowledge which Reid points at: "So Reid does not think, along the lines of the sceptic, of justification for a belief as always consisting of other beliefs on the basis of which the belief is held. Instead Reid is inviting us to expand our vision and think in terms of the justifying conditions for our beliefs as evidence of various sorts producing the beliefs under appropriate circumstances... What we obtain from Reid is a way of thinking of rationality, and a way of formulating a criterion of justified belief, namely, in terms of justifying conditions. But he does not actually offer a criterion."

Expert opinion is not rule based. It involves a high degree of judgement. It makes it hard for any regulator to formulate his rules based on expert knowledge if knowledge is not based on algorithmic rationality (rule based rationality), ie. if no fixed rules can be determined. One can not prescribe apriori how the expert will come to his knowledge, which paths he will follow, which sources he will use.

¹⁷⁸ N. Wolterstorff, "Thomas Reid on Rationality", edited by H. Hart, J. van der Hoeven, N. Wolterstorff, in *Rationality in the Calvinian Tradition*, University Press of America, London, 1983, p. 59

Various sorts of evidence create the commonly held beliefs that constitute common knowledge: memory, perception, feeling, intuition, instinct, the other, wisdom or tradition can be sources of common knowledge. This is not restricted to one source, such as empirical tests or rational reasoning. Wolterstorff refers to *situated rationality* as characteristic for Reid's episteme. This is similar to the much later formulated perspectivist rationalism of Rescher¹⁷⁹. Rescher brings this perspectivist rationalism forward to counter the consensus thinking of people like Habermas and John Rawls.

In terms of the philosophy of travelling, situated rationality is what is rational within the closure of any horizon. The traveller is a perspective rationalist in terms of knowing that another perspective will offer different views, and knowing that there are numerous different perspectives. Common sense knowledge is well reconcilable with PoT.

The comparison with situated rationalism offers an explanation as to why Reid does not formulate one single criterion for common sense knowledge: there is none. This doesn't mean that everyone in the community is an idiot. Multisource, multi-centred, perspectivistic driven common knowledge is an amalgamation of various opinions, differing in detail, common in principle, with no consensus that can be delineated or described precisely. This is caused by the continuous development of common sense knowledge, driven by the arrivers and leavers into the community and the continuous learning curve caused by accumulating experience as time passes. Common sense knowledge seems to be in between the members of an ever-changing group; it is in the air.¹⁸⁰

Conventionally, common sense knowledge is shared within one community, ie. within one set of people sharing time and space. Conventionally, common sense knowledge is local. Also, being confined, having borders of application, it is possible to identify specific common sense knowledge. For example, the Dutch know how to skate.

¹⁷⁹ Rescher, N.: *Pluralism, Against the demand for consensus*, Clarendon Press, Oxford, 1993, p. 87,88

¹⁸⁰ In this respect we can think of the experiments which Rupert Sheldrake mentions (een schitterend ongeluk, 1995, p.226) in which people are better able to solve a cross-word puzzle after it was already solved by others. As if solutions are sprayed in the air by the first solvers and can get picked up by others.

7.2.4.5.3 *Principles of Common Sense*

Common sense can best be described with an example by Reid¹⁸¹: "When I perceive a tree before me, my faculty of seeing gives me not only a notion or simple apprehension of the tree, but a belief of its existence, and of its figure, distance, and magnitude; and this judgement or belief is not got by comparing ideas, it is included in the very nature of the perception...

Such original and natural judgements are, therefore, a part of that furniture which Nature hath given to the human understanding. They are the inspiration of the Almighty, no less than our notions or simple apprehensions. They serve to direct in the common affairs of life, where our reasoning faculty would leave us in the dark. They are a part of our constitution; and all the discoveries of our reason are grounded upon them. They make up what is called the **common sense of mankind**; ...and, what is manifestly contrary to any of those first principles, is what we call **absurd**. The strength of them is **good sense**, which is often found in those who are not acute in reasoning. A remarkable deviation from them, arising from a disorder in the constitution, is what we call **lunacy**; as when a man believes that he is made of glass.

When a man suffers himself to be reasoned out of the principles of common sense, by metaphysical arguments, we may call this **metaphysical lunacy**; which differs from other species of the distemper in this, that it is not continued, but intermittent: it is apt to seize the patient in solitary and speculative moments; but, when he enters into society, Common Sense recovers her authority. A clear explication and enumeration of the principles of common sense is one of the chief **desiderata** in logic."

In the above quote, several principles of common sense knowledge can be found:

1. Common sense accepts more cognitive abilities than just ideas that appear clear and without any doubt before our consciousness (cogito). There is a multitude of cognitive abilities which can be trusted until proven otherwise. Nobody alive and sane will deny his existence. Common sense accepts what Polanyi calls Tacit knowledge, see below.
2. Common sense is based upon our human existence, dependent on the specific human condition. Also Rescher¹⁸² points at the constitution: "Everything [we know] depends on how nature pushes back on our

¹⁸¹ K.Lehrer, R.E.Beanblossom, Thomas Reid's Inquiry and Essays, The Bobbs-Merrill Company, Indianapolis, 1975, p.118

¹⁸² Rescher, p. 69

senses and their instrumental extensions...One's language and thought processes are bound to be closely geared to the world as one experiences it". Again, this is highly in line with the PoT, which emphasises the interactive nature of knowledge.

3. Common sense knowledge is closely aligned with language and with commonly held beliefs. It provides first principles for comparison to find out whether something is absurd.
4. It is the belief of society, of the community, at the centre where matters are decided. If someone wants to be more than a hermit, he has to deal with the common sense that rules social life. This statement excludes nomadic knowledge as common sense knowledge. Common is thus seen as referring to the largest group. However, also nomads will develop common sense knowledge within their community. That common sense knowledge (ie. of the nomad community) will again be referring to the centre of the nomad community.
5. Science should be based on common sense and try to find its first principles. If science deviates significantly from these principles, it becomes absurd.

Conclusion: the ideal – statistical- approach to EC requires vast amounts of data in order to establish a firm connection between meaningless statistical concepts and information that is relevant for action. When or because this data is unavailable, expert opinion is a last resort. Expert opinion is the most advanced type of common sense knowledge. The expert is most experienced in the community. As Reid and Rescher point out common sense knowledge is based on situated or perspective rationality, and, hence, relies on judgement because it can never be fully specified on before hand. In other words, there are no universal algorithms, in contrast with modernist science. Common sense knowledge uses more cognitive abilities than just Descartes' cogito; it is based on the human condition, closely aligned with language and represents the knowledge of the centre of society, where decisions are made. With these principles it much closer matches the ontological structure of wholesale credit risk than statistics.

7.2.4.6 Polanyi: The Tacit dimension

When I first came to credit risk management departments I was impressed by the in-depth knowledge of senior credit officers who had been in the field for more than twenty years. By their long experience, they had a feeling for what goes on at the customer and seem to be able to read between the figures. Although their evaluation and judgement was not always clearly argued, even with hindsight their assessments proved right in many cases. Judgements were allowed to be

based on some kind of intuitive feeling of senior officials; although they could not explain, they were able to distinguish good loans from bad ones in many cases. The right thing had their attention, and how they are able to be that informed is of no concern. Credit risk management seems to be concerned not with an adequate argumentation, but with the right decision. You don't have to assess the million factors which can cause a default on one's obligations, you only need to look at the right signals and be alert. Exactly how this is achieved remains a mystery to me, or better stated: it looks like a skill. In my opinion, the structure of credit risk management, considered as a type of knowledge resembles a skill.

The credit committee (CC) members read through the balance sheet and Profit & Loss numbers, which are in many cases inflated by the window dressing of banks and make up their opinion, despite the complications in the data or the analysis presented to them. From a philosophy of travelling point of view, it is clear that the CC members are not interacting with the (potential) clients of the bank directly. Their interaction with them is mediated by the credit application presented to the committee. The credit application in many cases itself is not a product of direct interaction with the counterparty. For large parts, the credit application is written by a credit analyst who never saw the client. So the CC members in fact make a long virtual journey when they focus on a prospect credit risk, being mediated by a credit application, by a credit analyst, by a relationship manager, who in the end interacts with the client.

Still, we can conclude that they are doing their job quite well, given that all banks employ such people. From a philosophy of travelling point of view, it is interesting to learn how these CC members gain and maintain their knowledge about counterparties.

Michael Polanyi (in 1966) was one of the first in modern philosophy who pointed explicitly at this type of knowledge when he launched the term Tacit Knowledge. Someone knows so much more than he can tell, and if he could tell, the words he is using have so much more meaning and rely on too much language-contexts to explain. A pianist can play virtuously without being able to explain exactly how his fingers move over the keyboard.

According to Polanyi¹⁸³ Tacit Knowledge has the structure of a skill, "...for a skill combines elementary muscular acts which are not identifiable, according to relations that we cannot define."

¹⁸³ Polanyi, Michael, The tacit dimension, copyright 1966, reprinted 1983, Doubleday & Company Inc., p. 8-9

The basic structure of tacit knowing always involves two things, or two kinds of things. The first term are specific, tacit, particulars of which we become aware only by what they signify and looks as their effect. We may say that we learn to rely on our awareness of these particulars for the purpose of attending to their significance, the second term, on which our attention is focused. This is the basic definition of the logical relation between the first and second term of a tacit knowledge. It combines two kinds of knowing. We know the effect, forming the second term, by attending to it, and hence the subject is *specifiably* known. But we know the effect-producing particulars only by relying on our own awareness of them for attending to something else, namely the effect, and hence our knowledge of them remains *tacit*. This is how we come to know these particulars, without being able to define them. Such is the *functional relation* between the two terms of tacit knowing: *we know the first term only by relying on our awareness of it for attending to the second*.

In many ways the first term of this relation will prove to be nearer to us, the second further away from us. Using the language of anatomy, we may call the first term *proximal*, and the second term *distal*. It is the proximal term, then, of which we have a knowledge that we may not be able to tell.

In the exercise of a skill, we are aware of the several muscular moves in terms of the performance to which our attention is directed. We may say, in general, that we are aware of the proximal term of an act of tacit knowing in the appearance of its distal term; we are aware of that *from* which we are attending *to* another thing, in the *appearance* of that thing. We may call this the *phenomenal* structure of tacit knowing.

But there is significance in the relation of the two terms of tacit knowing which combines functional and phenomenal aspects. When the sight of certain particulars makes us expect a specific effect, we may say that they *signify* the approach of the effect. This is their *meaning* to us. We may call this the *semantic* aspect of tacit knowing. All meaning tends to be displaced *away from ourselves*, and that is in fact the justification for using the terms “proximal” and “distal” to describe the first and the second term of tacit knowing.

From the three aspects of tacit knowing that have been defined so far –the functional, the phenomenal, and the semantic- we can deduce a fourth aspect, which tells us what tacit knowing is a knowledge of. This will represent its *ontological* aspect. Since tacit knowing establishes a meaningful relation between two terms, we may identify it with the *understanding* of the comprehensive entity which these two terms jointly constitute. Thus the proximal terms represent the *particulars* of this entity, and we can say, accordingly, that we comprehend the entity by relying on our awareness of its particulars for attending to their joint meaning.

With reference to the above, we may call the credit risk portfolio modelling projects within banks joining the EC movement a search for the particulars of credit risk. Given that the EC framework requires a considerable amount of econometrics and its fuel: data, it is comprehensible that most of the modelling work is being done by departments who know more about econometrics than about credit risk. These modellers rely on data for their activity. That concerns data, which in many banks was never systematically recorded because credit risk was not oriented on econometrics previously. In terms of Polanyi one could question how can we quantify the proximal in order to assess the distal? Especially when we have no experience or interaction with the distal (being the actual behaviour of a counterparty during the tenor of the contractual obligations of him).

One of the most striking concrete examples of an experience that cannot possibly be represented by any exact theory is an experience within science itself: the experience of seeing a problem, as a scientist sees it in his pursuit of discovery. Plato shows the contradiction in problems in the *Meno* when he says that, to search for the solution of a problem is an absurdity; for either you know what you are looking for, and then there is no problem; or you do not know what you are looking for, and then you cannot expect to find anything...

We must conclude that the paradigmatic case of scientific knowledge, in which all the faculties that are necessary for finding and holding scientific knowledge are fully developed, is the knowledge of an approaching discovery.

To hold such knowledge is an act deeply committed to the conviction that there is something to be discovered. It is personal, in the sense of involving the personality of him who holds it, and also in the sense of being, as a rule, solitary; but there is no trace in it of self-indulgence. The discoverer is filled with a compelling responsibility for the pursuit of a hidden truth, which demands his services for revealing it. His act of knowing exercises a personal judgement in relating evidence to an external reality, an aspect of which he is seeking to apprehend. Polanyi deviates here from the modernist view which states that all knowledge should be objective, discarded of personal beliefs and convictions.

Polanyi¹⁸⁴ provides an ontological status to tacit knowledge by way of what he calls indwelling or interiorisation of the senses of the body into real entities: "Whenever we use certain things for attending *from* them to other things, in the way in which we always use our own body, these things can change their appearance. They appear to us now in terms of the entities to which we are attending *from* them, just as we feel our own body in terms of the things outside to which we are attending *from* our body. In this sense we can say that when we make

¹⁸⁴ Polanyi, p.16-18

a thing function as the proximal term of tacit knowing, we incorporate it in our body – or extend our body to include it – so that we come to dwell in it...It brings home to us that it is not by looking at things, but by dwelling in them, that we understand their joint meaning.”

Note that this means that tacit knowledge requires bodily contact; requires the body as epistemological tool. In this respect, Polanyi takes a similar view as Nietzsche, see § 7.3.1.

Polanyi¹⁸⁵ proves to be a modernist realist when stating that: “It seems plausible then to *assume in all other instances of tacit knowing the correspondence between the structure of comprehension and the structure of the comprehensive entity which is its object*. And we would expect then to find the structure of tacit knowing duplicated in the principles which account for the stability and effectiveness of all real comprehensive entities.”

Polanyi shows his modernist character here in specifying the ontology of correspondence between comprehension and matter. This in fact is quite a strong statement, requiring correspondence between knowing and that which is known. After postmodernism, correspondence is a big problem. The philosophy of travelling equivalent of this only speaks of appropriation – not correspondence-leaving autonomy to the object.

However, different than conventional correspondence-thinkers, Polanyi does not assume that the object can ever be completely captured; can ever be fully specified by our knowledge. There is no full correspondence, as he leaves space for the unexpected¹⁸⁶: “This capacity of a thing to reveal itself in unexpected ways in the future I attribute to the fact that the thing observed is an aspect of reality, possessing a significance that is not exhausted by our conception of any single aspect of it. To trust that a thing that we know is real is, in this sense, to feel that it has the independence and power for manifesting itself in yet unthought-of ways in the future.”

The value of this conclusion about reality is in line with the distinction between the known and unknown. Knowing that you don’t know everything. This helps us to expect the unexpected systematically. That in turn helps us to anticipate surprises. Eg. we can prepare ourselves for situations which are different than currently, and especially those different situations which we experience as negative. Exactly that

¹⁸⁵ Polanyi, p.33

¹⁸⁶ Polanyi, p.32

is the essence of risk management; to anticipate surprises and set up arrangements to mitigate the effect of future hazards.

Nozick points at the features of objectiveness (autonomy, power to surprise) when he refers to the same reality, and need for the existence of an independent reality. It is this objective real world which is the focus of scientific inquiry, a reality to which third parties or third significances also have access, because it is independent from me – the subject, participant and observer. Its independence allows it to surprise us a few times.

All three positions (philosophy of travelling, Polanyi and Nozick) acknowledge the essential status of the real world for knowledge building. They are all realistic episteme, instead of idealistic.

A final remark regarding Polanyi¹⁸⁷ concerns the issues of emergence & marginal control.

”Take two points. (1) Tacit knowing of a coherent entity relies on our awareness of the particulars of the entity for attending to it; and (2) if we switch our attention to the particulars, this function of the particulars is cancelled and we lose sight of the entity to which we had attended.¹⁸⁸ The ontological counterpart of this would be (1) that the principles controlling a comprehensive entity would be found to rely for their operations on laws governing the particulars of the entity in themselves; and (2) that at the same time the laws governing the particulars in themselves would never account for the organising principles of a higher entity which they form... Thus each level is subject to dual control; first by the laws that apply to its elements in themselves and, second, by the laws that control the comprehensive entity formed by them... We may call the control exercised by the organisational principle of a higher level on the particulars forming its lower level *the principle of marginal control*...

If each higher level is to control the boundary conditions left open by the operations of the next lower level, this implies that these boundary conditions are in fact left open by the operations going on at the lower level. In other words, no level can gain control over its own boundary conditions and hence cannot bring into existence a higher level, the operations of which would consist in controlling these boundary conditions. Thus the logical structure of the hierarchy implies that a higher level can come into existence only through a process not manifest in the lower level, a process which thus qualifies as an emergence.”

¹⁸⁷ Polanyi, p.34

¹⁸⁸ In Dutch we say: through all the trees we don't see the forest anymore. We can't see the woods from the trees?

Polanyi indirectly urges us to investigate further into our credit risk than just using “the data”. This data, even if perfect, can never tell us exactly how the counterparty is doing. Indwelling, bodily contact is required to appropriate a skill. The principle of marginal control tells us that the health of a counterparty as a whole can not be found in particular data regarding aspects of the counterparty. Econometrists that purely rely on data miss the point they are looking for.

7.2.4.6.1 *The Rabobank case.*

Within Rabobank, Credit Risk Management of Rabobank Group is responsible for credit approvals. Until very recently senior management did not use any sophisticated credit models, but still always seemed very informed about credit risks, and has a remarkably good track record for selecting the right credit risks.

In credit risk, a multitude of factors influence the repayment capacity of any counterparty. These factors range from very specific –idiosyncratic– issues like fraud or mismanagement, to macro-issues such as interest rates and business cycles. Rating instruments or quantitative models can only specify a limited number of specific particulars, such as debt/equity or payment capacity ratios. From these particulars one could never tell with certainty how the counterparty is doing and whether it is going to honour its obligations.¹⁸⁹ Vice versa, when one knows what corporates with credit problems would be doing to conceal those problems, one is better equipped to give significance to the right particulars. Some experienced credit officers don’t need the abundance of data required by credit models and are in fact quite sceptical about the models. Already a few consistent but different particulars can provide them the desired insight.

7.2.4.6.2 *Conclusion*

Polanyi points at tacit knowledge which is the knowledge of the proximal which is sublimated by the attention for the distal. It is the knowledge of the skilled. He clearly shows that at least one type of knowledge can not completely be explained rationally, or even explicitly. By having just one perspective, seeing only some particulars of an entity, we are not yet able to construct a complete picture of it. Polanyi, in line with PoT, shows that we still can be surprised by something outside ourselves.

In fact, he points at the partial interaction between subject and objects. The subject only sees certain particulars which do not provide enough information to construct a certain picture of the second term of knowing, that which ultimately has our attention. This resembles the image of the perspective of the traveller. However,

¹⁸⁹ That is, one could never tell *in time* to manage the risk. Of course, public information that the client is bankrupt tells us that the client is also in default. However, this does not provide us with the opportunity to manage our position, this is way too late.

the traveller is able to distil the underlying patterns of each situation by the very fact that he transits various situations and is able to compare basic underlying structures. To me, it seems that it is possible to formulate rules for knowledge building, if one takes the perspective of the traveller and creates many similar but slightly different experiences. The objective world will make sure that in the end we will all arrive at similar conclusions. Until such time, knowledge development rules should be focused on the process of knowledge building and much less on the exact outcomes. From a philosophy of travelling, the route is more important than the final arrival.

7.2.4.7 Conclusion regarding epistemology/methodology of CRPM

EC theory and CRPM are basically econometric models, which rely on statistical theories and empirical data to determine frequencies. Therefore, we may conclude that the core epistemology and methodology (at least formally) are of an empiricist and statistical nature.

As explained above, the introduction of EC theory and its applications has created a shift in epistemological principles in credit risk management (CRM) practice. In traditional CRM credit risk knowledge was subjective, judgemental, resembling the structure of a skill. Iteration of similar but different experiences and indwelling helps to build an expert-understanding of the credit risk in a portfolio. Strong initial screening and structuring and one by one monitoring, supported by special asset managers for defaulted clients, helped to manage the risks and maintain tolerable risk levels. Risk reporting was at a minimum, focused on the individual credit application process.

With the EC movement, two new epistemological principles entered the arena:

1. Via the Financial Markets a very strong principle, which is the market price, allowed knowledge of the proper price, expected prices and possible volatilities for risks or segments of risks. This provides references to compare other, unquoted, assets and calculate prices (or values) in comparison with available alternatives. It is an epistemological principle, based on the equilibrium of a perfect informed trading between buyers and sellers, the joint effect of their individual but public actions.
2. Empirical classification and measurement, combined with mathematical logic. Via averages, volatilities, correlations and diversifications we can calculate expected and unexpected values of risk. Standardised and registered information is required for the classification of the various

components of credit risk of each asset, ie. each separate aspect of an asset must be rated and ranked in order to be comparable and addible.

Critical remarks regarding the use of statistics for CRM include:

- Statistics are meaningless until connected to the real world. If it is not possible to count frequencies, due to the high degree of variation or to the low level of occurrence, nor establish logical connections, probabilities are subjective degrees of believe. Subjects, that is humans, have shown to deviate in their behaviour from the formal model. For example, they tend to be loss averse instead of risk averse, they evaluate a return relative to a personal benchmark, are susceptible to the format in which risk is presented, etc.
- Statistical knowledge is dependent and conditional on the data, which is hardly available or reliable, given the efficiency of registration within banks and the nature of credit risk with its susceptibility to fraud, deception and misrepresentation.
- Statistics are presented with a misleading sense of accuracy hidden by the rhetorics of statistics, such as statistical significance, which is not the same as economical significance.
- Statistics hide the role of the bank itself in mitigating losses
- Statistics might not be very suitable for specific risk in the sense that the constitutions of the objects could be too different to apply statistics.

Regarding the application of econometrics, the analysis of the internal Rabobank model shows that a number of assumptions have been used that on the one hand ease calculations considerably, but on the other hand are clearly wrong empirically. Examples of these include the negligence of LGD volatility, assuming that default correlations can be modelled based on equity prices and the assumption of normal distributions, which underestimate the far tails of the loss distribution which part is relevant for EC calculation. Current versions do not measure, are not sensitive to changes in risk. For smaller portfolios, such as Rabobank International's wholesale portfolio, these assumptions can create a lot of model risk to a yet unknown extent.

Although EC theory –in theory- is a statistical/econometric approach, the (lack of) available data forces banks to use expert knowledge as epistemological approach. Data is required to determine important risk drivers (eg. by applying regression) and to determine the right level of parameters (the so called calibration). In Rabobank International both for rating improvement to estimate PDs per counterparty, and for estimation of LGD and EAD, expert opinion is used to either determine risk drivers, estimate parameters or evaluate the results of rating or LGD projects. Therefore, we may conclude that there is a difference between the formal epistemology (statistics) and the informal or pragmatical epistemology, which is

based on expert knowledge or common sense knowledge of specialised communities. Common sense knowledge is personal, uses a multitude of sources extending beyond purely hard empirical data or logic, it is human oriented and the basic reference type of knowledge that rules in society and in the decision making centres.

Polanyi has shown us the tacit side of credit risk knowledge by considering it a skill. He indirectly urges us to investigate further into our credit risk than just using “the data”. This data, even if perfect, can never tell us exactly how the counterparty is doing. Indwelling, bodily contact is required to appropriate a skill. The principle of marginal control tells us that the health of a counterparty as a whole can not be found in particular data regarding aspects of the counterparty. Econometrists that purely rely on data miss the point they are looking for.

7.2.5 Conclusions regarding classification of EC theory

In the previous three chapters EC theory has been classified in terms of the actors and their interests in the context of the theory. Next, an ontological classification, specifying the nature of EC and credit risk, has been presented. Finally, epistemological principles or methodologies that are used in practice of CRM have been described.

In general we may conclude that EC theory is developing in a regulated business context. The national banking regulator prescribes the counter of EC, RC or regulatory capital. Currently, a global effort is spend on bringing RC more up to best practice standards (which is EC) in the 'BIS II' efforts.

Although currently capturing the attention of bank-regulators, EC theory has many of its origins in the financial markets and the development of EC theory is still boosted by developments on the financial markets.

But, next to regulators and financial markets participants, EC theory is also embraced by banks themselves, especially the Credit risk management, Commercial and Control departments. With increased volumes and complexity of credit risk, stronger competition in bank finance, and emphasis on shareholder-value creation, EC theory seems to be a welcome tool. Also conflicts between the interests of the regulator and the shareholder have been identified.

Furthermore, we may conclude that EC theory, and especially its major components – capital, credit and risk – have a *difficult* ontological structure. Capital may be externally or internally originated or valued. Even internal valuation of capital is far from uniform. Risk is based on knowledge of causal structures and normative statements concerning tolerances and levels of acceptance. Credit risk is concerned with financial claims, is invisible, rare, has a high impact and is concerned with repayment of fixed cash flows within a specified horizon. It is a high impact, low occurrence (low probability) event.

Finally, we may conclude that the formal epistemology and methodology is respectively empirical / logical, and statistics / econometrics. However, analysis of statistics shows that human behaviour deviates from their rational models, because people are loss averse or have deviating preference structures. The connection to the real world, which would make statistics relevant for actions, is most problematic. Most mainstream EC models¹⁹⁰ use a frequency approach to establish this connection, whereas the ontological structure and the actual behaviour imply that probabilities should be modelled as subjective degrees of belief. Hence, being impossible or inaccurate, the formal principles are not upheld in practical

¹⁹⁰ Including the BIS II proposals.

behaviour. At best, the statistical model is a framework which must be twisted and tweaked by credit risk experts to customise it for a particular CRM. Also, econometric analysis of the clinical case showed that the model is not capable of performing essential tasks, ie. accurately measuring portfolio risk. This is caused simply because either the econometric tools are lacking to capture the drivers and mechanisms of credit risk portfolios, or the required data for factor analysis or calibration is lacking.

Analysis of the epistemological principles and methodologies used in the clinical case revealed that credit risk knowledge is much more personal than statistics can handle. First of all, it is based on significant stored experience of a group of people (a culture). Second, because it may contain tacit elements, in the degree that CRM can be considered a skill. Thirdly, Polanyi showed that it is impossible to construct a complete picture if one is only measuring the constituting particles of the picture, due to principles of marginal control. In other words, measuring data on a specific level can not reveal characteristics of entities on a higher level. Just looking at balance sheets of a company does not tell you how the company is doing. To be able to tell how the company is doing with limited information is exactly the skill, the tacit knowledge of credit risk management.

In practice, the results of the above analysis are visible in the combination of formal and informal approaches to the modelling of credit risk into EC concepts in the clinical case. Expert and common sense knowledge is combined with econometric expertise to tweak and twist the formal model. Feedback indicates that the process of modelling and the subsequent attention to risk analysis, and proper systems infrastructure already is a big leap forward and leads to considerable improvements of the credit process in terms of risk identification, measurement and evaluation. Implementation of products of dialogues between experts of credit risk and econometricians proves powerful, although not directly as intended formally.

7.3 Content issues

In this chapter we will focus on issues regarding the content of EC theory. Content issues that will be discussed include respectively risk concepts, the concept of diversification of risks, valuation and quantification.

7.3.1 Risk concepts

7.3.1.1 Introduction

EC claims to be risk-sensitive. Therefore, a considerable amount of attention will be focused on risk in this chapter. For a proper understanding of EC theory, insight into the concept of risk is a prerequisite. Risk as a concept will be introduced in terms of its origin and history. Subsequently, general concepts of risk will be discussed, including cultural and social approaches. Next, risk needs to be defined as working definition for this thesis. Next, we turn to the definition as “calculated risk” used in mainstream financial literature. Furthermore, model risk incurred when a bank uses a portfolio risk model is discussed. Finally, after general analysis of the concept of risk, we can use our toolbox to analyse risk according to Nozick’s functional response and the philosophy of (virtual) travelling.

7.3.1.2 History of risk.

Leed¹⁹¹ reports about the epic of Gilgamesh, who voluntarily departed for a journey to face the risk of the unknown in 2800 BC. At these times, a risk taker like Gilgamesh was considered a hero (when he returned). According to Leed, the epic was transcribed in 1900BC, which puts the period in which risk is a recorded concept at four millennia. As will be elaborated later (see § 9.8.2), risk management can be considered as a type of (virtual) travelling.

Caouette et al.¹⁹² hold that “credit risk is the oldest form of risk in the financial markets. If credit can be defined as “nothing but the expectation of a sum of money within some limited time”, then credit risk is the chance that this expectation will not be met. Credit risk is as old as lending itself, which means that it dates back at least as far as 1800 B.C. It is essentially unchanged from ancient Egyptian times: now, as then, there is always an element of uncertainty as to whether a given borrower will repay a particular loan... Traditionally, bankers and other lenders have handled credit evaluation in much the same way that tailors approach the creation of a custom-made suit – by carefully measuring the customer’s needs and

¹⁹¹ Leed, 1991, p. 5,6

¹⁹² Managing Credit Risk, the Next Great financial challenge, by J.B. Caouette, E.I. Altman, P. Narayanan, John Wiley & Sons, NY, USA, 1998

capacities to make sure that the financing is a good fit. Today's approach does not differ fundamentally from the one used by the earliest banks."

The concept of risk should be known by a small four millennia now. In essence it revolves about the uncertainty of a valuable promise, or expectation. Risk revolves around the uncertainty concerning the future period between now and when the promise is delivered, or when the expectation will be met. Time will certainly have an impact, as time needs to go by before the period is over. But aging processes are by far not the most uncertain. Human behaviour next to all other kind of contingencies bring the most uncertainties.

Although credit risk is managed similarly for ages, Caouette also asserts that new techniques, new approaches are very much needed for the management of credit risk when he emphasises that American bankers who survived their industry's recent crisis recognize that their approach has been deeply flawed. Today, many are actively pursuing more effective techniques for managing credit risk.

But not only bank crises have helped to understand the need for more sophisticated credit risk management, also credit risk itself has grown immensely because of the increased amount of transactions globally:

According to Caouette¹⁹³: "Credit risk has grown exponentially in the 1990s against the backdrop of dramatic economic, political, and technological change around the world."

Caouette et al. refer to technological¹⁹⁴ driven quantification developments, to which their book is devoted. Many of the techniques developed to measure and control market price risk will soon be applied to credit risk, they prophesise. The story they sketch is that the concept of credit risk is as old as 1800BC, and virtually unchanged until the 1990sAD.

However, credit risk may be as old as four millennia, the modern concept of risk in literature is not earlier recognised than after 1600, according to Giddens¹⁹⁵. (see § 8.3.1.3.1. below for further elaboration of Giddens): "Risk presumes a society that actively tries to break away from its past – the prime characteristic, indeed, of modern civilisations."

¹⁹³ Caouette et al., p.6

¹⁹⁴ especially referring to both conceptual (e.g. theory) as physical (e.g. computer power in Hz and bytes) improvements in calculation capacity.

¹⁹⁵ Giddens, p. 22

Also Bernstein¹⁹⁶ holds that the serious study of risk only started during the Renaissance, when people broke loose from the constraints of the past and subjected long held beliefs to open challenge. What differs from the past is the modern notion that the future is more than a whim of the gods and that men and women are not passive in relation to nature. In 1654 Pascal and Fermat discovered the theory of probability, the mathematical heart of the concept of risk. Both Giddens and Bernstein refer to the notion of calculated risk when they say risk. Risk is only risk when it is quantified, calculable. Risk is thus inseparable from the ideas of probability and uncertainty.

This calculated risk concept is widely used in standard text books concerning financial risks. J. Bessis¹⁹⁷ was used to create the below overview of the above mentioned financial risk measures:

Distinct Risk Measures:

- **Sensitivity**: captures deviation of a target due to a unit movement of a parameter; e.g. Greeks for market risk, such as the delta which indicates the profit or loss of a position caused by a 1 basis point shift in interest rates.
- **Volatility**: variation around the average, both upside and downside. Not a unit movement of the underlying risk parameter, but the actual average size of its change. Does not indicate profit or loss amount of a position, but the risk itself.
- **Downside risk**: focus on adverse deviations only, they characterise the worst-case deviations of a target variable, e.g. VaR (value at risk). Requires three components: potential losses, the probability of their occurrence and the assumption of dependencies between individual loans.
- **Notional values**: measures maximum losses or exposures to a risk, without consideration for risk mitigation. Current measure for principal¹⁹⁸ credit exposure within RI.

These are quantifications of various aspects of risk used in modern risk management approaches. The current approach within RI, monitoring notional values of loans under credit limits, is a rough measure, neglecting variances in

¹⁹⁶ Bernstein, 1996, p.1-3

¹⁹⁷ Bessis, 2002, p. 78...

¹⁹⁸ Principal credit exposure refers to credit in which a principal or notional amount is at risk, e.g. a loan.

default risk (PD) or loss risk (LGD), while often also neglecting the difference between contingent and direct credit exposure. However, it provides insight in the maximum value that can be lost due to credit problems with a specific relationship/client and is very easy to calculate or register.

Current text books all recommend a VAR approach, in which the economic loss is measured for a specific level of confidence. Risk in these cases is defined as downside volatility and is usually calculated by taking *measures* of basic risk indicators, such as PD or LGD, and *assumptions* about volatilities of these parameters.

Risk in current CRM text books is defined in terms of volatility, ie. standardised deviation from the mean of a defined risk category. The volatility is considered relative to a certain threshold, which typically marks the transition of the healthy position into the acute risky position, in need of close monitoring. This is a convenient statistical measure, which allows the full scale application of the statistics toolbox. The wide application of the toolbox for purposes of credit risk management in wealthy banks¹⁹⁹, comprising an active field of investigation, development and application, is even likely to contribute to the increased use of volatility as risk measure.

In order to discover a wider definition of risk, we will have to resort to the non-financial literature and see what a broader perspective on risk (broader than credit risk) can teach us.

7.3.1.3 General concept of risk

7.3.1.3.1 Giddens: risk is cultural

Some authors see risk as a relatively new concept that could come in the middle of attention only after the Renaissance, when man started to see his own role in creating a future. For these authors, Gilgamesh did not take risks, was not aware of the risky character of his journey.

According to A. Giddens²⁰⁰: "...in the Middle ages there was no concept of risk. Nor, so far as I have been able to find out, was there in most other traditional cultures." According to Giddens, the idea of risk appears to have taken hold in the sixteenth and seventeenth centuries, and was first coined by Western explorers as they set off in their voyages across the world. Giddens refers to the Spanish or Portuguese, where it was used to refer to sailing into uncharted waters. Originally, in other

¹⁹⁹ Poor banks can not afford investigations

²⁰⁰ Giddens, 1999, p. 21...

words, it had an orientation to space. Later, it became transferred to time, as used in banking and investment, to mean calculation of the probable consequences of investment decisions, for borrowers and lenders.

According to Giddens, traditional cultures didn't have a concept of risk because they didn't need one. Risk isn't the same as hazard or danger. Risk refers to hazards that are actively assessed in relation to future possibilities. It comes into wide usage only in a society that is future oriented – which sees the future precisely as a territory to be conquered or colonised. Risk then presumes a society that actively tries to break away from the past – the prime characteristic, indeed, of modern industrial civilisation.

Although the uncertainty of non-repayment of a loan already existed in the earliest loans four millennia ago, this can not be regarded as risk according to Giddens. In those days the future was not something that could be changed by humans. The future was already determined by God or faith and could not be changed by human intervention. Therefore, it had no use to measure the uncertainty in the future (actually there was no uncertainty, the certainty of what was to happen was just not known to humans). Only when man sees his own role in creating the future, measurement of risk becomes an issue.

The measurement of financial risk not only required an image of a liberated man, who could change his own future, but also the registration of profit and loss, ie. bookkeeping.

According to Giddens, p. 24: "Modern capitalism embeds itself into the future by calculating future profit and loss, and therefore risk, as a continuous process. This couldn't be done until the invention of double entry bookkeeping in the fifteenth century in Europe, which made it possible to track in a precise way how money can be invested to make more money."

Bernstein²⁰¹ also positions double entry bookkeeping as one of the two major factors for the development of capitalism, the epitome of risk taking (p.21). "The first was bookkeeping, a humble activity but one that encouraged the dissemination of new techniques of numbering and counting. The other was forecasting, a much less humble and far more challenging activity that links risk-taking with direct pay-offs."

Both authors above assert that risk is a modern concept, requiring the idea that man can change his future and the availability of financial calculation techniques, ao. bookkeeping. Although bookkeeping and the concept of probability enabled strong progress with respect to the calculation of risk, I do not agree with their ideas about

²⁰¹ Bernstein, 1996

the timing of origination of the concept of risk. The idea of peril and danger happening in the future and the idea of taking precautions are much older. Also the idea of interest or risk premium is much older, which even puts the origination date of calculated risk much earlier than the 15th century. Prescriptions for the calculation of the proper remuneration for the supply of money (finance) are already described in the Thora, Bible and Koran.

Another example of early risk management was the construction of “terps” by the ancient Frisians. They saw a recurring pattern of building houses below sea level and flooding of these houses and started building their houses on self made hills (“terps”). Another example involved the building of the Hadrian Wall in Brittany, or the Chinese Wall to mitigate the invasion of evil herds.

Both authors are referring to the origination date of “probability” in the 16th or 17th century. In other words, risk for them is synonymous with probability. That is a narrow definition of risk, even in EC terms. Risk is not only present in the probability that the risk occurs (PD), but also in the size of the exposure to the risk when it occurs (EAD), as well as the percentage of that exposure that will be really lost (LGD).

Probability may be a modern western concept, risk is not. Risk is more than probability.

7.3.1.3.2 Beck: Risk society

Giddens provides a cultural explanation of the origin of the term risk. He positions the origin of risk in a renaissance culture, where people see their own role in creating the future.

Beck provides a sociological analysis of risk and claims that risk is the most characteristic feature of current and near future society. Beck does not elaborate the origin of risk, but focuses on the current attention for the concept of risk. Although the concept of risk is old, new is its position in the centre of society.

Although our analysis will focus on the social implications of the EC movement in part two, Beck’s analysis also provides insights into the concept of risk. Therefore, in this part one of the analysis we will focus on those observations from Beck that provide insight into the concept of risk. Risk society as a social phenomenon will be described in part two.

In Beck’s story, risk is a sociological phenomenon that will affect the order of society. The strong progress in western science and the emancipation of various minorities in society since the 1960s coincide with the emergence of the risk society. And this development changes society fundamentally. For example, in

reflexive modernity, the risk society, the axial principle is the distribution of bads, as opposed to the distribution of goods in industrial society.

Typical features of risk society include:

1. Risks today induce systematic and often irreversible harm, generally remain invisible (because of the time aspect; risks by definition refer to future events), are based on causal interpretations, and thus initially only exist in terms of the (scientific or anti-scientific) knowledge about them. They can thus be changed, magnified, dramatised or minimised within knowledge, and to that extent are particularly **open to social definition and construction**. Beck refers explicitly to ecological risks and means by risks above all radioactivity, but also toxins and pollutants in the air, water and foodstuffs and accompanying effects on plants, animals and people. However, all risks relate to future and invisible events and rely on knowledge of causal relationships. This remark, in my opinion also is valid for other than ecological risks.
2. Some people are more affected than others by the distribution and growth of risks, that is **social risk positions spring up**. Risks of modernisation sooner or later also strike those who produce or profit from them. In that sense they contain a boomerang effect, which breaks up the pattern of class or national society. Connected to the recognition of modernisation, risks are ecological devaluations and expropriations, which frequently and systematically enter into contradiction to the profit and property interests which advance the process of industrialisation.
3. Civilisation or modernisation risks are big business, a bottomless barrel of demands, unsatisfiable, infinite and self-producible. With the **economic exploitation of the risks** it sets free, industrial society produces the hazards and the political potential of the risk society. Seeing risks as business then, the economy becomes self-referential, it produces the risks, which produce the economic area of risk management.
4. One can possess wealth, but one can only be afflicted by risks; they are ascribed by civilisation. Bluntly one might say: in class positions, being determines consciousness, while **in risk positions consciousness determines being**. The more chains of causes and effects we know of, the more risks we see. Knowledge gains a new political significance. Knowledge is one of the two basic resources to produce risk.
5. Risk society is a **catastrophic society**, it is focused on catastrophes. In it, the exceptional condition threatens to become the norm. And defence of the average threatens to become the goal.²⁰²

202 Beck points at issues that can have significant impact on society in terms of risk distribution, political significance of knowledge and defense of the average. However

Regarding the concept of risk, Beck shows us that risk not only comprises of cognitive, rational or scientific statements, but also comprises of normative statements. Science (or knowledge) is required to describe the chains of causes and effects that inflict the risks, but normative and judgemental statements are required to identify the risks, assess risks and evaluate risks. Statements on hazards are never reducible to mere statements of facts. As part of their constitution, they contain both a theoretical and a normative component. Risk statements combine knowledge about chains of causes and effects with normative judgements. In socially recognised risks, the authorities and agents of the modernisation process along with all their particular interests and dependencies are presumed, and are placed in a direct connection, in the pattern of cause and effect, with signs of damage and threats that are socially, substantively, spatially and temporally quite detached. Such risks can never be pure objectively determined.

Risk society is a society travelling through time, connecting future and present environments and changing present environments (and subsequently future environments). Future events in far away places are currently anticipated, environments and people are connected in the cause and effect chains that underlie any statement of risk. It does not so much matter whether the risks we focus on will actually happen, it matters that we anticipate these risks (and no others), and that these risks steer our attention and actions.

Risk is a blend between cognitive statements and normative expressions. According to Beck, risks experienced presume a normative horizon of lost security and broken trust. Risks are objectified negative images of utopias. Risk determinations are unrecognised, still undeveloped symbioses of the natural and human sciences, of everyday and expert rationality, of interest and fact. Herein lays the essential and momentous consequence: in definitions of risks the sciences' monopoly on rationality is broken. There are always competing and conflicting claims, interests and viewpoints of the various agents of modernity and affected groups, which are forced together in defining risks in the sense of cause and effect, instigator and injured party.

There is no scientific expert on risk. Where and how does one draw the line between still acceptable and no longer acceptable exposures? Scientists refer to quantifiable risks, but fail to quantify the normative aspects of risk. No matter how

interesting, these social implications will only be discussed in part two of this thesis, chapter nine.

small an accident probability is held, it is too large when one accident means annihilation.

What becomes clear is the difference between social and scientific rationality in dealing with risks. Social movements raise questions that are not answered by the risk technicians at all, and the risk technicians answer questions which miss the point of what was really asked and what feeds public anxiety.

Essentially, civilisation risks concern potentialities in the power of some, which can affect many others. Civilisation risks seem to demonstrate an important asymmetry. Radioactivity, toxins or pollutants can be produced by a small group, but can affect a large group.

In risk production, it may take a few people to affect many people, as if action gets highly leveraged. In this sense, risk management in a risk society is essentially decentralised, ie. in the hands of many small groups in their joint effect, and hence, risks are only under implicit control, ie. self-control of the small groups. It is impossible to control the behaviour of all these individual citizens, while they all may have access to required resources. Therefore self control is the only option. Unfortunately, our current technologies are so powerful that one man can leverage his action and affect many others. It only needs a handful to threaten society. As an example, this asymmetry is fully exploited by terrorist attacks.

Beck shows risk as a sociological construction and holds that risk deserves attention because it is at the core post-industrial (current) society. Beck's sociological analysis of risk society will be elaborated further in part two, § 9.6.2.

7.3.1.3.3 Definition of risk

Synthesising the above analysis, risk can be defined as follows:

“Unforeseen event that affects (future) performance negatively”.

This definition shows several dimensions of the concept of risk:

Subjective – objective

It refers to a subjective world in terms of what **a person** foresees or not, what is a performance and from whom, and in terms of what is to be considered as negative. Risk is a human product, either in terms of performance which will be affected, the normative aspect of defining what a negative impact is, or what is foreseen.

But, also risk refers to an objective world in which the event takes place and in which this person has vested interests. In the fact that the event constitutes a risk to us, the event is outside of us, outside the realm of direct influence and therefore

objective²⁰³. In the fact that a person is concerned with an event in the real world, especially in the context of risk management, that person defines himself as an actor in the objective world; one of the stakeholders in society on Earth.

Performance itself refers to an uncertain future and a promise regarding a specific outcome of a subjective action; it points at an external reference with subjective involvement. That the sun will rise is not a performance because it is hardly uncertain and does not require an action. If man doesn't see his own role in creating the future, there is no such thing as risk

Risk, consequently, refers to the uncertainty that the promised outcome will be realised in the future. There is some contradiction in the ability to promise something which is out of your control, which is external and risky. Morally, one could only promise a certain effort, never a specific result, because it is uncertain what the result will be.

The objective world is the place to which the promise refers, in which the action is executed, and in which the event that constitutes the risk as well as its consequences take place, not forgetting all the other events and processes that take place and interact with the risky event. This objective world can be predicted and anticipated, but not fully. Unforeseen events remain. Quoting Bernstein on Leibniz (p.118): "Nature has established patterns originating in the return of events, but only for the most part." (underlining is mine).

Forecasting is difficult, especially when it concerns the future. The past repeats itself, but only for the most part. Risk management is concerned also with preventing extreme losses, therefore needs to know what happens in the smaller part of the new future, the abnormal situations. In risk management the abnormal becomes the norm.

For global operating banks, the amount of possibly relevant information is enormous. Forecasting has to limit itself in scope of input required in order not to drown in the sea of possible relevant data. It has to ignore in order to focus. The current solution to this is to use statistics and mathematics to make use of as much structured and standardised information as possible. The econometric models allow to process vast amounts of data to calculate the joint effect, ie. the portfolio effect, of all credit risk assets.

²⁰³ Objective in this sense means also admitting third parties' interactions, not belonging to one's inner world.

Cognitive – normative

Risk concerns unforeseen future events. By definition, these events can never be measured before the risk has materialised and lost its status as risk. In that respect, one could question whether risk can be determined precisely, whether it is determinate in principle.

The unforeseen never happens in the present. Therefore, risk is principally invisible; we don't see it, but can only learn to expect it. In order to see risk, a causal relationship needs to be developed that indicates which of all the possible future events would be detrimental for our expectations, which factors cause harm. If you see a change in these factors, you can predict a change in the respective risk. Given the complex relationships in modern society, risk requires knowledge, risk is knowledge dependent. Science is focused on determining causal relationships, establishing what causes what. In effect, showing causal patterns with possibly negative outcomes, they identify risks and steer social attention. If not for science we would not know about greenhouse effects, we would not worry.

Furthermore, risk concerns negative impacts on performance. This element of risk requires a normative component. Who gets to determine what is negative and what is negative enough to be focused on. Science alone, by definition can not create this normative component. In principle every human being is eligible to discuss norms and values, not just scientists, especially not scientists as modernist scientists, as they are supposed to deliver objective knowledge, free of normative aspects. The normative statement should express which kind of risk is still tolerable and what are the acceptance levels. That involves quite some balancing in terms of costs, benefits and distribution thereof of each risk and possible ways to manage the risk. In that respect we can mention the ALARP principle, used in public risk management. This principle states that risk must be reduced to levels As Low As Reasonably Practical. It indicates that complete mitigation of all risks is impossible in terms of capacities or costs. We have to live with some risk. The determination of that is the normative statement required.

As risk concerns uncertainty in the future, it can not be observed directly. The particulars that indicate risk are only observed by their consequences, the materialisation of risk. In that respect, risk has an element of tacit knowledge, with risk indicators being the particulars on which we focus by way of their consequences. Risk indicators are the proximal term, the consequences the distal term.

Finally, risk concerns future environments, and risk management is concerned with interactions with environments that are not currently present. Therefore, risk management has an element of virtual travelling, and the corresponding problem of

intermediation. Hence, risk management is susceptible to problems of translation, interpretation and representation.

7.3.1.3.4 Calculated risk

7.3.1.3.4.1 Forecasting

Bernstein²⁰⁴ elaborates the concept of calculated risks in terms of its prerequisites. (p.121) “[There are] three requisite assumptions – as stated by Jacob Bernouilli- which are critical in determining how successfully we can apply measurement and information to predict the future:

1. full information, in order to know how reliable your sample is;
2. independent trials and uncorrelated risks
3. the relevance of quantitative valuation.”

Full information

According to Bernstein²⁰⁵: “We can assemble big pieces of information and little pieces, but we never get all the pieces together. We never know for sure how good our sample is. That uncertainty is what makes arriving at judgements so difficult and acting on them so risky... When information is lacking, we have to fall back on inductive reasoning and try to guess the odds. John Maynard Keynes, in a treatise on probability, concluded that in the end statistical concepts are often useless:” There is a relation between the evidence and the event considered, but it is not necessarily measurable.””

In a laboratory, it is possible to control most of the forces which influence the outcome of an action. In that case we can determine the influence of the known forces and start to quantify their impact by quantitatively modelling their behaviour. In real life situations however, in most of the cases we have to admit that we lack full information. We only know a number of forces, those which are observable to us. The fact that we observe only a limited number of forces doesn't mean that only this number of forces is relevant for the outcomes of our actions. Even the blind man cannot walk through a wall even if he doesn't see it.

From a pragmatic point of view however, we are limited in the influence we can have on all the relevant forces. If we don't know about a force, or if we are unable or incapable to control the force, or even are incapable of measuring or modelling

²⁰⁴ Bernstein, 1996

²⁰⁵ Idem, p.202. Quote: The information you have is not the information you want. The information you want is not the information you need. The information you need is not the information you can obtain. The information you can obtain costs more than you want to pay.

the force, then the force is of little use to us, we can do nothing about it or might not even be able to do something with the knowledge of such forces. These forces could be called “Fortune”, that what overcomes us without being able to influence them.

Pragmatically, it can be rational to direct our attention to those dimensions we can work with. No energy is wasted if we spend it on those important forces, at least until we have mastered all these dimensions. However, realistically forces work not in isolation, but in interaction with other forces. If we don't know all the forces in play, we might not be able to master a single one if that single force is influenced critically by other (yet unknown) forces. On the other hand, as soon as we interact with a force, we experience it and are able to respond to it. Only those forces which come into the realm of our interactions are really important to us. The blind man will notice the wall as soon as he bumps against it. Then only it is of his importance. We are only worried with the unknown as a whole, not regarding anything unknown in particular. Specific things only become important to us, if in one way or the other we interact with it, when it enters the realms of the known or own, according to the philosophy of travelling. At that moment, knowledge of the force will become available and subjective, because channelled through specific interactions.

As travelling mankind is increasing its experience and knowledge, more and more risks (patterns of relationships causing harm) will be identified. This will increase the efforts and need for modern risk management, in turn requiring more information. The quest for full information is endless. This was proven in the postmodernist turn in science.

Independent trials

The independent trials and uncorrelated risks are required in order to be able to infer inductions based on the observations. If it turns out that our observations are biased in one way or the other, for example because the trials are dependent²⁰⁶, or I choose observations which all have something in common which not all possible observations have in common, ie. typically my sample would be correlated, then I cannot predict future behaviour of those possible observations which don't have the bias in the sample. In case I would only have dependent trials, Bernstein holds that there is no rational way to calculate the odds (p.204). Eg. if I interview students about their opinion on society, I can not conclude anything about *the*

²⁰⁶ Eg. if I draw from a pot with black and white balls, but don't throw back the white balls if drawn, then the chance of drawing a white ball decreases every time I have drawn a white ball. The trials are no longer independent, because they rely on each other. I would have to know how many times I have not thrown back a ball.

opinion of all people in general, without having all types of assumptions which are not rational because counter the available information concerning only students. This effect also works in reverse. If I read something general about the state of the economy going down, ie. a crisis is looming, then I can not conclude that the credit qualities of all debtors of this specific bank are deteriorating as well. The bank might have a biased sample, not representative of the general economy, but maybe representative of a part of the economy which is booming, despite the state of the general economy²⁰⁷.

Either you have to know what the correlations within the population are, or you have to assume independent trials in order to be able to infer conclusions from the results.

Quantitative valuation

Only numbers can be subject to calculation and benefit from theories such as probability theory to extend their significance. In order to benefit from risk calculation engines, risk must be quantified into numbers with fixed meaning. Statistics can only handle numbers. Every statistical solution requires quantification. If no meaningful quantification is possible, statistics can't help.

Measurement is a quantification of some real life event. Quantification entails expressing only some dimensions of the real life situation in numbers, not all dimensions. This means that in quantifying the event, information is lost. The importance of the information lost determines whether quantitative valuation is relevant. Examples where quantitative valuation is useless concern matters of happiness, love or sympathy; no unimportant aspects of human life. Also, it is highly likely that all Tacit Knowledge or common sense knowledge is lost in quantifications.

7.3.1.3.4.2 Calculated portfolio risk

Bernstein points (p. 257) at some interesting problems with Markowitz "Portfolio selection" theory, which is the basis of portfolio thinking in CRPM:

- are investors rational enough to behave Markowitzian? Many of us have (especially recently) experienced some quite irrational investors, eg. driving equity prices of internet firms to unstable highs. The critical question though is whether investors as a group behave rational enough to allow the Markowitz' perfect market assumptions. The science of behavioural finance explores instances where rationality seems to be

²⁰⁷ Examples of firms which flourish in downturns are Collection Agencies, Fire-sale Auctions, lawyers, etc.

lacking in the markets. Some academic institutions see enough demand to supply these kinds of studies with institutional investments.

- Is variance the proper proxy for risk? If investors perceive risk as something else than variances, the Markowitz implications of optimising variance and return might be distorted, or not. Bernstein quotes Jeffrey who holds that volatility (or variance) fails as a proxy for risk because volatility per se, be it related to weather, portfolio returns, or the timing of one's morning newspaper delivery, is simply a benign statistical probability factor that tells us nothing about risk until coupled with consequences. For an investor the real risk lies in the fact whether he has the cash available to make essential outlays. Jeffrey holds that the risk of owning assets has meaning only when it is related to the investor's liabilities. The central idea is that variability should be studied in reference to some benchmark.

Another remark concerning the suitability of variance involves the factor time. With time variances change, but time changes risk in many ways, not only in volatility. For example, if I predict an interest rate increase in one month, the risk of the change not happening changes between the beginning of the forecast horizon and the end of that month. The risk will again have completely changed when the forecasting horizon lies completely behind us.

Within the lending business, it is well known and accepted that loans with tenors of ten years are more risky than loans with tenors of one year. We also know that a default will probably not occur tomorrow, the day after the start of the loan or the regular review of the loan, it will probably occur much later in time. But if we arrive at that later in time moment, the risk of a default has completely changed, because we already know what happened in the meantime. It is as if the risk concerning a specific point in time is withdrawing as we approach the point in time.

- Is there a positive relationship between risk and return? If we could find cases where by lowering the risk, we increase the return, Markowitz' efficient market line would have a completely different shape. In §8.3.2.2. we will find some empirical evidence of lacking positive relationships between risk and return.
- Technical: can investors estimate expected returns, variances and covariances?
 - Only data about the past is available. Results of the past are not a guarantee for future results, the world might change in between.
 - Quantification of risk; in order to decide how much risk to take, risk needs to have some order of magnitude. This becomes very complicated when the parameters themselves are not stationary, but fluid. Next to that, the risk appetite of people is changing over

time. If people get older, they tend to be more risk averse. Sharpe holds that changes in wealth affect the willingness to take risks (p. 264). People who just made a gain have a thicker cushion to absorb losses and more appetite for risk.

- Usually the error margin of making predictions based on past data is quite high, whereas Markowitz requires precision. In addition to that, the sensitivity of the process to small differences in estimates of the inputs contributes further.
- Calculation of all correlations between each asset and every other asset is an enormous task. Therefore, this requirement was eased by the introduction of the beta, known from CAPM, which allows calculating the correlation of each asset with the market as a whole. Credit correlations are even more difficult as credit information (opposite to investor information) is not public in many cases where bank finance is involved.
- The idea that a portfolio, or the security markets themselves can be described with only two numbers: expected return and variance. Relying on these two numbers is only appropriate if and only if security returns are normally distributed. No outliers are permitted and the results on either side of the mean must be symmetrically distributed. This is a problem for some investors more than for others, depending on the purpose for using the Markowitz model; for some investors the data fits closely enough. The required precision is dependent on the actual strategy of the investor.

7.3.1.4 Credit risk: the Rabobank International case.

In order to obtain a detailed picture of a subject “where the devil is in the detail” we will have to resort to proprietary knowledge, ie. the exact way how banks view credit risk, the mechanisms which affect the losses in their credit portfolio and the methods which they apply to capitalise and charge for credit risks. In the below, the clinical study approach will be used to study the way RI has dealt with these concepts, without revealing the secret of the cook.

Within Rabobank International traditionally, there was not one precise definition of credit risk, other than the uncertainty that a debtor will not repay its loan orderly. BIS II efforts change this in the sense that for a PD, EAD and LGD estimation, there must be one precise definition of what constitutes a default in order to be able to calibrate parameters. Risk is then translated into the probability of a default, the most likely exposure at the time of default and the loss given that a default has occurred. The definition of default is then the mark of risk. Although default must

be defined for BIS II, and several precise indications are included in the definition (such as a payment of interest or notional is overdue more than 90 days), these indications never fully capture default risk²⁰⁸. Therefore, Group Credit Risk Management has insisted that an indication has to be included in the default definition that says that a default also has occurred if the bank thinks that it is highly likely that a loss can occur, even if the precise indications have not materialised. With this inclusion, the definition of risk again is subjective and imprecise.

In practice, credit risk is indicated by an internal rating (e.g. financial risk score) or by a regulatory classification (e.g. good, olem, substandard, doubtful or loss), which in principle should work in tandem. Ie. a substandard credit position should also receive a low rating. If the classification is substandard or below, a provision should be taken regarding the amount that could be lost, which is the unsecured part of the position. For example, for a credit that is secured by a mortgage on a house worth 60% of the size of the loan, 40% should be provisioned for. For substandard, only 10% of the 40% has to be provisioned, for lower classifications this is 100% of the 40%.

When a provision is taken, this is booked on the profit & loss account, ie. creates a loss. This means that the risk of a loss is materialised when the provision is taken. After that moment, the credit is considered at high risk and is transferred to the work out department or the special asset management department. In case the credit improves after the provision, the provision can be released, generating a profit. If the credit deteriorates to the extent that the bank thinks it will not receive the money anymore, the provision is written off against the loan. This means that both the loan and the provision is taken off the books and are ended. After that, the bank could still realise a recovery by continuing to chase the client, e.g. by legal procedures which might take quite long to finalise. This is then booked as an exceptional income.

Concluding, the risk of default is indicated by the rating or classification, which is linked to provisioning. After a certain threshold (substandard classification) a provision is taken and the risk of loss has materialised technically. After that, the credit is in work out status where the bank increases its management of the credit in the hope to recover as much as possible, either by restructuring the loan (extending tenors, defer interest payments, etc.) and extending the relationship with the client, or by liquidation (selling collateral or other assets of the client, or selling the loan at a discount to other banks) and terminating the relationship. In practice it turns out that losses are mostly created with those clients that end up in a

²⁰⁸ For example, some companies may be in big trouble already three days after an overdue payment. Compare the Barings case, which was bankrupt two days after default.

liquidation scenario. In a cautious approach, risk is defined as the probability that a provision has to be taken. Realistically, most provisions are released after a while and no loss is incurred. Only for clients that end up in a liquidation scenario, losses are highly likely, ie. there is a serious risk of loss. For Rabobank International, only approximately 10% of defaulted clients would end up in a liquidation scenario. Therefore, the definition of default – indicating an acute risk of loss- is confusing; the majority of respective defaults does not create a loss.

7.3.1.5 Model risk

Next to the risk that debtors will not repay their loans, a further dimension of risk is added when a bank uses a model to assess the risks in its credit portfolios. Given the large amount of loans outstanding, and factors that determine the risk in the portfolio, the bank must focus on specific factors, ie. must ignore some factors and concentrate on others. That means that the bank must use a model to assess the portfolio risk. This in itself adds an extra layer of risk, ie. that the model is incorrect and suggests wrong actions. First, we will analyse the basic public CRPM models that are available on the market. Next we turn to comments of the regulators concerning the use of portfolio models.

7.3.1.5.1 The Basic EC operating models

Koyluoglu²⁰⁹ et al. summarise the currently existing CRPM approaches into three representative models:

- Merton based, eg. CreditMetrics (JP Morgan), PortfolioManager (KMV). (ie. using the option approach and stock returns).
- econometric, eg. CreditPortfolioView. (ie. adjusting for macro-economic factors and shocks), and
- actuarial, eg. Credit Risk+. (ie. assuming some kind of statistical distribution for default probabilities and volatilities).

They show that “when the joint default parameter values [ie. correlations] are harmonised to a consistent expression of default rate and default rate volatility, the default rate distributions are sufficiently similar as to cause little meaningful difference across a broad range of parameter values. Any significant model differences can then be attributed to parameter value estimates that have inconsistent implications for the observable default rate behaviour... Parameter inconsistency can arise from two sources: estimation error, or model mis-specification.” They show that all models are first of all specified by their correlation assumptions, then by their parameter (PD, EAD, LGD) estimates.

²⁰⁹ H.U. Koyluoglu, A. Hickman, 1998

From a statistical point of view, three type of models for correlations and volatilities can be distinguished:

- Structural models; these models are based on an explanation of the default process, such as the Merton based models, and supported by empirical evidence, such as stock values. KMV and Credit Metrics belong to this class.
- Reduced form models, which simply try to model the default and correlation processes, based on actuarial information and assumptions about the loss distributions. Credit Risk + is an example.
- Mixed Models which are based on both empirically supported explanations and assumptions about the distributions. Credit Portfolio View is an example which models uncertainties according to distributions and conditions these on states of the economy.

“The latent variable approach underlies all models that descend from Merton ‘s firm value model (Merton, 1974). In particular, it underlies the most important industry models, such as those proposed by KMV Corporation and Credit Metrics. In these models, default of an obligor occurs if a latent variable, often interpreted as the value of the obligor’s assets, falls below some threshold, often interpreted as the value of the obligor’s debt liabilities. Dependence between default events is caused by dependence between the latent variables. The correlation matrix of the latent variables is often calibrated by developing factor models that relate changes in asset value to changes in a small number of economic factors...A core assumption of the KMV and CreditMetrics models is the multivariate normality of the latent variables.”²¹⁰

“The basic message is that asset correlations are not enough to describe dependence between defaults. Asset correlations do not fully specify the copula of the latent variables and much model risk remains.”

Econometric models, such as CreditPortfolioView, are an attempt to deal with the issue of cyclical impacts on parameters.²¹¹ There is considerable evidence to suggest that important industry factors, country factors, and business cycle factors impact default behaviour. As Caouette et al.²¹² point out:

- It explicitly models actual, discrete loss distributions dependent on the number and size of credits in a subportfolio.
- Rather than being based passively and unconditionally on historic averages, the loss distributions are conditional on the state of the economy.
- The losses are measured on a mark-to-market basis both for exposure that may be liquidated and for those that cannot be.

²¹⁰ R.Frey, A. McNeill, M. Nyfeler, 2001

²¹¹ Saunders, 1999, p. 49

²¹² J.B. Caouette, E.I. Altman, P. Narayanan, 1998, p297

- The approach is applicable to single obligors as well as to collections of obligors such as retail portfolios.
- The approach captures the uncertainty regarding recovery rates as well as losses arising from country risk.

7.3.1.5.2 Regulator's issues and problems

At the centre of the EC movement is the issue of the internal rating. BIS has termed its internal models approaches in the BIS II proposals IRB, internal rating based. In fact, BIS II leaves banks with three options to calculate required capital for loans:

1. Standardised; only external ratings, assigned by a recognised rating agency, can be used to differentiate counterparty default risk, with risk weights ranging from 0, 20 to 150%.
2. Foundation IRB; only the internal creditworthiness (PD) rating can be used to differentiate counterparty risk, with risk weights ranging from 0, 14 to 625 %.
3. Advanced IRB; next to the internal rating, banks can use all internal estimations of risk (also with respect to exposure levels and value of risk mitigation) to differentiate counterparty risk, with risk weights ranging from 0, 14 to 625 %.

As mentioned above, there are two approaches to obtaining default probabilities: 1) by empirically measuring the average default rates of a specific group of debtors, which requires a method to classify debtors in specific groups²¹³; or, 2) based on the options theory framework, which calculates PD based on the market value of the firm's assets, the level of its obligations and a kind of beta

Regarding the credit rating approach, some issues include:

- Grouping of clients; in wholesale banking, clients are more or less unique in their business, and the reason for default is unique as well in most of the times. Next to that, to consistently and objectively quantify the possibility that a client will default requires hard evidence of its creditworthiness over time. The financials of the client are used as a benchmark to compare the client with others. But the amount of eg. equity required varies per sector of industry, differs per country, should be compared with appropriate economic cycles, etc. Finally, default behaviour of clients is believed to depend also on the strength of the relationship between bank and client. If the relationship is strong and loyal, default will occur only in extreme events.
- Historical empirical evidence; many banks have applied the individual approach for CRM and managed credit risk decentrally. Therefore, many credit files have their own format, language, etc. In other words, much information was not stored systematically. Next to that, risk does not have to be stationary, ie. the drivers of risk can change in time, hence historical risk patterns might

²¹³ ie. groups which have similar default characteristics, eg. groups with similar public credit ratings.

not occur again in the future. Banks learn and change their policies, society changes uni-directionally, the economy develops in different cycles, not necessarily always in identical patterns.

Regarding the options method, the following issues can be mentioned:

- Is the financial market always right in its valuation? In many cases, markets are known for their overshooting reaction when big news is announced. KMVs model is also criticised for the volatility of EDF²¹⁴ ratings produced by the model. Next to that, the recently burst internet bubble has proven that stock prices can be misleadingly volatile.
- Does the Merton model explain all defaults? In its simplest form, Merton says that a firm will default if the value of the firm's assets falls below the value of the debt liabilities. But Caouette mentioned a shift from balance sheet lending towards cash flow lending. Banks might not be too concerned about the value of the assets as long as they are repaid by the cash flow of the company. A bank rather not liquidates a firm and tries to sell its assets as occasions, but prefers to deal with customers who can repay based on their ongoing operations. Merton assumes that capital markets are efficient, but in many cases information is asymmetrical. Eg. suppose that a seller of stock knows more than a buyer, then he will sell the stock for an inflated price. Next to that, Merton assumes that an equityholder is a long term investor and prices accordingly. Today, equityholders tend to be more short term investors, reacting on volatility, which is not included in Merton's model.
- It only applies to listed companies, which are in the minority in the non-US.

Although much attention has been directed towards ratings, more issues, also regarding LGDs and correlations, in fact issues regarding the whole model have been raised. The BCBS²¹⁵ "recognises that credit risk modelling may indeed prove to result in better internal risk management, and may have the potential to be used in the supervisory oversight of banking organisations. However, before a portfolio modelling approach could be used in the formal process of setting regulatory capital requirements for credit risk, regulators would have to be confident not only that models are being used to actively manage risk, but also that they are conceptually sound, empirically validated, and produce capital requirements that are comparable across institutions. At this time, significant hurdles, principally concerning data availability and model validation, still need to be cleared before these objectives can be met, and the Committee sees difficulties in overcoming these hurdles in the timescale envisaged for amending the Capital Accord."

²¹⁴ EDF : expected default frequency, similar to PD.

²¹⁵ Basel Committee on Banking Supervision, April 1999.

In the same report, the BCBS provides a long-list of 21 conceptual and parameter specification issues.

In 2001, BIS II announced that the reforms would not be implemented earlier than 2005, a one year delay. In 2002 BIS II announced another delay, stating that implementation will only occur in 2007. In 2004, it was announced that implementation was one year more delayed.

A further concern is the convergence of risk assessment methods and use of similar models in the whole banking industry. As Bikhchandani²¹⁶ mentions: "Some observers express concerns that herding by market participants exacerbates volatility, destabilises markets, and increases the fragility of the financial system. This raises questions about why it is surprising that profit-maximising investors, increasingly with similar information sets, react similarly at more or less the same time?" Banks feel the need for data in order to improve model validation. One of the ways to "grow" data is to pool the data with other banks with similar portfolios and similar data problems. In similar ways, current problems with concepts will be solved by further standardisation of concepts.

Banks will use more and more the same data and models. Hence, their behaviour will more and more coincide and this may lead to herding behaviour. Also Schinasi et al. (2001) claim "that contagion occurred after the Russian unilateral restructuring because financial institutions use VaR rules."

7.3.1.6 Philosophy of science perspectives on the risk issue

In this paragraph we will analyse the concept of risk with the tools from the toolbox of the philosophy of science approaches. First, Nozick's approach is applied, then the philosophy of travelling is used to highlight interesting aspects of risk and credit risk management.

7.3.1.6.1 Nozick's functional response

According to Nozick we should analyse risk concepts according to the following questions:

- What is the starting place ? the phenomena and invariances that evolution has shaped us to notice and take account of,
- Why it is appropriate?
- What transformations are admissible according to the current views?
- A general description of past, present and future views, including ontological and epistemological restrictions.

²¹⁶ S. Bikhchandani, S. Sharma, 2001

The last question has been extensively discussed in § 8.1 and § 8.2. The other three questions will be elaborated below.

Starting place

As shown by Giddens and Bernstein above, the concept of calculated risk (risk as probability) arose when man liberated himself from tradition and saw the future as something in which he has his own role. The risk concept started in early Renaissance. For it to become important it was necessary that man keeps track of performance. Hence, a precondition to conceive of risk is the measurement of performance, ie. the double entry bookkeeping and the calculation of profit and loss, including the expectations of future profit and loss. The discovery of the concept of probability in the 17th century turns the concept of risk into a calculable concept and allows applying the full range of the statistical toolbox to calculate risk.

However, the EC movement most of all is concerned with portfolio risk, the aggregated singular risks and their joint behaviour. This concept was only introduced in financial theory by Markowitz in the 1950s, although the joint effect of singular risks has been modelled a lot earlier in the insurance industry, e.g. by Lloyds in the 17th century. Very roughly, the distinction between insurance and banking is that the insurer doesn't want to pay out the premiums received, while the banker wants to be repaid the loan given.

Why is it appropriate to distinct portfolio risk?

Based on the notion of volatility as risk, it can be shown that the volatility of two separate risks added is more than the risk of the joint position in case the two positions are less than perfectly correlated. In that case, if one position would have its maximal deviation from the mean on a certain day, it is unlikely that the other position would also have its maximal deviation on the same day. The total deviation consequently would be less than maximal. Therefore, it is appropriate to compose a portfolio in such a way that the correlations between the individual positions are minimal, all other things equal. This is called the diversification effect. To give an idea of the relevance of this effect, for Rabobank International the consultant OWC estimated that the diversification effect decreases the aggregated standalone risk with 85%, ie. our diversification benefit is 85% of standalone risk. That is very material.

As stated above, it is appropriate to use a model because too much information must be combined to assess portfolio risk. This can not be done in the heads of credit officials, at least not to the required level of accuracy.

Which transformations are admissible?

The most important transformations concern the mappings of individual risks characteristics in uniform measures, such as PD, EAD and LGD, and the

conversion of distinct combinations of these three basic components in expected losses, unexpected losses and Economic Capital, by way of application of volatility, correlations and loss distribution assumptions.

Given the clinical study approach, and the fact that RI is currently focusing on improvement and implementation of the three basic parameters - PD, LGD and EAD-, comments on admissible transformations will be limited to these.

1. As stated above, the estimation of these three parameters is closely tied to a uniform definition of default applied to all credits in the portfolio. The first problem is that the definition applied describes a number of indicators that it is likely that losses can occur in a certain credit (e.g. overdue payments of more than 90 days, bankruptcy of the debtor, etc.) However, the definition also allows the judgement of the bank that there is a problem as a marker for default. This is a subjective decision which is likely to differ between different credit officers, different offices and different regions. The definition thus still comprises a subjective element which makes it harder to aggregate default risk consistently. Next to that, many defaults are caused by fraud, which is very hard to predict, especially when the bank does not have a long lasting and close relationship with the client. Ie. in case the bank would want to diversify its portfolio, it has to accept new clients that have no track record, known reputation or commitment to the bank.
2. As mentioned above, availability of data to calibrate the three parameters or even find the appropriate risk drivers is a structural problem. Historical data is a problem because of the efficient registration of the bank (the bank only registers if there is an information requirement. Given that new theories have new information requirements, historical information is hardly available in the proper quality). Furthermore, given the size of portfolio of RI (approximately 1200 clients) and the required distinct rating tools (accounting procedures differ per country, large clients behave different from small ones, banks are different from corporates), it is highly likely that the bank will never get the amount of data needed for proper statistical estimation of parameters. This leads to the anomaly that this highly statistical approach (ie. CRPM) is in the end based on expert opinion regarding parameter levels. This is a transformation that is not admissible according to mainstream statistics.
3. Other parameters used to calculate EC (ie. higher layers in the model, such as volatility and correlations) are provided by the consultant who claims to have done studies in many other western banks. However, Rabobank International is a bank focused on Food & Agri business, in which it is quite unique globally. F&A companies tend to be unlisted, ie. have no publicly listed equity, and the industry is known for its seasonal effects. Therefore, it can be doubted whether the benchmark parameters from the consultants are adequate for our portfolio.
4. Alterations through time are acknowledged as important issues by any expert in CRM, but due to lack of data and the choice for the one year horizon for

portfolio risk evaluation, these can not yet be modelled in the current framework. Debtors are reviewed on a regular basis, typically one year frequencies, which indicates that the bank thinks it is important to keep an eye on the alterations that occur through time (otherwise it would not spend money on updating and reviewing). Especially for classified clients, monitoring frequencies are increased typically to quarterly, which creates a lot of work for the credit officials. However, these clients are considered to be in default, and according to the EC formula, do not need capital anymore. This means that the most risky clients are excluded from the EC considerations. Hence, for the real risky clients, alterations through time are considered essential by the bank, but still not included in the model.

Biasing factors and counteraction.

As listed above, there are numerous biasing factors that hinder a proper and adequate application of the CRPM theory. CRPM also is received with a sound doses of scepticism, especially from senior Credit Risk Management on Rabobank Group level.

The counteraction of these biasing factors within Rabobank in the current phase of development and implementation of EC is four folded:

- Testing of outcomes against expert knowledge. Both on the side of ratings and PDs as on the side of LGDs and EADs, models have been constructed based on expert knowledge and outcomes have and will be tested against the opinion of experts. In that respect, the EC movement doesn't provide new types of assessment of credit risk, but especially helps in better structuring and more uniform assessment of credit risk.
- Theoretical criticism. Risk Research departments within the bank are focusing on the validity of the theory and proposed model on Group level. As shown in § 8.2.4.3 (epistemology of econometrics) analyses are made of the theoretical foundations of the model and the fit with general theory and the specific portfolio and credit philosophy of Rabobank International. With these analyses awareness is raised for shortcomings of the model. This can help in initiating projects aimed at improvement of the model, but the awareness will also help in the careful interpretation of the results of the model. Management of the bank is aware that the model is not perfect and will use the results of the model only as one of the inputs to their decision; they will not rely on the model solely.
- Already initiatives are developed to start back testing the results of the model according to statistical theories for validation of models. Although not enough critical mass of data is available, and one could wonder whether there will ever be enough data available, given the portfolio size and few defaults, this back-testing will add another source to support or improve the model.

- Adherence to BIS II prescriptions regarding content of the risk model and risk management process and submission for approval by DNB, the Dutch regulator. All internal models will be presented to DNB, tested on compliance with BIS II criteria, and otherwise scrutinised by DNB before approval is granted.
- Last but not least, the traditional credit process, ie. one by one approval of credits by a credit committee, will stay in place. CRPM is implemented as an addition, not a replacement of current processes. If the bank is happy with the traditional process, the impact of CRPM can only be an improvement, not a deterioration.

In summary, biases are counteracted by accepting common sense knowledge as a reference benchmark (results have to make (common) sense), by theoretical criticism and raising awareness for biases, thirdly by applying the techniques as suggested by statistics (the core epistemology) for back testing and validation, by submission for approval by DNB, and finally by introducing CRPM as an addition, not a replacement of current credit selection and approval processes.

7.3.1.6.2 Risk (management) as (virtual) travelling

From a general philosophy of travelling perspective we can analyse the concept of risk, and the active assessment and anticipation of it, which is risk management, by focusing on the following questions:

- Identity; what is the identity that knows? (or tries to); how does it relate to the world?; how is the Identity preserved under the violence of ever changing environments?
- Border; what constitutes the actual border (place of exchange) between Identity and environment? What is actually exchanged and how? Usually, it is tacit at the border, and the border can be perceived as a gate, which limits transition. However, usually the border is not explicitly perceived, because we rely on its awareness for attending to the real world, hence tacit.
- Environment; is the source of the Other, a condition for Life and Meaning. In it we meet humans, animals, plants and hard objects; both they (people) and it (matter) out-there. The change of environment is the basis of travelling.
- Orientation; the Environment is much richer than we can explicitly be aware of (e.g. there are more colours than we can see), and even within the realm of our awareness, to be efficient and effective, we have to focus on certain perspectives on reality. In the course of life we learn how to do that and which focus helps us most: we develop a general orientation on the world, which is the way we approach the world in order to meet it for the first time.

- Kind of travelling; each kind of travelling is characterised by a distinct setting of the possible interactions which limit and allow knowledge development.

The Identity

The identity that tries to get to know the world in risk management is the risk manager who employs his skills in favour of the organisation he works for. A risk manager needs an organisation to be economically relevant. That is, if not somewhere else in his organisation people are originating risks (such as account managers) and the general management of the organisation is not profit oriented, the risk manager would never face any real risks, given this attitude. Risk management is concerned with limiting risks, but has to allow a limited level of risks, because risk and return are related. No risk, no return. In this respect, the risk manager is essentially part of a larger identity. His part is focused on limiting risks and making sure that risks taken are in line with the risk appetite of the organisation. The other part of the identity is the account manager who is focused on generating return by originating risks. General management (GM) is subsequently, as an over-layer, focused on generating adequate returns, staying within the risk appetite and keeping costs for risk management and account management sufficiently low.

The risk manager (RM) relates to that part of the world, ie. that part of all possible debtors, which has been selected by general management in their strategic focus. Ie. would the bank focus on all possible clients that create an adequate risk-return, or would the bank focus on certain types of industry or certain countries, or certain credit products? Also relevant in this is the frequency of change of strategy of general management. With every change, RM will relate to another part of the world, become alienated from its first focus and will have to appropriate the part of the world in the new focus. This process of appropriation takes time, which is limited by the mentioned frequency of strategy change.

The RM will preserve his identity as risk limiter because he has a formal responsibility to limit the risks that arise due to the commercial activities (generating transactions that incur credit risk). This is usually practised by approving credit limits (concerning amounts, tenors or products which are allowed). Formally, RM is held accountable for the selection and management of all individually approved limits/clients. If one of the clients would default and create losses, it can be traced who precisely managed that client. If the RM could or should have foreseen that this

particular client would create a loss, he is doing a bad job, and in the end (if losses occur more frequently) might lose that job. Thus his professional responsibility will make sure he preserves the identity of RM, or the bank will fire and hire another RM who will.

The Border

The actual border (place of exchange) between Identity and environment in first instance comprises of the credit application in which a lower level RM has made an analysis of the creditworthiness of the counterparty according to the bank's policies, which in turn are made by the RM. The credit analyst obtains the required information usually from the account manager and from the annual public reporting of the client. Balance sheets, Profit & Loss statements, together with a qualitative risk assessment of the specific company, industry and country provide the basis for the analysis, possibly supplemented by answers to specific questions the analyst may have, which will be answered through intermediation of the AM. That is, the AM manages the relationship and will execute all required interaction with the client.

From the perspective of the bank as a whole, the actual border is the relationship of the account manager (eventually assisted by product specialists, in case of complex products) and the client.

In second instance, the RM might have paid a visit to the client previously. This allows the RM to obtain a view on the quality of the client's operations and to obtain a view on the key persons who make decisions within the client's organisation. However, this is not a general procedure within RI. It would increase the costs of RM too much. Often the RM visits a client as a typical one, to compare with other clients, ie. to obtain a general view on what is important for the specific industry. More indirectly, the RM will obtain information about the client or even more general about the industry of the client by using general sources of information, such as the newspapers, business magazines or professional RM literature. Much of the information currently is third hand. If the client is of a reasonable size, ie. large enough to make an impact on the local economy, the local newspaper will publish any relevant news about the specific client. Ao. for this reason, RI thinks it is important to have a local presence, ie. to have a local office in the countries of its clients. Only a local office is able to screen the local news, and most of our counterparties are such size that they are only reported in the local news, not in the global newspapers or media.

The Environment

The environments through which the RM is travelling comprises of actual debtors in good condition (limited interaction), prospects (new interactions), and bad clients who either have created a loss for the bank or are highly likely to do so (intensive interactions). The environment of the RM changes because of several reasons:

- Strategy changes, which make the bank focus on new customers and not renew contracts with old customers or sell complete portfolios to third parties.
- The tenor of credit contracts (they mature) so that old credit positions will run off (the loan is repaid) and new decisions must be made to replace the old credits. The risk of repayment varies accordingly over time. E.g. if a loan has to be repaid in full at the end of the tenor, most risk is present just before the loan matures.
- Changes of credit quality of existing debtors due to *alterations through time*. For example, industries and economies boom and bust according to cycles. In another part of the cycle (compared to when the credit was originated) the debtor will be in another economic shape. Or for another example, food and agri type of industries can be hit by an event, such as BSE, pigs plague or draught. These factors seriously affect the performance of everyone in the industry negatively.

The debtors of the bank do not operate in isolation; they are competing against others in the industry to attract more demand, they depend on suppliers for their resources, are influenced by factors that determine the demand for their products, such as levels of consumer spending. Their performance in part correlates with many other factors outside their influence, ranging from specific events to the global economy.

Orientation

There is no direct indicator of the credit risk which the RM has to manage; the BS and P&L account are based on accounting principles and not focused on indicating the available cash flow, and heavily subject to window dressing, ie. looking better than the actual situation. Next to that, credit risk concerning a specific debtor is caused by many factors, of which a large part is not influenced or directly related to the debtor. Therefore, the RM has to focus on certain perspectives on reality and ignore others. That is, the RM will have developed an orientation; a way of looking at the world, a perspective which he thinks is helpful in reducing and structuring the available data.

The exact orientation of the RM can be considered tacit knowledge; the RM is focusing relying on his own awareness of credit risk indicators for attending to something else, namely the effect, the future repayment capacity of the counterparty.

However, in general, the credit RM will be searching for indications of the cash flow available for repayment in the client's company. Loans are usually repaid because the counterparty earns enough cash in time to make interest and notional repayments. Accounting based statements do not focus on cash flows, they focus on earnings, which can be completely different. For example, earnings take into account depreciation, amortisation and other non-cash movements, and thereby distort the proper cash picture. The RM, i.e. the credit analyst will try to correct the financial accounting figures and create a cash flow picture of the company. This already involves a projection of what, e.g. sales and cost of goods sold will be in the future.

Next to cash, loans can be repaid by selling assets of the company. The RM will therefore also focus on the value of saleable assets within the company. These could be assets that are explicitly pledged to the bank, or assets that are available to all creditors of the bank (i.e. unpledged). The RM will have to assess what a proper value of available assets is under various scenarios, e.g. in case the bank will liquidate the company of the client and have a fire sale²¹⁷ auction, or in case the client is willing to co-operate in case of problems and sell assets himself to repay the loan. In latter case, there will be less of a fire sale effect and the assets might be sold on a going concern basis and generate more cash.

The kind of travelling

Risk management is concerned with future events, future behaviour of counterparties in terms of their future repayments of contractual obligations.

Therefore, interaction with the environment which is the focus of RM is not directly possible, simply because it is not yet there, it is in the future.

Hence, the interactions with the relevant environment must be intermediated, must be indirect. That means that the kind of travelling is virtual travelling.

As discussed before, if the RM uses a model to analyse credit risk of portfolios, there is another indirectness in the interaction with the relevant environment in the

²¹⁷ In case the bank will liquidate, the client's company will cease to exist and the bank will try to get its money back a.s.a.p. Therefore, the asset might be sold on a wrong moment, buyers might be unwilling to buy when the company is liquidated, or for other reasons the value of the asset will be less than on a going-concern basis, when the company continues to operate.

sense that the bank is actually interacting through the model. However, results of the actions that are based on the model will have real implications and real effects, e.g. in terms of real losses incurred or mitigated. These results, however, will only come to existence in the future environment, as and when they realise. Hence, the use of a model for RM introduces a second dimension of virtual travelling.

Given that RM concerns a virtual type of travelling, we can extend the analysis by focusing on specific virtuality issues. When we focus on a virtual type of travelling, the following issues should be addressed in addition to the above mentioned:

1. What are the direct interactions between subject and object? What are the subject and the object? How are the objects appropriated and what forces cause alienation?
2. What is the medium in case of virtual travelling? Who makes the interpretations of real life situations and the translation and what risks are there for misrepresentation? How are interactions actually transferred so that travelling becomes virtual, eg. by way of tele-communication, recorded memory or language.
3. What is the transferable storage capacity? How are results of historical interactions stored? How are those results maintained, ie. how are processes of alienation counteracted and new appropriations organised?

Identity and environment

The identity- relationship-environment structure that enables only indirect or mediated interactions in this case concerns the RM who actively tries to assess future performance of a client with respect to the capacity to honour its (future) contractual obligations towards the bank. Only to the extent that current performance determines future performance, the RM is able to interact directly with his intended environment. As mentioned above, next to current state, future state is also determined by exogenous factors, as well as with purely stochastic factors.

The RM appropriates his object by:

- Risk assessment, which is both qualitative and quantitative, and
- Structuring of the transaction to make sure that the counterparty is doing what it should do with the loan and to enable the bank to receive early warning signals in case of adverse developments.
- Regular monitoring of the creditworthiness and adequacy of the financing structure to make sure that the dynamic alterations through time are taken into account again.

- Updates and additional information sources regarding exogenous developments and adverse developments of the client which become public.

The degree of alienation if the four above bullets are not properly managed varies, depending on both credit quality at origination and speed of change in a particular industry, such as caused by the weather seasons or technological change, or supply-demand cycles. Finally, alienation can be caused by events, or differently put an error term. Some clients will be more susceptible to events than others. E.g. if the bank only makes a 1st assessment, but no monitoring, this might not be that bad for the very best (AAA) clients. In fact, all western governments are hardly analysed.

Medium

The medium that the RM uses to enable his virtual travel with the future performance of the client consists of *information* provided by the client to the relationship manager to the credit analyst to the credit committee members and *judgement* of each of these people, with the decisive voice for the most senior RM in the committees.

All these people make the interpretations of real life situations in which the client operates and the translation of the actual situation into the likely future scenario, including worst case scenarios. Analyses really tend to be redone at higher levels of seniority.

For traditional credit risk management, the language used was plain English, albeit loaded with financial terms. Guidelines and a high level format for analysis were provided, but this kept transparency of the analysis high. This is in contrast with the new way of CRPM, in which ratings are processed by a spreadsheet type of calculation, combining various financial factors (usually more than 5) with different weightings and combining that with another set of non-financial or qualitative factors. This is no longer transparent, in the sense that a credit committee can easily say that one factor is assessed too optimistically, hence the rating should be lowered. What is the actual effect of this single overstatement is not transparent, new input must be fed into the rating tool to compute a new rating.

The risks of misrepresentation are determined by the character of the transferable storage capacity; resources for the knowledge of credit risk (management) that exist outside one specific brain, that is between the humans and functions as a general knowledge base, accessible for more than one human (i.e. employee). Due to the EC movement, this capacity is greatly changing as will be elaborated below. The EC movement introduces a central model to capture (local) risks. If the model does not fit well to the local situation, the violence applied locally to capture the risk determines the risk of (mis)representation. The intermediation, the carrier of appearances is vital for the quality of risk management. The exchange starts with the local translator.

The transferable storage capacity.

Within RI, this general knowledge base is present in the way we structure our contracts, how we select our clients to offer contractual loan agreements, how we monitor them and process data and information to manage the credit risks, how decision bodies are constructed. This comprises so much more than I could describe precisely, which forces me to call it the **credit culture** of RI. Culture is then defined as the aggregate of institutional and common behavioural factors of a specific group of people (i.e. organisation). Culture can not be precisely defined other than common emerged features of a group of people.

Traditionally, before CRPM is introduced as the new culture, this culture was a decentralised, locally implemented structure, which was driven by human responsibility and judgement. In this system, local management of an office of RI was represented in a credit committee, where all relevant credit decisions were made in unanimity. However, their authority is limited by:

- general conditions, such as customers with a low credit grade or making operational losses can only be recommended and must be sent to head office for approval, and
- specific conditions, such as a maximum exposure for a specific office, as determined by size and quality of the credit portfolio, organisational capabilities in terms of product knowledge and monitoring and Food and Agri industry focus concerning clients in a specific country.
- the Credit Manual which prescribes general concepts, product descriptions, credit application format, general policies and procedures.

These arrangements seemed adequate and complete, credit losses were quite acceptable.

However, when CRPM is introduced in RI by the BIS II/EC program since September 2001, it became clear that more than half of the required data to properly develop EC frameworks and parameters is simply not there. Data is the largest problem for all the EC oriented projects that were and are still running. The data that is available suffers from local interpretation and is translated into concepts that are not uniformly applied across offices. From a CRPM developer point of view it is incredible how sound decisions could have been made if so little information is reliable. In 2001, when the project started there was no reliable report available on all aspects of the Raroc of a client. Different aspects of portfolios of clients, but also for individual clients, for example return versus credit quality, were reported in different reports that were irreconcilable²¹⁸.

²¹⁸ Control reports had no link with credit reporting. Within credit applications only projected return of a client was available. No reconciliation between actual return and credit quality was possible.

Even for the current level of sophistication of the CRPM framework, the bank was not able to produce the information required for EC modelling. The bank had to rely on an external consultant to provide benchmarks, which are customised general results of the enquiries of the consultant within other banks. Next to the specific benchmarks of the consultant, the bank also relied on general models or parameters for aspects of the framework, such as vendor rating tools to produce PDs for specific types of clients in specific countries, or external ratings as a model and calibration for internal rating tools.

For further sophistication and RI-specific portfolios the consultants role is changed into providing modelling skills instead of content and much more emphasis is put on translating current expert knowledge of employees into the uniform concepts required for quantification and use in EC models. Instead of benchmarks of a consultant or vendor models or parameter values, the bank is increasingly using internal knowledge (common sense or internal research).

Still, CRPM is changing the credit culture of Rabobank International. It creates a shift from the local responsibility and interpretation to the central portfolio concept with exact definition. This high level of exactness and uniformity is required for the quantification of credit risk which enables integration and aggregation which in turn is required for credit risk portfolio management. However, the translation of actual risk into a number is susceptible to misrepresentation considerably, depending on the local importance given by the local translator to make a proper translation. This risk is higher especially if the translator is not aware of this importance, or given adequate importance, both while developing the model and when assessing risk positions. In fact, the translator is the connector to the real world. And, as we have seen before, the connection to the real world is the problematic part in a purely statistical approach.

7.3.2 Diversification of risk versus concentration of knowledge

One of the core elements of EC theory involves the diversification effect; basically the idea that investments should be spread instead of concentrated. This diversification effect is also referred to as the portfolio effect, which is why it is a core element of EC theory, being a portfolio risk theory.

Traditional portfolio theory suggests that diversification (always) produces superior returns compared to focused portfolios. For Banks and other Financial Institutions (BFI) the issue of focus vs. diversifications is more important than for standard corporates due to the larger flexibility of BFIs which can (simply) invest or disinvest in financial claims (e.g. loans) in a specific industry or market.

There are several reasons why the popular belief in diversification benefits can be doubted. First of all, by a philosophical experiment showing that, in extreme cases, focus yields minimal risk and decent returns. Second, by the empirical evidence supplied by Acharya, Hasan and Saunders²¹⁹ (AHS) who find that industrial or sectoral (eg. households vs corporates) loan diversifications produce inefficient risk return trade-offs. And thirdly, by the standard work out procedures of RI, requiring extensive knowledge of the industries of the counterparties. Finally, in several cases of strategic diversification within Rabobank International in recent years into sectors such as Healthcare in the US or Telecom, Media and Internet, this strategy proved to yield an inefficient risk return trade off (i.e. large losses were incurred because of the diversification strategy).

7.3.2.1 Philosophical experiment

In this section I would like to start a philosophical experiment about two different types of banks, which both are unrealistic but arrived at by taking assumptions in EC theory to their extremes.

Global Bank is a globally operating bank; in fact it is the only bank operating throughout the globe. Global bank services all bank customers throughout the world; it finances all credit risky assets available on the globe. Global bank therefore is maximally diversified; it cannot invest in assets which are not yet in the portfolio, because the portfolio consists of all assets in the world. From EC theory, we know that Global bank is only subject to systematic risk, or market risk, which

219 BIS Working Papers, no 118, by V.V. Acharya, I. Hasan and A Saunders, Should banks be diversified? Evidence from individual bank portfolios, Monetary and Economic department, sep 2002, www.bis.org.

cannot be diversified away anymore²²⁰. This systematic risk still causes volatility in losses, for which the bank needs to hold capital.

Special Bank is a niche bank which finances only one type of customer. In fact, Special bank finances exactly the same type of customer a million times, so it has one million exactly the same loans with exactly the same characteristics and it does this for a hundred years already. Special bank has recognised its advantage in a very early stage and has always kept perfect records of anything interesting. Therefore, Special bank has a perfect knowledge base about its credit portfolio and already ten years estimates credit losses perfectly, without any volatility. Therefore, Special bank needs no capital at all.

These two cases show that a perfectly diversified portfolio still needs capital, whereas a fully and long term focused portfolio doesn't need any capital. It shows that portfolio theory within credit risk produces anomalies if you take assumptions to extremes.

However, the above examples may be less extreme than they sound. In fact, people in the field provided the inspiration for the above examples.

In one of the presentations held for the New York branch of RI, the BIS II/EC project team explained that not every obligor is expected to default simultaneously, and the more diversified the portfolio is, the higher this diversification benefit. One of the attendants to the meeting questioned whether there was also a concentration benefit, as this bank is a niche bank trying to leverage the knowledge it has of particular sectors of industry (ie. Food & Agribusiness). This assumed the claim that this bank was able to select and manage the credit risk of this particular industry better than of any other industry. They assumed that because of this knowledge RI is able to cherry pick those clients that will not default. And in case a default does occur, RI knows the industry standards for proper management, knows the competitors, who might be willing to buy the troubled company or parts of it. In short, RI has much more options to manage troubled credits because of this knowledge. Concentration yields more knowledge and that should be a benefit (know your customer is the first rule in credit risk management). If risk is knowledge dependent, concentration is key for learning and growth of knowledge, hence for risk management.

²²⁰ note that this definition of the market is broader than the usual assumption of market index, such as the Dow or AEX. In my definition the market consists of all assets available.

7.3.2.2 Empirical findings

AHS²²¹ assert that BFIs act as “delegated monitors” in their nature as financial intermediaries in the economy. “They have an information monopoly over the firms they lend to... The downside risk of these borrowing firms translates into the riskiness of the loans held by BFIs. The quality of BFIs delegated monitoring thus directly affects the *endogenous* quality of their loans and in turn their default risk. However, due to equityholder-creditor conflicts, incentives to monitor are affected by the extent of debt in the BFIs capital structure and the downside risk of the firms to whom they lend. For the sake of illustration, consider the extreme case where the BFIs debt level is extremely high so that all benefits from monitoring accrue only to creditors (e.g. uninsured depositors and providers of borrowed funds). In this case, bankowners (equityholders or managers assumed to be fully aligned with equityholders) have little “incentive to monitor”.

In general, the BFIs underinvestment in monitoring will be more severe the greater its debt or leverage or in banking terminology the lower its capital ratios. All else being equal, this implies that the BFIs underinvestment in monitoring will be more severe the greater its downside risk of failure. Under such an incentive structure, can BFIs monitor their loans effectively as they expand into different industries and segments of the loan markets?”

To illustrate their point further, AHS quote Winton (1999) in two advices:

- It’s part of a wise man to keep himself today for tomorrow and not venture all his eggs in one basket;
- Behold the fool saith “Put not thine eggs in one basket”- which is but a manner of saying, “Scatter your money and attention”; but the wise man saith “Put all your eggs in one basket and watch that basket”.

This refers to the possibility that the quality of a bank’s loan portfolio is endogenous to the bank; it is determined for a large part by the levels of monitoring and screening to which the bank adheres.

The quality of a loan portfolio in that case, is in the end not solely determined by the financial strength of the borrowers, or in BIS II terms by the internal ratings of the loans in the portfolio. The value of the loan portfolio is determined for a large part by the standards and criteria that are applied in the selection (screening) and monitoring of borrowers by the bank. In that sense, it is the bank that creates the value of the portfolio, ie. it is adding or destroying value of the portfolio,

²²¹ BIS Working Papers, no 118, by V.V. Acharya, I. Hasan and A Saunders, p.1/2

depending on the quality of its own operations, the bank's own performance²²². Weak standards for screening and monitoring will lead to bad loan portfolios²²³.

Furthermore, AHS hold that not all diversification is equal: "From the combined results on bank loan return and risk, we conclude that increased industrial loan diversification²²⁴ results in an inefficient risk-return trade-off for the (Italian) banks in our sample, and sectoral diversification²²⁵ results in an inefficient risk-return trade off for banks with relatively high levels of risk. Geographical diversification on the other hand does result in an improvement in the risk-return trade off for banks with low or moderate levels of risk...

This also suggests that the optimal industrial organisation of a banking sector might be one with several focused banks, an outcome that may also be attractive from an aggregate risk or systemic risk standpoint."

The conclusions from the empirical research are not conflicting with econometric theory per-se. All mentioned effects could be modelled into an EC framework. However, by far most models do not recognise these effects and simply favour equal dispersion over as many industries as possible.

7.3.2.3 Rabobank International (RI) Case

7.3.2.3.1 Standard work out procedures

In current Rabobank credit monitoring and structuring policies²²⁶ three types of counterparties are distinguished:

1. very low risk (S&P rating AAA/AA): very competitive market conditions dictate lenient contracts with no covenants nor security;
2. investment grade (S&P rating A/BBB): variation between unsecured standard contracts with some balance sheet covenants to stricter cash flow covenants, non-monetary covenants and collateral or guarantees.

²²² In that respect it is ironical that the bank is planning to charge for operational risk, e.g. the actual level of screening and monitoring upheld in day to day operations of the bank, to its customers to be included in the required interest margin the customer has to pay.

²²³ Furthered by processes of adverse selection in which account management is anticipating the lousy standards when originating new loans.

²²⁴ Examples of industrial sectors include Agricultural, forestry and fishing, energy products, Iron and non-iron, Paper, Sea and Air transport, etc.

²²⁵ Examples of asset sectors include Sovereigns, non-financial corporations, Financial institutions, Households, etc.

²²⁶ See course material Level 2 Rabobank International internal credit risk course 2001.

3. weak counterparties (S&P rating BB and below): variation between collateralised lending, extensively structured contracts, asset based self liquidating finance, strong control on goods or counterparty.

As counterparties' credit qualities deteriorate, the account manager is supposed to raise the level of control and monitoring and security position. If this is properly done, in case of an actual default of the counterparty, the bank should have several options for work out:

- Restructuring; varying from a simple delay of repayment with penalty interest, to partial divestment by the counterparty itself (sale of business units) to generate cash for repayment, to increased exposure management by extending more funds to keep the business ongoing, supported by strong interference in management.
- Liquidation of some assets of the company, preferably by sale of pledged assets at a priority fixed price, or liquidation of the whole counterparty in a firesale auction, in the worst case not even by the bank itself, but by a government-appointed liquidator.

Monitoring by the bank is essential to distinguish the type of counterparty (high or low risk of default), and hence the structure required to finance the actual type of counterparty. In the most common scenario when the counterparty is slowly deteriorating, timing of increased credit management is essential. The bank should continuously update a view on the financial strength or creditworthiness of the counterparty, given the dynamics involved. This view should be input to reconsider the appropriate financing structure, given the strength of the counterparty, possibly leading to new discussions between account manager and client.

In case the client ends up in the intensive care of the bank - the work out department-, a first decision has to be made, ie. whether the bank wants to continue a relationship with this client (and sees a positive future for the client as a real possibility) or the bank wants to exit. In order to determine whether the client still has a feasible economic proposition, the bank needs information and knowledge of the respective business to make this analysis.

In both cases (exit or continuation), it becomes essential that the client stops losing value. This means that activities of the counterparty have to be restructured to avoid further damage to the value of the company. This requires quite some knowledge of the business of the counterparty. In fact, as soon as the bank has more control over the company than management, actually the bank claims to know better what to do than the management of the company.

Both monitoring creditworthiness as work out involvements require extensive knowledge of the economy of the counterparty and its industry and its specific

larger environment²²⁷. Risks and losses are thus closely linked with actions and capacities of the bank itself. In this perspective, risk can not be completely described by objective measures solely.

7.3.2.3.2 Some strategic diversifications

In the mid 1990s Rabobank decided to expand its focus and include the Healthcare sector. At that time this seemed an attractive diversification with respect to the traditional Food and Agri focus of the bank. Given the ageing of Western populations, it could be expected that the demand for Healthcare would remain strong or even improve in the years ahead. People do not only need to eat, but need healthcare as well, and increasingly.

However, due to political changes that affected the funding of the US Healthcare sector, at the time the bank had entered this sector, the sector was in a bad shape, resulting in many credit deteriorations. At the end of the millennium, the bank was doing all it could to sell all its remaining Healthcare exposures as fast as possible, withdrawing from the sector completely.

At the end of the millennium, the bank decided to diversify into the Telecom, Media and Internet (TMI) sectors, at that time by far the most popular industries for investors, especially the internet business. Luckily, the bank was quite hesitant about internet companies and therefore had no large exposures when the internet bubble busted in 2000/2001. For Telecom companies, the bank had more appetite, resulting in significant exposures, and even equity investments in one of the five players in the Dutch mobile sector. Although this sector did not bust as hard as the internet sector, the bank is now caught in several large exposures with significant deteriorated creditworthiness.

In both cases RI diversified into other industrial sectors, which were new for the bank. Also, analytically, it is clear that TMI or HC markets differ in dynamics compared to Food & Agri markets. It is unlikely that F&A versus TMI or HC sectors will default simultaneously. That means that indeed economical diversification benefits could be expected. However, both cases proved to increase losses of the loan portfolio of RI. Both strategies have been given up, ie. HC is no longer a target market in the US and TMI has been reduced to TM already, while the Media and Telecom Industries have been under severe pressure as well.

²²⁷ Of course, management actions of the bank will be focused on being repaid, not to operate the company to the best of shareholders. This may mean that future prospects on profit may be sacrificed to repay the loan. The idea is that the shareholder should bleed most.

7.3.2.4 Philosophy of science perspectives on the diversification issue

If we look into our analysis toolbox, several instruments can provide insights into the matter of diversification versus focus.

If we consider Polanyi and his Tacit Knowledge and recall the dynamic interaction with counterparties required for credit risk management (CRM) according to current RI policy (see above), CRM can be viewed as a skill. The particular pieces of information that are available about the actual financial strength of the counterparty are by far not enough to construct an adequate image of its risk. The counterparty will always try to look better than he is, and economise on providing information. There is so much more to know than is communicated in order to understand the bits and pieces of information that indeed come through. As a skill, the knowledge required for proper CRM can only be learned by investing a lot of time in interaction with the subject of the skill. In CRM, seniority as years of experience still very much makes the difference. Credit cycles can take from 6 up to 12 years. In order to have experienced the behaviour of corporations in all phases of the economic cycle, it takes 6 to 12 years. Given that an average loan maturity for a corporate portfolio is 3 years according to BIS, it is important to have a proper view on developments of industries within horizons of at least three years. If something goes wrong with the counterparty, the loan might have to be restructured and the bank might be tied to this counterparty for 5 years easily. If we consider CRM as a skill, diversification into completely different areas (which are “completely uncorrelated”) is not a wise thing to do. You don’t ask a virtuous concert pianist to play the drums, let alone to perform surgery. You might ask him to play another style of piano music, but even then you don’t expect him to be as excellent as when he’s playing his own songs.

If we consider Nozick we may recall his requirement of stating invariances under admissible transformations as condition for knowledge. CRM concerns the screening of customers for the initial approval decision to extend finance, and the monitoring of customers’ financial strength and value of their assets on ongoing basis for the term of the tenor of finance. For this, two kinds of admissible transformations are required:

1. mapping to type of customer (“reference class”) in order to establish the level of default risk and loss risk of the customer and the corresponding required financing structure, ie. the requirement for covenants or security. This information will determine the price and terms and conditions of the product offered. Basically, the mapping concerns the rating process in which a client must be classified.

2. alteration of credit quality of customers through time in order to establish the possible speed and extent of deterioration of credit quality and corresponding restructuring actions of the bank required to ensure proper CRM and eventually work out options.

In order to determine (“map”) the credit quality of the counterparty, the bank must be able to determine whether the counterparty is in a viable industry and whether the counterparty has organised itself appropriately to be a player in this industry. Both knowledge about the industry and knowledge about the proper organisation to be a player in this industry are essential.

Furthermore, the CRM assessment should be concerned with the future behaviour of the counterparty, ie. the behaviour of the counterparty in the future as long as the loan is outstanding in order to get a good view on the probability that the loan will be repaid. Given the reward on taking these risks (usual margins vary between 0.5% and 2%), it is essential that the vast majority of customers will repay their loan. Initial screening in order to select counterparties that are able to repay during the lifetime of the loan is essential to CRM. But to get a proper view on the health of the customer in the future, knowledge about the dynamics (“alterations”) is essential as well.

Possible diversification, in this perspective, should be limited to what is overseeable, to those assets that still can be mapped. The bank can not afford too many mapping mistakes or surprises regarding the speed and extent of credit quality alterations; it can diversify and make some mistakes in mapping, but cannot diversify into the unknown. The bank should be familiar with the potential biases in risk assessments in order to be able to counteract them.

If we consider the philosophy of travelling, we should analyse the type of interaction and the change in type of interaction when diversifying.

The focused bank resembles the vested order, it knows its customers, and it knows their dynamics. In its longstanding relationship with a specific community it not only has grown knowledge about the community, but also has shown commitment to the community and therefore earned commitment and solidarity of that community. Both the bank and the community have become travel companions. The diversifying bank resembles the gypsy, who enters new environments and should be cautious. For both the new environment and the bank itself, it is clear that the bank has come here to reap benefits. The bank is in the new environment for the profit only, is a newcomer, knows little and has no long-lasting relationships or commitments.

Venturing into new grounds is wise when there is a viable expectation that the new grounds will yield what is not available on the old grounds. One must be quite

desperate to venture into fully unknown grounds, where any expectation is just a fantasy. Such a flight is only undertaken when in great hurry.

Diversification from a philosophy of travelling perspective is wise only into the neighbouring areas, where one has at least a little knowledge by watching over the fence. A bank should not be thrown in the deep, but only take balanced steps.

Also, there are various ways to achieve diversification, with some of them producing better results than others. A bank could be increasing its exposure to an industry by buying loans from other banks. These other banks will sell the loans they want to get rid off, maybe because of obscure portfolio reasons, maybe because these are just bad loans. A bank could also be increasing its exposure by sending its account managers to the new targets in the new industry. They can offer finance blindly or be well informed. If diversification is seen as a venture into new areas, the bank can reduce risks by proper preparations according to the newness of the area.

7.3.3 Valuation problem: Corporate finance vs. Accounting

7.3.3.1 Introduction

EC theory is focused on calculating an adequate capital buffer to provide for all unexpected losses, within a certain confidence level, or target rating. For example, within Rabobank, targeting a AAA rating, capital should suffice to buffer for all losses in 99.99% of all cases.

Therefore, the concept of EC is closely linked with the concept of loss. A loss is negative return, which is composed of three elements: 1) initial purchase; 2) cash received in the intermediate period; 3) sale price at the end of the period²²⁸. In this concept, several difficulties regarding the recognition of return (or loss) can be found. First of all, on the inflow and outflow of cash during the project. When do we recognise income and costs? If it has been received, or if it has been agreed? Second, what is a proper estimation of the future sale price?

7.3.3.2 Accounting based valuation

There is a huge amount of literature on these basic accounting principles, and even the accountants themselves are not completely determined what to use. There are large differences between countries, e.g. vs US Generally Accepted Accounting Principles (US GAAP) or the Dutch laws. Furthermore, the International Accounting Standards committee is currently issuing new rules for banks, introducing the concept of fair value, (the so-called IAS 39), recognising the need for improvement.

According to Bos²²⁹ accountants use four principles in valuing capital and result, and showing the liquidity and solvency of a company. Caution should be taken in recognising profits and losses; profits can only be recognised if they are realised and losses which are likely to have been caused within the respective period must be taken into account. The accrual principle says that income and costs must be allocated to the period in which they occur (and not as cash or its equivalent is received or paid). The causality or matching principle relates to the accrual of income and costs to that period in which they have been made, keeping the link between income and costs in tact.

Bos²³⁰ recognises two valuation approaches used in banks:

1. historic cost price:

²²⁸ Monnery, N. Motivations to manage value, in Mastering finance, Financial Times, London, 1998, p.121

²²⁹ Bos, 1999, p.67

²³⁰ Bos, p. 79

- a. price which has been paid to acquire the asset including all accompanying costs. Or,
 - b. the purchase price of the resources used to make the asset and other accompanying costs.
2. actual value:
- a. replacement value, a.k.a. market value; costs to replace the asset,
 - b. going concern value; price which can be obtained if the asset is still in use, a.k.a. indirect sale-price,
 - c. liquidation value; price for which the asset may be sold immediately.

For floating assets, valuation should be based on the lower of cost price or market. For fixed assets, decrease of value may be included to derive an amortised value.

7.3.3.2.1 Cash flow versus earnings

Within the accounting approach we can distinct two different views on the value generation of a company: Earnings or Cash. The Profit & Loss account of a bank shows the earnings it has produced. However, given the many interpretations, hence space for misrepresentation, credit risk managers prefer to look at cash flow. It is the cash that is generated by the company that will repay the loan, not the earnings. If invoices are not being paid by the customers, there are earnings but no cash to repay debt.

According to O'Brien²³¹ "...cash flow measures inflows and outflows within a period, regardless of the state of the operating cycle, while earnings measure inflows and outflows from operating cycles that the business has completed within a period, regardless of when the cash flow occurs. Cash flows are more credible since they involve less judgement but they are less relevant than earnings when it comes to measuring replicable operating performance. That is the classic accounting conundrum – no single number provides both."

For stable and successful companies, earnings and cash flow are broadly equal. However, if companies grow, investments in working capital (inventory, debtors and creditors) and in fixed assets will grow. These investments will probably generate future cash flows, but not in the current period. For this growing company, cash flow will be negative, while earnings may well be positive, as earnings measure only completed operating cycles.

²³¹ O'Brien, P. Cash flows versus earnings, in Mastering finance, Financial Times, London, 1998, p. 127...

7.3.3.3 Market based valuation

In most economies, banks are just one mechanism for redistributing money, from people with excess funds to people with shortages of funds. Financial markets provide another mechanism. Financial markets are defined as environment in which suppliers of money meet parties with a demand. This may be a physical place (the market) or it can be a virtual place, in which the interactions between supply and demand are supported by technology, such as telephones and computers. Claims regarding debt and equity are traded on the financial markets in terms of their initial public offerings (when the company issues them for the first time) and in terms of the secondary market where existing stocks and bonds are traded. Already in the 1600s sophisticated instruments such as options (right to buy or sell something at a fixed price) were traded. The development of derivatives (eg. options) made it possible to un-bundle certain financial instruments in their risk components and trade risks separately. For example, it is possible to hedge (undo) the interest rate risk of a loan portfolio and keeping the pure credit risk (spread risk).

The financial markets do not use accrual type of valuations for assets. In general, financial markets value an asset according to an equilibrium of bidders and sellers actually available who are willing to transact. This may sound magic, but is what actually happens. Imagine that I go to the market with a specific asset, say cauliflower, to sell my harvest. I need to get rid of the cauliflowers because they spoil and I need to get cash to buy new seeds. If it turns out that many other farmers also came to the market that day with abundant harvests of the same produce, then I will not receive a high price, because all suppliers want to get rid of their products, but fear that there is too few demand to buy all supply and thus accept a lower price than their neighbour seller in order to make sure that they sell. It is clear that the market is not interested in the amount of cash spend ("costs accrued") on the product, it just compares this product to the prices of available alternatives. The market *marks* assets to market prices, ie. compares them with available similar alternatives, not with costs made to produce the asset.

Brealey and Myers²³² refer to the market participants who will together determine the true value:" But what do we mean by true value? It is a potentially slippery phrase. True value does not mean ultimate future value – we do not expect investors to be fortune tellers. It means an equilibrium price which incorporates all the information available to investors at that time. That was our definition of an efficient market. Now you can begin to see why price changes in an efficient market are random. If prices always reflect all relevant information, then they will change only when new information arrives. But new information, by definition cannot be predicted ahead of time (otherwise it would not be new information)."

²³² Brealey and Myers 1996, p. 327

There are many who view market based valuation as the only correct valuation approach. The fact that one can actually trade at the market price provides the best basis for valuation. Note that this approach is based on inter-subjective agreement, not necessarily linked to any real phenomenon. A market is a human artefact and can behave anomalous, unexplainable, psychologically driven, hysterious, creating bubbles and bursts. In those cases we say that the market is not behaving according to the fundamentals.

For market based valuation, it is essential that the market is perfect; accessible, transparent, complete and deep. As many markets are less than perfect, market based valuation is not the panacea.

According to Bessis²³³ the arguments for accounting standards for the banking book relate to the stability of earnings. A market based valuation would change every day, especially with fixed rate assets (e.g. a loan with a fixed interest rate). Also, given the lack of market prices for the banking portfolio, it does not make much sense to MtM these assets. Finally, given the illiquidity, if we would MtM these assets, a large discount for liquidity would have to be applied.

However, accounting flows do not give information about the long-term profitability of facilities. They ignore market conditions which serve as an economic benchmark for actual returns. Furthermore, accounting values are not risk adjusted. Hence, accounting values do not take into account current interest rates, nor riskiness of the asset.

Therefore, Bessis advocates fair value which provides the economic value of an asset.

7.3.3.4 Mixed models and fair value

According to Bos²³⁴ the current regulations for banks prescribe a mixed model, that is a mix of various valuation approaches, both accrual and Marking-To-Market. According to Bos, what is special about the current mixed model is not that various approaches are mixed, because this is also the case for the Anglo-Saxon *minimal of cost or market*, which prescribes to account for either the cost or the current market price, depending on which is the lowest. Typical for the mixed model is that the appropriate approach depends on the management intent with the respective asset: does management intent to keep the asset until maturity or is it for trading purposes? Accrual accounting is appropriate for the banking book, e.g. the

²³³ Bessis, 2002, p.110

²³⁴ Bos, p. 268...

loan portfolio, in which the assets are held until maturity, MtM is appropriate for the trading book. In the trading book unrealised gains are taken into account in the profit & loss accounts, ie. are included in the profits. This is contrary to the caution principle in which profits are only taken into account if realised.

With the IAS39 initiative²³⁵, fair value is introduced into accounting. Typical for fair value approaches is the use of the actual value for valuation.²³⁶ Fair value is defined as “the amount for which an asset may be traded or a liability can be settled between informed, willing and independent parties. The market value is the amount that can be obtained by selling, or that must be paid when buying a financial instrument in an active market”. Market value is thus a special case of fair value.²³⁷ In Dutch accounting law, actual value is defined in terms of replacement value, going concern value and liquidation value. Replacement value is the sum of the costs to replace the asset; going concern value is the value of that part of the sales that can be allocated to the asset; liquidation value is the amount for which the asset can best be sold in the market, under reduction of marketing costs. Market value seems to be best interpreted as liquidation value.

7.3.3.5 Criticism on fair value

The main criticism from Bos on the fair value approach is that it is focused on individual balance sheet items, which means that it is focused on financial instruments. This may lead to the inconsistency that a portfolio (or book, in banking terms) is valued in different approaches, if they consist of various instruments. Books or portfolios are structured in terms of the risks in them. For example, a bank would have an interest rate risk book, or a option (gamma) book, or a corporate loan book. These books are centred around a specific risk, and in the books various instruments are used to manage these risks. If two instruments, which may serve as a hedge, are valued differently, the hedge doesn't work in the accounting framework. There is an accounting mismatch. This may also occur when two different books are transacting with each other (intra-company transactions), for example the loan book hedges credit risk with a credit derivative.

Furthermore, Bos²³⁸ sees difficulties in the absence of guidelines to determine fair value. The determination of the fair value differs for various financial instruments, such as bonds ('clean price' or 'dirty price'), FX forwards (forward rates), or swaps (NPV calculation). Within Dutch law, concepts like fair value, market value, actual

²³⁵ Also known as the IFRS, International Financial Reporting Standards.

²³⁶ Bos (1999, p.130)

²³⁷ Bos (1999, p. 129)

²³⁸ Bos (1999, p. 273)

value and estimated liquidation value are not treated consistently. Furthermore, Bos thinks that “generally accepted principles” for valuation do not adequately take into account future risks and costs. This can lead to the situation in which profits are taken too early and losses are delayed.

7.3.3.6 EC and valuation

7.3.3.6.1 Valuation clash

The EC movement causes a kind of valuation clash. Portfolio theory is developed in corporate finance, but is now used for valuation of assets in accrual/banking books and as a basis for Profit & Loss measurement. Initially the EC movement was supported because it could please the shareholder, who wanted to evaluate the risk/return profile of a bank and compare it to investment alternatives on the financial markets. He needed a comparable measure for bank-shares in order to evaluate his total portfolio.

Now, EC theory is implemented on a wide scale, also for assets in the banking book. For these books, accounting is backward looking and showing realised results and expected losses. Implementation of EC causes a second valuation method for the same assets, a kind of shadow bookkeeping. Official P&L numbers, which are the basis for dividend distribution, do not have to be consistent with EC based P&L. Risk management needs to look forward and assess future risks (past risk are not risks, at most losses) and propagates EC based measures. But shareholders want to maximise the official P&L, because that is the basis for dividends.

Furthermore, a major development, enabled by and stimulating CRPM, is the increasing securitisation and commoditisation of assets from the banking book. This means that assets which are valued at accrual standards (historic cost) will be repackaged into portfolios that can be resold in the financial markets. The valuation clash is very real in terms of the difference in value between sales price and accrual value. This securitisation and commoditisation development will stimulate the fair valuation of banking book assets, or simpler, the transfer of assets from banking book to trading book.

7.3.3.6.2 EC based loss definition

EC can be based on two different loss concepts, yielding two different results. The question is which is the right one, or whether you can have a loss if you don't include it in your concept of loss? Is loss what you measure as a loss, or can you have unmeasured losses?

In available EC models, the distinction is made between Default-mode and MTM-mode EC. In a default mode, only one drastic credit quality deterioration is taken into account, ie. when the debtor changes from healthy to default state. In the MTM-mode, also negative changes in credit quality regarding healthy debtors is taken into account.

In a Default-mode model, migration (change) to lower risk classes before default status is not taken into account in loss prediction. The measurement of the loss is binomial: either the counterparty repays its obligations, or it doesn't and that incurs the possible loss.

However, in the more subtle measurement method (Mark-to-Market), the price of credit risk is not only determined by the possibility of default, but also by the risk that this possibility of default can increase in a period of time (the estimation horizon). For example, if a AAA credit asset would deteriorate to a single B, the value of it will have decreased when the return has not been adapted for the change in quality.

From a formal point of view, a loss only exists if it is taken into account, ie. registered in the ledgers of the bank. Accounting rules thus define what is a loss. That creates the possibility to "hide" trading losses in banking books²³⁹.

7.3.3.6.3 Valuation requires quantification

EC requires the quantification of risk in terms of probabilities, exposures and losses given default. In order to determine a PD of a counterparty in the clinical case, an assessment is made of the business of the customer, its financials, and qualitative aspects. Its financials indicate the repayment capacity in terms of quality of cash flows or quality of assets. Also for LGD, assets pledged must be valued, next to the estimation of the value of the company if sold as going concern (ie. instead of in pieces it will be sold as operating company), or a valuation must be presented of the value of the unencumbered assets available for unsecured creditors in a liquidation scenario. These are all difficult valuations that have to be made. The estimation of the basic parameters involves quite some judgement, sometimes only judgement.

Accounting rules prescribe how to value assets. Banks have a business in arbitraging these rules and make their clients look better than they are, ie. they dress up the balance sheet (BS) so that it looks better. Banks help in what is called window-dressing. For example, if a company sells his major fixed assets in order to lease it back, the company receives a high amount of cash immediately and has to pay only a small lease amount (this year). The company does have a long term

²³⁹ As mentioned before, the implementation of IAS 39 will improve this arbitrage situation.

lease obligation, but that is not shown on the balance sheet (a so-called off BS item).

If a client turns to the bank for a new loan, an experienced banker would make his own assessment of values of assets on the BS and include items which are taken off the BS, or deduct assets that have a bad quality and are overvalued on the BS. The bank can be sure that for a developed company, the BS does not state the proper value, although it is one of the main sources to assess the client's creditworthiness. The bank has to trust his credit analyst to be able to look through the numbers and see the true quality of the company. The credit analyst extends his analysis until he trusts that he has a proper view on the client. For new and unknown clients, the analyst needs to analyse deeper than for well-known long term relationships.

Especially recent accounting scandals have proven that one can never be certain about the quality of financials, not even for respected large Dutch groceries. Current financial analysis can never reveal the last bit of uncertainty, because the numbers are created too far away, there is too much room for misinterpretation or outright fraud. Therefore, trust in the integrity of the counterparty may be more important for banks than the truth of his financials.

In the next paragraph, the issue of quantification will be elaborated further.

7.3.4 Quantification

7.3.4.1 Introduction

From my personal experience in the BIS II/EC program in the Rabobank, I may conclude that the quantification required for BIS II/EC is one of the most dominant changes in credit culture. An example of the development of the new (PD) ratings within Rabobank may be illustrative.

Traditionally, the bank would use the FRS, the financial risk score, as one of the indicators for credit risk. The FRS is closest to a PD rating in the new approach, and summarises a qualitative assessment of liquidity, solvency, profitability and quality of management into one number. The FRS rating could be modified to include the coverage of security in what was called the credit risk score, CRS.

These scores would be relative scores; indicating the relative creditworthiness, as compared with the other counterparties in a particular portfolio, typically belonging to one office. So it could happen that Utrecht office had an average FRS that was below the average of the Sao Paulo office, while everyone knew that the average credit quality of a Dutch counterparty is higher than its Brazilian counterpart.

However, since the people in Sao Paulo had a good view on their counterparties, but not on the ones in Utrecht, they could compare creditworthiness locally quite well, but not internationally. Since the FRS was only one of the inputs to a credit decision (which in 2/3 of the cases was taken locally), and since its use did not require much accuracy (there was only a policy that distinguished FRS below 3,5 to indicate impaired credit quality, no other policies or procedures required the FRS), there was no need to be absolutely correct in FRS, except for the local relative accuracy of FRS. Credit decisions were based on the information in the *Credit Application*, which, next to a description of the commercial relationship, contained a description in text of the financial condition of the counterparty, including a description in numbers based on its certified annual accounts. This gave Credit Committee members the opportunity to assess the counterparty themselves, as well as validate the FRS and CRS.

In the new (BISII/EC) set up, all loans will be compared according to their Economic Value Added, requiring uniformity in ratings. This is achieved by the development of new rating models that are calibrated (given an absolute accuracy that allows to compare them not only within a country, but within the total portfolio of the bank, and even allows to compare them to loans outside the portfolio of the bank (e.g. loans traded on the financial markets)). For midcap clients (concerning the majority of exposures) this is actually achieved by sending the input in the rating tool to an external vendor, who combines this information with all other information he receives from other banks who use his system to estimate the creditworthiness of the respective counterparty. The point is that, although the rating may be globally comparable now, the local analyst will have

lost any track as to the derivation of the rating, being unaware of what happens in the vendor's system. The system weakens the intelligibility of the rating process for the local analyst; he must assume that the calibration is appropriate, without seeing the evidence.

In fact, given the number of ratings, quantification of risk required two things:

1. Applying numbers instead of words to describe risk; when risk is expressed in a number, it becomes calculable, ie. calculations can be made. The benefit of quantitative valuation is that only numbers can be subject to calculation and benefit from theories such as probability theory to extend their significance. In order to benefit from risk calculation engines, risk must be quantified into numbers with fixed meaning. Numbers can be subject to algorithms, which do not require judgement for interpretation or processing. This allows the use of technological computing power, processing speed and memory.
2. Standardisation of concepts and application thereof; it's not just the translation of letters into numbers that allows the calculation of portfolio effects, the numbers must be consistent in order to provide information. Adding apples and oranges does not make sense. Equivalent risks should be quantified equivalently. This requires that all credit analysts use the same concepts in a similar way to assess the risk in their (local) loans. A rating of 4 should have the same meaning, regardless of the office who assigned the rating or the date of assigning. Standardisation allows the central calculation of risk; allows to ignore local circumstances and centralise risk management into portfolio risk management. This makes sense against the idea that the bank will not default itself if one of its loans turns sour, but especially if groups of loans default, if a significant part of the portfolio is affected simultaneously. The bank should pay attention to correlated movements of its obligors: do they all move simultaneously? The required information to assess the total portfolio requires ICT²⁴⁰.

For quantification, a unit must be defined that can be applied similarly enough to all possible/relevant risk situations. Recall the remarks made in §8.2.4.2. regarding statistics, which can offer interesting and useful algorithms to provide information about groups of entities which are both similar enough to be compared (similar constitutions), and are different enough to make statistical distinctions (different magnitudes). Statistics apply well to similar qualities with different quantities, eg. the length of a soldier.

²⁴⁰ That is, ICT is required given the current approach to portfolio management, ie. a statistical approach.

Quantification first of all requires the definition of the unit. In the EC movement, this is a unit of credit risk; think of for example 1 basis point PD risk, or 1% expected loss or 1% EC. Essentially, all units are similar; all units have as only distinctive feature that they are exactly one unit, not 1.5 unit. For the user of the quantitative information, there should be no reason to distinguish one unit from the other.

From one perspective, we know that this may not be valid in all cases. The bank may view the default of one counterparty different than of another, for example dependent on the history of the relationship with the client. In a group of seven children, they may be all equal as children, but if one of them is my child, their value is no longer equally distributed (for me). This equality of units of risk assumes that risk is objective, as objective as: one and one is two. Implicitly it treats risk as an independent substance that can be measured objectively, that can be sold or manipulated as an autonomous substance, resembling physical matter. From another perspective, we recognise this unit in the language on the financial markets. The thing is that financial markets not only use units of risk to express risk positions, but also allow actual trading in these units. Market risk has been quantified longer than credit risk, and the quantification of market risk is well appreciated. And to quote a credit portfolio manager from ING: the markets are always right, especially when they are wrong.

If risks are objective, can be objectively measured and responds to objective rules or laws, it becomes possible to use the algorithmic rationality. As we saw above, since computers need clear rules for processing, this is the only rationality computers can handle. Given the strong emergence of ICT, it may be no surprise that algorithmic rationality is widely applied in current society.

F. Schipper²⁴¹ observes a crisis of this quantitative rationality in our organisations and illustrates this with a quote of Karl Weick:

“To get the organisation into countable, measurable form is to strip it of what it made worth counting in the first place.”

Schipper presents two distinct models of rationality; two different forms of rationality.

The first is the algorithmic rationality which departs from evident insights and progresses via fixed, infallible compulsory steps. Implicitly it is assumed that the order of thinking reflects the order of reality. As a paradigmatic example, the

²⁴¹ F. Schipper, Zin in organisatie: een filosofische beschouwing over organisatie cultuur en rationaliteit, Boom, Amsterdam, 1993, p. 15, p. 65 – p. 86.

Euclidian geometry is mentioned or modernist arithmetic. The ideal is the availability of infallible prescriptions for calculation of arguments and statements. In that case, our knowledge would be certain and indisputable, and our behaviour would be the best possible. Leibniz, a philosopher at the turn of the 17th century wanted to apply such algorithmic rationality on issues like morality and metaphysics. Later, Weber is well known for its bureaucracy, with its objective rules for behaviour, banning arbitrariness and subjectivity, *nach berechenbaren Regeln*. In the first half of the 20th century, the logical positivists provide an example of advocates of algorithmic rationality. Decision theory is another example, with its theory of expected utility. In this theory an actor is assumed to have a well defined utility function at his disposal which enables him to assign value to all possible scenarios. On the basis of full knowledge of all options to act, of causality structures and probability density functions, the optimal action can be calculated.

With respect to the above example involving decision theory, Herbert Simon has criticised the idea of this rationality. According to him rationality is bounded, which means that we only calculate scenarios which are known to us according to rules which are disputable. But Schipper mentions two more interesting comments:

1. Scientific theories are empirically underdetermined. Recall that this issue was also mentioned as one of the complicating factors of modernist science in § 5.2.3. An empirical test of a theory involves much more than a simple verification or falsification of the theory. As Nozick pointed out, an empirical test also requires theories for example about the propagation of light, or the working of our sensory organs, etc.
2. Knowledge is algorithmically underdetermined. There are no imperative rules for evaluation of theories. Again, Nozick pointed at this issue in § 5.2.3., when he stated that ideal theories have conflicting properties, such as scope, simplicity, accuracy, etc. Whenever an algorithm is applied, already two moments of judgement must have been passed. First of all in the construction of the algorithm; in defining the risk to be captured, defining its components, defining the way we can measure it, underlying definitions, etc. Second, in the assessment whether a concrete situation fits within the scope of the algorithm. For example, in the EC framework within Rabobank, analysts must first identify the proper rating model to assess the PD of the client, next, a different choice must be made for LGD models. For all these models, an analyst may do an *override* of model generated output if the analyst judges it inapplicable in this case. There may be more than one model applicable if an actual client operates in the grey areas on the demarcation lines between the models.

Therefore, Schipper also distinguishes the judgemental rationality. Following the English philosopher Brown²⁴², a **judgement** is then defined as:

“the ability to evaluate a situation, assess evidence, and come to a reasonable decision without following rules”.

Note that judgemental rationality is negatively defined, as being still rational although no algorithms will be applied. The question is then how the reasonability of a decision is to be assessed. Schipper suggests that more general prescriptions would still apply in this rationality. Examples include the pursuit of consistency in judgement, or the requirement to take into account all relevant information. Next to that, this rationality is linked to the intention to justify the judgement, possibly even by referring to algorithms.

For CRPM, the subjective assessment of creditworthiness of debtors must be expressed in a rating which indicates the chance of defaulting. In order to do so, all aspects which are relevant for the creditworthiness of the debtor must be summarised in one number which can subsequently be compared with the rating of the other debtors.

One could question whether the rating is an under-determination of creditworthiness in the sense that one figure cannot represent the wide array of possibilities to default. For a very simple example, two counterparties can, at a given time, have exactly the same rating, but differ in credit risk widely in case one counterparty is improving its creditworthiness and the other is deteriorating. Latter was good, but is going down, while the first was bad but is improving. At a certain moment, these two will have the same rating, whereas it is clear that the deteriorating counterparty incurs more risk. Recalling the Heisenberg principle, in one number one can not measure position and speed simultaneously. One number is easy for calculations, but may be too easy for risk management.

But, next to the impossibility to express speed and position in one number, this quantitative reduction also requires the equalisation of inequalities. For example, in a rating, a company with a fractionally impaired profitability must be compared with a company with fractionally impaired solvency. Different dimensions (e.g. liquidity, solvency or profitability) of the rating are scaled and compared to each other, which is all quite dependent on the quality of the development set of data used to develop the rating model. While credit risk seniors know that so much factors can cause a default of a company, and even default itself might mean so many different things. It is plausible that factors that were not identified in the model development process may be important for actual risk positions, especially given the requirement to keep models as lenient as possible. In Rabobank, factors

²⁴² H.F. Brown, Rationality, London/New York, 1990.

were included in the model based on a predictive capacity of around 40%, ie. in 40% of the cases, the factor predicted the default correctly. A coin may work better!

Portfolio management essentially requires uniformity of concepts, whereas risks may be locally determined, for example because of local bankruptcy laws, or local oversupply in a particular industry. Furthermore, when concepts are not defined unequivocally and fully on central level, there will be room for local interpretation of concepts. This is the second judgement in model application as mentioned by Schipper above. For example, referring back to Nozick's remarks (see § 8.2.4.2) regarding the requirement to assign risks to reference classes in order to estimate probabilities, there may be local risks that can rationally be assigned to two mutually excluding reference classes. In terms of one criterion, the risk position may be assigned to class A, while another criterion justifies the assignment of class B. Which of these classes is going to be assigned is a local decision, however possibly polluting the consistency of a global database. As long as risk management is local, that is not a problem. As soon as management becomes central, as in a portfolio context, it is essential that equivalent risks are quantified equivalently, and that there is a general language, ie. common denominator, which is consistently applied. However, are centrally supplied concepts always able to capture local specific issues to a satisfying extent?

To illustrate the judgement required in the development of models, it is recalled from § 8.1.2. that the various EC principles may be in conflict with each other. For example, in pricing and credit risk measurement, it is required to have the maximum accuracy and differentiation of the framework, ie. where the risk is different, this should show up in the quantification. However, with a fully differentiated framework, each obligor will be quantified uniquely and all back-testing and validation pools will consist of one observation only. From a validation and standardisation point of view (and probably a cost point of view) one requires uniformity, while for credit selection this could lead to adverse selection, where worse than average customers apply, and better than average customers have better offers from competitors. With uniform performance measures being wide open to arbitrage, after a couple of years, such bank's portfolio will implode by bad debt²⁴³. Given the conflicting principles, it is obvious that quantification of risk itself is not possible within algorithmic rationality. Since this involves a balancing act between conflicting principles, quite some human judgement is required to decide which principle should dominate at what moment in the quantification. For example, judgement is required whether just one reference class is required for all secured

²⁴³ Recall that BIS I required 8% capital for all corporate counterparties and was arbitrated to such extent that it had to be replaced.

loans, or whether the bank wants to make a distinction in loans secured by cash or near-cash, and loans secured by illiquid assets²⁴⁴. A computer can not solve this problem for us, which makes quantification, or even wider stated, the determination of the risk framework essentially subjective, ie. dependent on human judgement.

Summarising, we see that the quantification and standardisation are required in order to allow the processing of the vast amounts of data needed for these quantitative EC models. However, only after quantification, algorithmic rationality can be applied, neglecting everything that can not be captured in rules. Although the algorithmic rationality may seem objective and solid, it also requires judgement in its development and application, just moving the issue of expertise out of sight.

7.3.4.2 Philosophy of science analysis of quantification

From Nozick's perspective, quantification is a matter of mapping; capturing an actual risk situation into a set of numbers which fit in the model. The real situation is mapped into model language. Next to mapping, Nozick points at dynamic changes or alterations through time. From my personal experience in the Rabobank case, I know that this is a weak spot in the EC framework. Already the bank had severe difficulties in collecting adequate data for the development of the rating tools. Given the newness of the rating tools, retro-actively rating counterparties and measuring the changes in their (new) ratings to measure the dynamics was considered impossible. Hence, data concerning the dynamics of ratings will only become available when the rating tools are fully implemented. However, to measure dynamics of ratings, more than one year of rating data is required. Estimations of the bank show at least eight years of data are required. That means that dynamics of ratings can only be measured eight years after their implementation date! Furthermore, if rating models are changed in that period, the history is distorted, and depending on the materiality of the change of the rating tool, historic data of the old model may be worthless.

²⁴⁴ Obviously, such a decision also depends on the constitution of the portfolio, more in particular the materiality of a specific segment. If a segment is material and behaves different, it should be distinguished. However, the paradox is that materiality of course would be defined in terms of EC or Economic Value Added. The paradox is that in order to find out whether a segment is material, there should be a risk framework to measure EC or EVA of segments. But the development of the risk framework depends on the materiality of segments. This is a vicious circle that cannot be solved within EC theory, but needs the judgement of credit experts.

Finally, Nozick points out that transformations based on biasing factors are not allowed, and must be counteracted and corrected. From the above analysis, it is clear that quite some biasing factors are present in the mainstream EC frameworks for wholesale finance, especially in the conditions for quantification, and neglecting of the subjective aspect of risk.

From a philosophy of travelling perspective, quantification is an appropriation of reality, more in particular an appropriation of the credit risk of the exposures to counterparties of the bank. First, the quality of the appropriation will determine the extent or the degree of appropriation. The quality of the appropriation is directly dependent on the tool used for appropriation, which is the available risk framework. As already mentioned above, the appropriation takes place in two steps; development of the risk model, and application of the model to assess a risk position. In mainstream EC these two steps are distinguished and usually taken separately. In first instance, a central modelling team will define a project to identify the risk and its components, collect historical data, apply statistics and econometrics on the data to identify the risk model including the calibration of its parameters. For risk assessment, a local credit analyst will use the model, after its implementation and having received required training by a central team. Feedback on the model, arising from complications in applying the prescribed risk categories to actual risk positions, usually is collected and centralised, to be input when the model will be improved. Usually, the complications in assessments done will not be corrected in the model, since no sufficient data is available to statistically determine the correction. That means that we just accept their inaccuracy up to a specific level, on which the bank will judge that the model must be revised. It is my impression that this separation of model development and use is a reflection of the underlying technology, being ICT. The bank uses central databases, central calculation engines, server technology, etc. which are always developed by a specialised department, not by the users themselves. Systems are developed according to *ITIL* procedures for projects, indicating the phases and structure IT projects should have. Projects structured like this take at least six months to implement, even for an update version of an existing system, but usually this period may extend to some years easily. In my opinion, much time is devoted to all sorts of testing. For example, to implement the EC framework IT systems, the Rabobank is already five years down the road and not yet there.

Second, the speed of alienation will determine its freshness date.

Alienation may be caused because the appropriated object is changing rapidly, or because the object was not properly appropriated in the first place. If we assume proper appropriation, then, in general, alienation is determined by:

1. The level of detail of appropriation: very specific information usually has a very close freshness date, while general

information will be valid longer. For quantified risk, this translates in the sensitivity of the model for specific parameters. If the model is very sensitive to the slightest change in one parameter, its review frequency should be accordingly high. Similarly, the quality of appropriation should be accordingly high.

2. The dynamics affecting the object, in this case, the counterparty's creditworthiness. Examples of such dynamics include the changes in the business context of the counterparty, changes in its management, technological changes, changes in the world economy, political changes, legal changes, sometimes especially changes in weather, etc.

Credit risk experts know that different industries will behave different on the same factors mentioned above, and will be in different phases in their development and their response to the more general factors. However, the formal model distinguishes only very limited between the various industries or other general factors affecting creditworthiness. And as stated above, the formal model is not capable yet of including changes through time outside of its one year horizon²⁴⁵.

Does this now mean that the bank takes decisions based on the hampered quantitative appropriation as described above?

No, the bank may well ignore results of the EC framework at this time, since the framework is not officially implemented; it is not real yet, does not affect real income or bonus. And date of implementation probably depends most on the date of solving the most important shortcomings of the framework.

If the bank would strictly adhere to the formal EC theory, it would create an insurmountable data problem, and date of implementation would be far away. For most wholesale banks, risks are too heterogeneous to be captured in a limited number of broadly defined categories or *buckets*. Per jurisdiction, distinction should be made in types of clients, types of products offered, types of risk mitigation received. A bank should have at least 25 cases in each of the three above mentioned categories. Each category may consist of at least four different subtypes, for example types of clients can be subdivided in midcap corporates, large corporates, banks, governments. Per jurisdiction, there should be about 375 ($25 * 5 * 3$) testcases, ie. clients that have defaulted and of which the default has ended. Since most banks in developed countries have reasonable credit portfolios, with average default probabilities of 1%, a large portfolio of about 37,500 counterparties

²⁴⁵ Eg. a PD is a one year default probability, a chance of something happening within the one year horizon.

is required to deliver the testcases. And then still, we can only make a model which, for example, can distinguish between four types of risk mitigation (e.g. cash backed, real estate mortgage, other assets as collateral, no security), and, hence leaves ample opportunity for arbitrage. In the Netherlands, we would not have sufficient companies doing business in the country to allow the formal approach. The Netherlands would be unbankable! History does not agree.

Fortunately, the bank does not apply the formal theory strictly. Data is tweaked (“cleaned”); models are tested by experts and subsequently adapted; model outcomes are tweaked to get to desired levels according to experts; some models have been developed purely based on expert knowledge and some anecdotal data. My conclusion is that quantification **and** statistics and econometrics together create the data problem. Quantification itself does not have to be a problem. More even than regular language, the language of numbers offers abundant opportunity for endless variation; the language of numbers does have a number available for any situation. Next to that, the repetitive use of the same concepts does make people get used to them and develop a feeling for them. After a while, an analyst can give you the basis points default risk without use of the system with reasonable accuracy. By regular discussion, components of the model may receive meaning; people get accustomed to the use of the terms.

In my projects I found that numbers and the econometric model can be used as a language to discuss the most important credit risks with the local experts of the bank. Numbers and simple formulas are transparent and clear in their functioning, which makes it possible to use them to interpret the experts when they mention the most important risks to them. Calculations can show precisely what the implications are of specific statements about risks, for example, in showing an effect on PD or LGD. A simple spreadsheet can be used as a tool for the user to communicate with the model; the user can change something, press calculate and see the effect and compare that with his expert expectation of the risk. In an intelligent trial and error, the model may be reshaped to reflect the risks as the user sees it. A model needs to be able to accommodate changes, both lasting changes as trials and errors.

Next to that, given the simplicity and transparency of numbers, these user-developed models are suitable to communicate about risks and risk assessments with other experts. The inter-subjective agreement over risks and risk assessments (at the core of the credit risk culture of the institution) will start to shape the model, reflecting the credit risk expertise of the bank. If the bank thinks it should distinguish risk (ie. identify risks), it can be adding a new category or parameter. The model allows the bank to store the best there is in credit risk knowledge within the bank.

Such a model development process can act as a learning mechanism in the area of credit risk, at the core of a financial institution like the Rabobank. In terms of PoT, such a process creates an external storage capacity that will improve credit risk management over time. It creates both a language and a specific memory that can hold all wise lessons learned by the bank.

The only problem is that the model will differentiate beyond the possibilities for back testing. With ever more categories and parameters, at the end of the day, buckets will be filled by one case only.

However, this problem is only a problem for the formal approach, which I think is itself a problem, creating its own problems. In my view the only possible validation is a validation by experts anyway for such rare events as credit risks.

7.4 Conclusions regarding the content analysis

In this chapter specific issues regarding the content of EC theory, and specifically CRPM models, have been discussed. These included an analysis of the concept of risk, diversification and concentration, and valuation and quantification issues.

The analysis of the concept of risk revealed that risk, as probability of a negative event, emerged in the 16th and 17th century in Western Europe. However, the broader concept of risk as likelihood that a negative event can happen which we can anticipate or mitigate is as old as the ancient *terps* –type of dyke- in Friesland. Cultural explanations hold that risk emerged in a culture where man sees himself as the creator of his future, not at the whim of the gods. Social explanations assert that industrial society produces a risk society where the distribution of bads (as opposed to distribution of goods) is the axial principle.

The synthesising definition of risk links subjective elements, such as expectation and performance, to objective elements, such as empirical success rates or frequencies or causal relationships. Furthermore, it is based on cognitive components, revealing the pattern of causal relationships that may produce harm, and normative components, stating what risk is tolerable or which level is acceptable.

The more narrow definition of calculated risk requires full information, information about correlations and relevance of quantitative valuation in order to produce accurate results. We have seen that all three prerequisites are seriously hampered and especially regarding portfolio risk theory there are many questions if not straight doubts regarding the validity of the formal approach.

Investigation of the clinical case revealed that the exact definition of the respective risk can be a snapshot in a gradual process of deterioration of credit quality.

Several moments could indicate the acute risk of a loss. In the case concerned, the approach was to use an early definition of default. This resulted in the majority of defaults not causing losses, ie. most defaults' acute risk of loss has not materialised.

Subsequently, model risk, caused by the use of a model for decision-making, has been investigated. After a short description of available models, issues and problems have been listed, such as data availability and model validation, or the suitability and stability of risk indicators, next to the risk of herding behaviour because all banks would use the same data and models.

Finally, the concept of risk has been analysed according to the toolbox, created in § 7.5. The Nozick approach revealed the relevant mappings and alterations through time and the biases in the current tools. However, focusing on biases also allowed to counteract them, as evidenced in the clinical case, by development and testing

by experts, theoretical research and critics, collection of data for back-testing and validation, compliance with regulatory prescriptions and approval by the regulator, and last but not least, implementation of an additional layer of risk management, not replacing the current layer.

The philosophy of travelling shows that the interaction between risk manager and counterparty is already quite distant and needs to be intermediated by several media; risk decisions tend to be made on second or third hand knowledge. The environment of the risk manager can change rapidly due to strategy changes of the bank, finite tenors of contracts or changes in credit quality caused by idiosyncratic (unique) or systematic (common) factors that somehow correlate. Having to analyse all these factors and their dynamics, the risk manager needs an orientation, a focus on some aspects and simultaneously neglect other aspects. This orientation appears to be tacit knowledge, in structure resembling a skill. Given the invisible, future oriented nature of credit risk, and given the use of models to manage credit risk in the EC movement, the risk manager must be travelling virtual. His travelling – interaction with his environment- must be intermediated, simply because the risk event is not yet there. Methods of appropriation used by the risk manager include initial assessment, proper structuring, regular monitoring and updates from secondary sources. All types of issues that require personal expertise. Risks concern misrepresentation and both abundance of data and scarcity of information and foremost an integer local translator. Recalling § 8.2.4.2, again we note that the link to reality is the weak spot in the EC framework and is personified by the local analyst.

Concerning the issue of benefits of risk diversification, we observed from three angles that it may not always be wise to diversify, although all current available models do suggest so. A philosophical experiment showed that it is better to know everything about your client than to diversify, when taking the two positions to their extremes. Furthermore, empirical findings for Italian banks suggest that diversification into other industrial sectors produces higher risks and lower returns. Only diversification into relatively similar risks provided some benefit. Next to that, the standard work out procedures of the clinical case show that a considerable amount of information and knowledge concerning the client and its business is required in various stages of the credit process, especially in the work out process, when the risk is high.

The toolbox reveals that complete diversification is not a proper request to a skilled person. You don't ask a piano player to play soccer. Nozick points at the important mapping of the customer in rating buckets for PD and LGD, and the alteration (of credit quality) through time which must be monitored. This again requires significant knowledge, which does not support the imperative of maximum diversification. According to the philosophy of travelling, same conclusions can be drawn. A settled party has too much to lose when it would venture into the fully

unknown new. Furthermore, a diversifying bank is like a gypsy, lacking commitment to and from the local community.

Concerning valuation, we can conclude that capital itself is a blurred concept, subject to the accounting mismatch between banking and trading books, and other valuation clashes. Considering capital as Net Asset Value, it is subject to all valuation issues throughout the bank. As such, controlling banks by way of capital constraints introduces its own risks.

Concerning quantification, we observed that this involves assigning numbers consistently, according to a central standard. The uniformity of the numbers allows the use of ICT and the application of quantitative risk models, and simultaneously ignores local circumstances. However, given the conflicting principles of EC, the determination of the framework for quantification, as well as the application of the framework to assess individual risk positions remain essentially subjective. Numbers are not as hard as they seem.

Finally: I believe that most issues regarding the content (see §8.3) are attributable to inconsistencies between ontology and formal epistemology and methodology. In many issues, we can prophesise that an increase in acceptance of the human factor in the formal epistemology and methodology will solve many issues, albeit not according to the (current) formal rules. The challenge is to include the benefits of human judgement and expertise in our quantitative models. As shown in the end of §8.3.4.2., models and quantification may be considered as a language –an external storage capacity- and an important learning device, able to subsume all the bank's credit risk expertise.

8 Social implications

8.1 Introduction

In the previous chapter, a philosophy of science analysis of the theory of the EC movement was presented. It showed that risk is a composite of both cognitive as well as normative statements. Formal theory was shown to be too strict to be true for wholesale credit risks, in the sense that full information is usually lacking, and the Law of Large Numbers does not apply, prohibiting the use of statistics as prescribed in the theory. Expert based modelling seems inevitable in an important number of cases. In this way, social aspects are included in the EC movement. Expert judgements are no longer objective, they necessarily include subjective aspects.

However, the EC movement is to be used by all major banks in the world to support decision making regarding the provision of funds for economic operations that support our levels of consumption. Especially given the strong current preference for market based organisation of economies²⁴⁶, banks will be major players in many industries. To the extent that EC based assessments will drive financing decisions²⁴⁷, our food, shelter, clothing, education, entertainment, communication, transportation, etc. will be affected by the EC movement.

In this chapter we will investigate the impact of the EC movement on society, as well as the impact of society – or social aspects- on the EC movement. In order to recall the EC movement, a social movement that is only beginning to move, a short summary of characteristics of the EC movement will be provided, based on the analysis in part one.

Philosophy of travelling (PoT) shows us that society is in the middle of a major shift in core type of travelling; from a physical import and export of goods, services and people to a virtual travelling of representations. The main vehicle that enables our travelling is shifting from money to information. A detailed analysis of the new types of travelling can reveal interesting characteristics of the social implications of the EC movement. Focus is on the type of interactions involved in

²⁴⁶ In a market based economy, operations are privately financed. That usually means that a person will invest equity and banks or bondholders will provide debt to enable the operations.

²⁴⁷ The future will prove to what extent EC models become leading decision support tools. This depends on the acceptability of several (future) solutions to current challenges in the theory.

the new activities. We will see that the informationalist²⁴⁸ is a handicapped traveller, but a very powerful one.

A social philosophy type of analysis will assess the EC movement and its three fundamental developments (informationalism, risk management, capitalism) to find out whether there is any ground to support or reject the thesis that society is transforming from a monetary society to an informationalist society. Furthermore, a social analysis will elaborate on the social implications of this virtual turn in society. In this chapter eight, focus is on the implications of the EC movement as a special case of the virtual turn. In chapter 9 to 11, part three, we will focus on the implications of the virtual turn in general.

Basically, the social philosophical analysis in part two of this thesis consists of 5 steps:

- overview of thinking regarding the (western) society,
- assessment of impact of informationalism, the infrastructure issue
- assessment of impact of risk management, the content issue
- assessment of impact of capital allocation / wealth distribution, the value issue
- assessment according to philosophy of travelling

The first four steps are discussed in more detail in §8.3, the chapter about problem and approach below.

8.2 Short description of the EC movement

From chapter seven, we have learned that the EC movement essentially links risk and return by way of risk adjusting the return and comparing it with the cost of the capital-buffer required for the risks incurred by holding an asset. It is the first theory that offers an accurate algorithm to calculate the amount of capital that is needed for a bank for a certain level and type of risks as well as the economic value added per investment. Combined with the cost of capital, this provides the new basis for assigning value to cash flows, for example valuation of operating cash flows of the companies which provide our food, drinks and shelter. In summary, the EC movement provides the new/sophisticated basis for valuation of any economic activity, thus affecting society.

In EC theory, scarcity of finance²⁴⁹ -one of the basics of economic thinking- is linked to risk, the unexpected negative deviation of expectations. The EC movement essentially links value to information which has two implications:

²⁴⁸ The Informationalist is the typical citizen of the informational society

- A need to have the proper information emerges in order to be able to calculate EC and economic value added. To the extent that information is lacking, valuation of assets must be conservative in order to account for the future unknown, but potentially negative deviations in value. The degree of the unknown is an important determinant of the size of the required haircut to discount the risk that drives the value. If a bank knows exactly what drives values, estimation of value can be more accurate and higher. Hence, the *availability of information determines the value* of assets. Not all information is valuable. The information must be tailored to specific practical processes of value creation (or destruction). EC theory prescribes what counts as valuable information. It prescribes what we need to know of a counterparty, in terms of its default probability, determined by solvency, liquidity and profitability as well as some identified soft factors, in terms of the quality of the available risk mitigation, etc. As availability of information determines value, an infinite quest for superior information is emerging, stimulating further informatisation of society.
- ***Interpretation, translation and representation become major issues.*** On the one hand it is quite important to have information that truly reflects the world it represents when that information is used to estimate value of assets and manage them accordingly. On the other hand, precisely because of that, it is very worthwhile to misrepresent and literally earn money with nothing. Since information is second-hand experience, it relies heavily on the first experiencers (the interpreters and translators).

It is recalled (see §7.2) that banks evolved from a house with a safekeeping function, where the merchant could store his excess money, to a function as transformer – ***exchange*** – of money. Supply and demands for money were exchanged by the banker. Due to increasing sophistication of banking, it has now evolved to a stage where information might be more important than the money itself.

In order to perform their redistribution function to select users of money, banks must be able to assess the risks associated with financing. As risk management became more sophisticated, banks were natural counterparties for firms which want to focus on their core competencies and hedge other (eg. currency or interest rate mismatch) risks. Their non-core risks, ie. financial risks, were thus transferred to banks. However, for banks their core competence is finance and risk/return redistribution. Developments in their core competences enabled banks to develop into a new phase of information-based banking: the quantitative turn.

²⁴⁹ in particular equity finance, the so called risk bearing capital

As is the case with many innovations, we have seen that the EC movement is not an isolated phenomenon; it is based on and interacts with several other developments in society. See also § 8.2.2. for an introduction into the context of the EC movement.

The EC movement is not only dependent on developments in Information & Communication Technology, but on the progressing sophistication of risk management theories and tools, and on globalisation of the economy, and the further perfection of financial (credit) markets especially:

- ICT: without the computing powers and the interfaces to collect and process all required information, EC models would not be possible. The era in which the value of loans may be calculated on the back of a cigar box is over.
But ICT is a much wider phenomenon than the EC movement. ICT, together with economic and political changes, have created a network society. The EC movement operates within this network society and may be considered a child of its time in this respect. On the other hand, given the information requirements of as well as the output generated by EC models, the EC movement may also be regarded as a driver of ICT developments as well as the network society.
- Risk management: EC theory is the first theory that can explicitly calculate the required capital buffer for singular as well as portfolio credit risks. In EC theory, information has been given explicit value. In other words, EC theory, or broader stated, risk identification, measurement and management, are contents that make it worthwhile to invest in ICT. Quantification requires and allows standardisation of risks to compare them and differentiate them. The standardisation also involves a commoditisation of credits, which provides liquidity on the financial markets. The availability of information enables the determination of uniform references and benchmarks, which in turn allows centralisation of risk management to reap diversification benefits.
Risk management is the link between value and information.
- Economy: started in the end of last millennium, a truly global market has now emerged. Both in terms of flows of goods and services, as well as in terms of capital or finance flows, markets have extended to include the whole globe, although not every local space is covered. Supported by speed of light technologies, place and time seem annihilated, or looser formulated, moulded into different patterns. Competition is not with your neighbour, but in principle with the whole world. This has resulted in a very efficient and dynamic allocation of capital investment.
The EC movement will further stimulate this. Given the availability of this

risk information, capital, the corner stone of society, can be managed accordingly, giving rise to new ways of capital allocation, ie. investment decisions. The value of information and the ability to make global comparisons changes and increases competition, which drives the economy. A capital theory in application affects capitalism, the core of economy in western/global society. EC can make capital hyper efficient by further improving its mobility.

If all banks use EC models, this will create social effects among EC players, such as increased transparency of risk costs and current cross-subsidies, as well as cyclicalities and herding behaviour which cause systemic risk. In such cases, the financial system is affected.

Information & Communication

ICT is the infrastructural fundament of the EC movement. Without current levels of ICT development, the EC movement would be unthinkable, given the complex calculations required and the vast amounts of data that must be processed and stored. However, the emergence of ICT will change society in a wider range of aspects than the EC movement. The computer was not invented for the EC movement, although the EC movement may give a strong stimulus to the use of ICT in the finance industry.

Current/old society may be described as capital efficient. It refers to capital being a scarce resource, so the capital provider is entitled to the surplus value in a company. But it also refers to the victory of capital in the political area. A healthy financial condition of the state is one of the most important political goals. At the height of the reign of capital, it may be no surprise that a new candidate to the throne is rising: information scarcity.

Technically, by risk-adjusting return on capital, one of the key aspects for value creation becomes risk measurement and management. We have seen that the formal EC approach requires vast amounts of data, but it also generates vast amounts of information. To deal with all this, a whole consultancy sector is thriving on helping banks to cope with the quantitative turn with portfolio models and capital allocation strategies. In all of this the supply and demand for information is ever increasing. The new society will pivot around information efficiency, once it has recognised that usable information is scarce. The new society will be concerned about the generation or mobilisation of good information²⁵⁰, the distribution and maintenance of information, and finally, about the effects of all this information.

²⁵⁰ The term information is used for any usable data, information, knowledge or wisdom.

Information in itself is not scarce at all. Never before, so many men had access to so many sources of information. What is scarce is usable information. That is, information that can be used in other processes which create value. Usable means that the right type of information is at the right time available on the right place, where it can make a difference in other processes. Information has no value unless linked with subjective goals and objective processes of value creation.

In an information efficient society, quite different laws than today's will prevail, based on the very different constitution of information as compared to capital. While capital refers to available wealth in universally accepted notes (an objective issue), information refers to processes that may affect that wealth and is perspectival. While capital is the hardest commodity, information is the softest, perishing quite quickly, with hyper inflation rates. Whereas the amount of capital I have diminishes quickly when I share it with others, the value of information can increase by sharing²⁵¹.

The quantification of risk in portfolio models is just one way of representation which allows virtual travelling. In other industries, in other segments of society, similar shifts in type of travelling occur. Eg., also in family life, as technology became available, much virtual travelling and virtual visits have taken the place of the good old physical overnight visit. We don't pay a visit anymore; we just give them a call to find out how they are doing.

Risk Management

We have seen that managing risks requires a cognitive and normative component:

- The **cognitive component** provides a basis for expectations as it consists of descriptions of the causal structures that allow forecasting, ie. the generation of expectations about the future. Knowledge of value-drivers allow the development of rational expectations about future (hence present) value of assets. The identification of risks strongly depends on available knowledge (about these value-drivers). With this cognitive component, the future can be appropriated.
- The **normative component** first of all allows the identification of risks and negative deviations, ie. provides the basis for differentiation between positive and negative outcomes²⁵². Next, the normative component is required to identify acceptable levels of risk, ie. in order to measure risks, they have to be compared to a reference, they have to be assessed for their

²⁵¹ When sharing information, information may be confirmed or even improved.

²⁵² In fact, in the cognitive component, there is such a wide choice in available approaches that a choice must be made. For example, the decision to apply quantitative reductionism requires a normative judgement.

acceptability. Only non-acceptable risks are considered as risks to be managed. Norms for acceptance levels thus focus attention and indicate risk appetite.

It is risk management which connects capital with information, by establishing risk premiums or risk costs based on available information, or lack thereof. With help of statistics, knowledge about developments that drive future value is translated into risk measures that can be confronted with norms to indicate whether the risk is still acceptable or must be managed more intense.

In shifting to EC based Credit Risk Management, CRM is increasingly centralised. Given that EC is essentially a portfolio approach, all constituents of the portfolio need to answer to universal (read centrally developed) metrics, ie. need to be translated into a uniform language, in order to be able to aggregate singular positions to portfolio level and apply statistics on groups of assets.

Statistics itself are based on a quantitative reductionist approach, which tries to reduce real life entities to a set of numbers in order to calculate. In this reduction, several important aspects of life are ignored and, hence, not accounted for.

Decision making based on EC models in turn will ignore all the aspects that have not withstood the required reduction. The theories about developments that affect our future focus our attention. In that respect, as with any theory, there is a large model risk in the EC movement. You only see what is in the model, knowing that the model is a simplified picture of reality. One could wonder whether the right aspects have been modelled²⁵³. What if the model of reality is reduced in a wrong manner, not reflecting the aspects which are in the focus of the decision maker? What if our knowledge generates expectations that can never realise?

Norms within EC theory are travelling norms: developed somewhere else, applied here. Essentially, EC metrics must adhere to a uniform reference, to a central standard in order to make risks comparable. Norms within EC theory allow for comparison of all economic positions, regardless of place, history, promises, or efforts. EC theory provides an objective, risk adjusted comparison of economic value of various risky positions, without taking into account anything else than economic aspects. Norms within EC theory foremost support decision making of the owner of the portfolio from a global financial market context, not the local context of the asset itself (ie. where the invested money is put at work: the plant, factory, shop, etc.).

Finally, the dependency on knowledge further stimulates informatisation in order to provide the information on value drivers, information on actual positions and

²⁵³ In the worst case, a statistician has done the modelling by himself.

information of alternative positions including a view on their value drivers. The more relevant information one has available, the more value one can generate in the global economy. Investments in ICT pay off directly via the EC framework.

Economy

In the economy, entrepreneurs invest equity and create companies which produce goods or services. However, for leverage (increase in the impact of the equity investment) debt finance is required. Without debt finance, not all current projects could be realised, without debt finance the hurdle to realise projects would be higher. This is because debt finance is cheaper than equity finance.

One form of debt finance, ie. bank finance, will be analysed for the effects of the EC movement. In short the EC movement holds that credit extension will be determined by risk, which means that non-volatile activities will be favoured. All activities which have more than average probability of negative surprises will pay more for their loans or less finance will be available. Mediocrity is rewarded explicitly in this kind of economy. Unexpectedness, or stated in travelling terms, the Other, is not welcome anymore, because it costs capital. Everything that deviates from the standard is punished; inventions, avant-garde, art, creativity. On the other hand, the masses and commonality are favoured, stimulating ever larger mass-productions, being closer to the average (everyone should drink Coca Cola).

With EC models, transparency of risk costs can be increased considerably so that current cross-subsidies become visible. The EC framework is supposed to be risk sensitive, which means that it can distinguish risks. In the end everyone can be charged for its own risk costs, which means that the strong will bear few costs and the weak will bear most costs. This does not sound like a human system, where social also means solidarity.

Furthermore, as the same information sources become more and quicker available to everyone connected to the same networks, cyclicity and herding behaviour are becoming serious threats to the financial system. If banks would all use the same type of model and start sharing other kinds of information as well, this could even increase systemic risk further. As we know from portfolio theory, it would be most beneficial for the whole set of banks (the *portfolio* of banks) if they would all behave very different. Then they would provide most risk diversification to the whole, to the aggregate, which is the financial system. Also see §8.3.2.2 for some empirically supported findings on diversification in the same direction.

However, given the current lack of data, those parties that have the biggest number of counterparties in their scope, such as the large rating agencies, are in the best position to offer empirical based EC models. For example, the KMV model is provided by Moody's, while the Credit Metrics model is provided by JP Morgan.

The biggest parties have the biggest data sets, and, according to formal EC theory, would have the best risk models.

EC theory is a neutral theory, it only judges based on economic values, free of social values, “objective”. Social philosophy in this case should focus on possible but material mismatches between economic and social values. If economic theory is going to be taken as the only factor to make decisions, this may well lead to unwanted behaviour of finance institutions. For example, it may turn out to be worthwhile to decrease presence in the Netherlands significantly, leaving the environment which has worked to make the company what it is. Or, the *raison d’être* of the institution may be changed beyond desire of the majority of its stakeholders. It only takes the shareholders equity piece of finance to decide about the future of a company. Is it acceptable that such strategic decisions are made based on EVA considerations by a small group of people (ie. the shareholders) who only provide one of the resources to the company?

Informatisation of society may impact the distribution of wealth in terms of a shift of importance from the provider of capital to the provider of information/knowledge. In the former era, the capitalist would be the beneficiary of surplus value of labour; in the new era when society has become information efficient, this role may be awarded to the information provider. If information becomes more scarce than capital, it may well claim title on surplus value of activities.

8.3 Problem and strategy of analysis of part two

In this part of the thesis we will explore the social implications of the EC movement. In chapter seven, we have assessed the EC movement from a philosophy of science perspective. In this part we will apply social philosophy concepts and perspectives for an assessment of the social implications of the EC movement.

The research question in this part is:

What are the social implications of the EC movement?

As described in the introduction, the EC movement was made possible by ICT developments, by sophistication of risk management, and given economic importance by the link with cost of capital. Therefore, the research question will be subdivided into questions revolving around:

- Infrastructure: what are social implications of the increased use of ICT and the rise of the informational society?
- Content: what are the social implications of the quantitative turn in risk management?
- Value/significance: what are the implications for the capitalist economy of application of EC concepts and relating informationalism?

In order to investigate the impacts on society of the EC movement, we must first create the conceptual space required to refer to society. Therefore, the analysis starts with an inquiry into available models of society. In this inquiry we will see a number of thinkers that have gone before us and analyse their concepts of society. From the higher order view of ancient and medieval times, to the renaissance view on man himself, to the reasoning powers, social contracts, combat of the classes to modernist and post-modern views on society will be elaborated. This overview shows how man has emancipated himself from the higher powers above him, but with increased use of technology and organisation, is now mostly facing the consequences of his own behaviour; man produces his largest risks. Next the network society will be described according to Castells. In his view networks play a dominant role in current society and their logic shape and change society.

This part will be concluded by an analysis of society based on the philosophy of travelling, describing the merchant society in terms of the relationship of man with his environment and the flows of goods and people. A new stage in the travelling genealogy of man starts with the creation of global markets by the support of transportation technology in the 1990's. Then, in the mid 1990's, with the emergence of the Internet, man starts his virtual journey.

Virtual travelling can have many appearances, depending on the technology used as vehicle.

In this part of the thesis, focus will be on the types of virtual travelling which are dominant in the EC movement, which have to do with ICT, risk management and economic developments. Virtual travelling does not have many limitations in terms of scope of areas that may be visited, but does have severe restrictions on the ways how we get there. Virtual travelling severely constrains the range of possible interactions compared to conventional travelling²⁵⁴.

Subsequently, these types of travelling within the EC movement can be analysed according to PoT in terms of a description of the type of travelling involved and its consequences, as well as in terms of the three phases of travelling (departure, transit, and arrival).

Finally, concluding remarks can be made regarding the social implications of EC theory. On the one hand these refer to the social issues within the theory (for example, subjectivity in risk), on the other hand these refer to the implications for society of the widespread implementation of EC theory.

In part 3, virtual travelling in general will be elaborated, focusing on its two main features; the ultra speed and the broken horizons. Conclusions from the specific case – the EC movement- will then be used as the starting place to generalise about the virtual society in general.

²⁵⁴ Most notably because our body (an instrument to connect to reality) is not accompanying us on our virtual travels.

8.4 Model of society

In order to explain the impact of something on society, we must first get an idea of what society is. Therefore, an account of some major thinkers on social philosophy is presented below. This will help us in exploring the social implications of the EC movement in terms of being able to go further, to start at a more advanced place than zero.

Note that the short history presented below is a reflection of what is common. Most stories start with Plato²⁵⁵. However, if we recall the chapter about PoT, we can conclude that at the times of Plato, man had settled down already²⁵⁶. In terms of our genealogy of travelling, the presented history is based on the orientation of the farmers, and does not go back to the times of the hunters. I think this shows in taking things to be absolute, ideas to be universally valid.

Only later, when mankind picks up mobility again in times of the merchant, focus shifts back to the relative, contextual and the role of man himself.

8.4.1 A history of western social philosophy

8.4.1.1 Introduction

In this chapter a selected overview of the history of western social philosophy will be presented. Each social philosopher will of course have had his original thoughts, but nevertheless, is also a child of his time. That means that the theory of one philosopher answers to the specific issues raised in the society he lived in; his thinking is a response to –then- current issues in society.

Furthermore, as a social philosopher, trying to develop the body of knowledge that is known as social philosophy, one will try to build on historic achievements and constructively add to available knowledge.

So, besides describing the development in various phases of society, a history of social philosophy will also provide insight into the development of our thinking about society and show how historical developments have lead to particular major issues in current society.

The analysis will start with the classical philosophers, such as Plato and Aristotle, and describe the “higher order” view on society. In Medieval times, this higher order type of thinking still prevailed, although the higher order was no longer considered to descend from the multiple of the ancient gods, but from the one Christian God.

²⁵⁵ Socrates did not write down his thoughts.

²⁵⁶ Note that the transgression towards farmers thinking coincides with the transition from matriarchal gods to patriarchal gods, from Gaia and Dionysus to Zeus and Apollo.

Next, the analysis will turn to modernist philosophers, such as Hobbes, Locke, Marx, Weber and Habermas, to show their anthropocentric focus and the emancipation they advocate. Subsequently, the analysis will elaborate issues in (post)modern society, and describe structuralists and post-modernists, such as Foucault and Lyotard. Next, the network society will be described as the most actual picture of current society. Finally, a philosophy of travelling analysis of current society is presented

In summary, this history may be described as the emancipation of man (ordinary man) from the forces of nature into a stage where man may be dominated by self-created technology, organisations and capital.

Furthermore, in the developments of the lines of thinking we can recognise the dominant forms of travelling. Starting with Plato, the age of the hunters has already transformed in an age of farmers where merchants are emerging as new type of travelling. Approaching current thinkers, we see the shift caused by increasing mobility, for example in the emerging relativism.

8.4.1.2 Classical society

It was until 1822, when August Comte issued his first articles on the study of society, that philosophy was the only discipline that studied society. Therefore, we will recognise important philosophers if we investigate views on classical society. Plato and Aristotle will be discussed who view society as the way to pursue the Good life, a means to achieve a higher order.

Plato (427 – 347 BC) his thoughts are fundamental to western philosophy. He was a Greek philosopher in times when his society consisted of city-states, such as Athens. Plato contemplated on justice and society, while for him justice is closely linked with knowledge. Who knows what is right, will do right. However, the sensible world which we observe is continuously moving, and will not provide us with true²⁵⁷ knowledge. Only our reasoning capabilities can show us the Ideas behind the world of the senses. These Ideas constitute the true knowledge, and are ordered hierarchically, with the top Idea the principle of the Good, which may be compared with the sun which allows us to live and see. Any norms or values are derived from the absolute ordering of Ideas, and, hence can not be determined arbitrarily, but must be concluded from our rational knowledge.

Turning to the Ideal State, Plato suggests a rigid division of work into three categories:

- soldiers
- workers

²⁵⁷ True as in universally valid. See also Sloterdijk, § 6.2.

- rulers

Each human will be allocated to the category he best fits in. Rulers will first get their training as soldiers, and in case of successful service, may get promoted to be ruler at age 50 or more. Only the workers (farmers, craftsmen and traders) are allowed to have private property because the two other categories could misuse their social powers to enrich themselves.

Now justice can be defined as a situation in which each category will contribute his part to society, guided by the wisdom of the highest category, the rulers. Therefore, the best society would be one in which the kings become philosophers or vice versa.

Plato also sketches four types of decay of the Ideal State, each type showing one of the categories to misbehave:

1. timocracy; a state where fear rules, a state of generals. Here the soldiers have taken over and society is no longer capable of contributing to the good life, in constant fear of war.
2. oligarchy; a state where the wealthy rule. Here desire has overgrown intellect and talents are only used to gather more money.
3. democracy, a state where the masses rule. Here the workers have taken over and are only doing what they like, instead of what they are good at. This situation is very unstable and will lead to anarchy quickly.
4. tyranny; a state where one dictator rules. Here one person who initially may have protected the people has become dependent on warfare to prove his leadership and distort attention of the people. Anyone who resists will be taken out, leaving only the least suitable persons to rule.

Aristotle (384 – 322 BC) was a student of Plato, but went his own way later on. He rejects the idea of two worlds (one which we see and one of Ideas) and bases his thinking on empirical observations. For him, the true nature of something is determined by the goal of the thing. All things strive for their completion, fulfilling their inherent goals. Therefore, the good life is a life in which everyone reaches the goals he was made for.

As man can speak and communicate to each other, and also has reasoning skills, he is made to live in a society. Only in a society he can use these capacities and thus achieve the goal, man is a political being. His society, again the polis, consists of free and equal citizens (slaves nor woman included). This requires that political power is based on mutual agreement and backed by written laws. Rule must be a rule of law. Secondly, the state may not be focused on own interests of rulers, but must be focused on the common interest.

Economy in this view is quite separated from the political area. Economy should serve politics, not vice versa. People who have to farm, craft or trade have no time left to think about politics. To discuss the good life and take appropriate decisions and actions to achieve that is an activity which is inherently good, whereas

economic activity only serves as a means to support a polis and has no intrinsic goal.

8.4.1.3 Modernist society

In the renaissance²⁵⁸, man rediscovers himself in the sense that the Theo-centric worldview is replaced by an anthropocentric worldview, where latter has consciousness and reason as founding principles for our thinking. This emancipates man because he has the required faculties for awareness and reasoning. He can find his own way, without the help of the Gods. No longer is man satisfied with the knowledge as provided by the Church, people want to do their own investigations. Opposite to the humble man of the Middle Ages, in the renaissance the *homo universale* is propagated, the free, creative and universal developing man. This is the time of the geniuses, such as Michelangelo, Leonardo da Vinci, Shakespeare.

Next to that, the anthropocentric view is expressed in increased attention for the economy and its founding concept of ownership and distribution of inequality.

In modernist times, after the Renaissance, the political process in Europe is dominated by the emergence of centralised states, nations. Social philosophy in this era is dominated by issues of sovereignty. Modernist philosophy more in general is based on the notion of consciousness, and in particular reason of man as individual. This is conform Descartes *Cogito ergo sum*²⁵⁹.

Machiavelli (1469 – 1527) was one of the first to make a split between politics and ethics or religion, by choosing for a purely empiric approach to politics focusing on the actual behaviour of people, instead of focusing on some morally advised, but non-existent, behaviour. If you want to rule, you want to rule actually, not in some utopia. Furthermore, he explains the balance between nature and man by introducing the concepts of *fortuna* and *virtu*, respectively the way of nature that determines our reality, and the virtue of man who can influence nature and change its course. Like a river that always flows down (*fortuna*) but can be changed by building dams or dykes (*virtu*). Via the concept of virtue, man is capable to influence matters, and man is shown to have a free will, in terms of the capacity to get influence on events.

As it is in everyone's nature to strive for power, a king must necessarily rule alone. He must make sure that his rule is effective, much more than ethical. He can not allow any powers above him (such as higher principles), because he would be

²⁵⁸ 15th and 16th century AD.

²⁵⁹ I think, therefore I am. It is my consciousness, my reasoning skills that proves my being, as a first principle.

overruled by these. He can not rule on behalf of the people, as in a democracy, because then the people would effectively rule. Therefore, he is necessarily autocratic. However, the king needs the respect of the people in order to be able to rule, therefore, he will always be dependent on the people, more in particular on the wealth and friendliness of the people. This has lead Rousseau to the conclusion that Machiavelli was in fact the first revolutionary, explaining to the people how kings rule and where their weaknesses were.

Thomas **More** (1478 – 1535) takes another stance and sees the basis for most problems in his society in the economic inequality. According to him, in his book *Utopia*, justice and wealth can only rule when private property has been abolished and all assets are owned by the community. Because there is no production for profit, but just to provide for human needs, a working day is only six hours, leaving plenty time for personal development in terms of art, lectures, study and religion. The cause for social wrongs is in the pride of humans, which makes people not only wish that they are well off themselves, but that other people are worse off. The larger the difference, the more satisfaction from pride. Man can only behave ethically, if institutions in society make sure that there is economic equality. More is not so much concerned with effective rule, but with the right type of rule. Although labour has to be organised efficiently, this only serves to enable personal development of humans. The right society is the ethically superior society, in which people can work most on their own development, not one where the king has most power.

Hobbes (1588 – 1679), inspired by Galileo and Euclides wanted to construct his view according to firm first principles, and by way of deductive reasoning arrive from first principles to specific conclusions regarding man and society. In his view, the natural state of things is movement, as opposed to the, until then ruling, physics of Aristotle, who held that things strive for rest. One of the basics movements in humans are desires and aversions. The first and most common characteristic of people is their desire for endless power. Power in this respect is comparative, something which distinguishes one person from another, leading to mutual competition. Man is different in this respect from animals because the personal interest of animals coincides with the general interest of the species. With humans common agreement is not a natural thing, but must be artificially achieved. As all humans want the same things in their competition for power, while there are only a limited number of things available due to scarcity, humans naturally end up in war. Fortunately, man also has other desires and aversions, such as the aversion against death and harm. Next to that, man has reasoning powers, which he can use in his passion of self-preservation. Therefore, for the sake of self-preservation, man will come to social contracts to establish security and peace. Considering what will happen if there is no state to constrain people in their strive for power (war),

making social contracts is the only reasonable thing to do. It is very important that people live up to the agreements they make. Therefore, there should be a higher power (the state) that can force people to comply with agreements. People have to give up their natural rights to own the world, and in turn receive protection from the sovereign state. The state must create the conditions in which people can transact their private affairs safely.

Locke (1632 – 1704) also starts reasoning from a kind of natural order, in which there is yet no state. And also for him the duty to self-preservation is a key principle: “Everyone is obliged to preserve himself and the rest of humanity as much as he can.” This also means that one is not allowed to harm another’s life, health, freedom or possession. In the state of nature, everyone is free and equal in terms of power and legislation. The earth has been given to the community of people, and people can only own something if:

1. it is no more than he can process by himself,
2. there is no spoilage,
3. there is enough left for others.

In the first phase of socialisation of the Earth only by labour, land can become a value, and may be privately owned by the labourer. In the second phase, when money is introduced, limitations on possessions as mentioned above are no longer valid. Because money can be saved, it is possible to extend possession endlessly, preserve it without perishing and without others having to suffer injustice. However, since the protection of private interests by the individual himself will be more and more complicated when unequal positions emerge in the course of appropriation of the Earth, people will unite in a political society by agreeing to a social contract. Consequently, the state is there to protect the rights that people already had in the natural state. This is the fundament of current liberalism, which states that the state can only be legitimised if it is better able to protect the right to property than individuals can themselves. Property being an economic issue, for Locke, economy is thus primary to politics.

More, Hobbes and Locke, already starting in the 1500s focus their attention on the distribution of goods and bads, ie. on the economy created by people. In classic days, that was not done for the elite. The most important thing for people now consists of the mutual contracts between them.

Marx (1818 – 1883) is another thinker of the Enlightenment, and maybe one of the most radical ones. Central in his theories is the notion of combat of the classes, in particular the struggle between labour and capitalists, ie. the owners of the means of production²⁶⁰. In his thinking he is striving for the emancipation of the labour

²⁶⁰ that is, owners of all means of production except labour.

class. Even after declaration of human rights, such as in France in 1791, Marx observes that the rights of the strongest are still dominant, especially in economic matters. Those who have no property are still not free and unequal, factually. Marx analyses society critically according to his own theory, historical materialism. This means two things:

1. One should look at what humans actually do, instead of looking at some kind of unrealistic ideal. What people actually do is shown in their labour and economic activity. In this respect, Marx reacts on Hegel who takes an idealistic view and departs from rationality. Marx emphasises human activity, as something active (not passive) and therefore dynamic (not static or deterministic).
2. One should consider that society changes, ie. take into account the historical context. As the praxis changes, society will be different in every era. This means ao. that analysis should not be based on some kind of abstract, universal view on humans, but on the specific economic relationships in a particular timeframe. In this respect, Marx reacts on Feuerbach who made an analysis based on the essence of humans. According to Marx there is no universal essence of humans. Humans are shaped by the prevailing reality, which changes. Therefore, science has to investigate prevailing empirical evidence, instead of metaphysical notions, such as ratio or God. The appropriate factors that determine history concern the real individuals, their activity and the material conditions for living.

Marx has shown some development in his thinking, so that emphasises on specific notions have changed over time. Key Marxist concepts include:

- ***Alienation***²⁶¹; in a capitalist economy, where the labourer does not own the means of production, the labourer will alienate from the product of his labour (which is owned by the capitalist), from the activity of labour itself (which is organised by the capitalist), from his essence as social being, and finally from his fellow humans. In the capitalist economy, the labourer must focus on sustaining his own life, instead of focusing on social processes. Because he does not own the means of production, he is forced to offer his labour to a capitalist in order to generate income. Society then becomes a means for individual survival, instead of vice versa. In the organised labour, the capitalist has nothing to gain by normal social interaction between labourers, which creates alienation between labourers.
- ***Basis-superstructure***; the basis in society consists of the economy, while the superstructure, such as the state, legislation, religion and art ("culture") are determined by the basis. In other words, the position in society

²⁶¹ Note that Marx' concept of alienation differs from the one described in PoT in chapter seven. In PoT alienation is a natural process between two autonomous entities.

determines consciousness, or more concrete, politics and legislation reflect prevailing economic relationships.

- ***Forces of production versus relationships of production***; the forces of production refer to the productive capacity of society and is determined by the skills of labourers and level of development of technology and organisations. The relationships of production refer to the class or property relationships. The forces give rise to specific relationships, and when the forces develop, they may force new relationships. For example, emphasis on capital changed the emphasis on land as major source of production. This has resulted in the transformation from feudal society into capitalist society.
- ***Surplus-value***; according to Marx, the exchange value of a good is indicated by the amount of (labour)time invested in the good. However, because the capitalist is able to leverage the labour time with capital investments in technology, the utility value of labour is more than what the labourer receives. In this way, the capitalist can appropriate the surplus-value of the labour. In fact, this is the sole goal of the capitalist: to create as much surplus-value as possible. Starting and end point for exchange of resources and goods becomes money, solely focused on the accumulation of capital, ignoring any other goal of social life.

Marx already displays some postmodernist aspects by focusing on what people actually do, instead of focusing on what they should do. Next to that, he shows a relativism of somebody who realises he is travelling in his concepts of historical materialism.

Habermas, (1929 -) started as a member of the so-called Frankfurter School, which aims to provide a critical assessment of society, and in particular on societies' attempt to control nature with the instrumental rationality, which produces oppression. Habermas is a second generation Frankfurter, active in the post-WWII era, who tries to save the modernist belief in progress of society, based on the notion of progress in what he terms *communicative rationality*. This communicative rationality is endangered by the increasing dominance of systematisation of society.

Habermas tries to introduce a new paradigm by focusing on intersubjectivity, instead of the traditional subject-object model, or pure subjectivism. Central is the interaction, and in particular the communicative interaction, which uses language as medium. He elaborates a theory that sees communication as an act, and distinguishes between 4 action-concepts:

1. teleological; we act because we want to achieve specific goals (teleos). This is focused on the objective world.

2. normative; we act in groups according to the prevailing norms. This is focused on the intersubjective world.
3. dramaturgical; we act to express ourselves towards others. This is focused on the subjective world.
4. communicative; we act because we want to construct a shared understanding. This entails all three worlds. With language we can reach agreement over facts, norms and someone's perception.

Every act of communication is accompanied by a claim to the validity of the communication. A speaker claims the *truth*, the correctness of the norms involved, and the honesty of what he says, next to any specific content of what he says. Only communicative acts allow the construction of mutual understanding, that is only if the communication can be criticised and argued intersubjective recognition is possible. If coercion and force is used, for example in strategic communication, recognition by others will fail.

With respect to society, Habermas distinguishes between the social world and the systemic world. In the social world, communicative rationality prevails. The social world is the reservoir of cultural tradition and contains all unproblematic background that is required for any discussion.

In the systemic world, the functional rationality dominates. Examples of the items in the systemic world include the state, where actions are coordinated by way of power, and the economy, where actions are coordinated by way of money.

Progress is possible when the progress in the three sectors of culture, ie. science, justice and morality and art, are feed backed to the communicative acts in the social world. In this way, communicative rationality can show progress.

However, the risk is that the systems become so powerful that they dominate the social world. For example, if a product of science is immediately applied in the economic system without being discussed and agreed upon by the social world, only functional rationality is applied in the evaluation of the product of science. In terms of Habermas, the social world tends to be colonised by the systemic world, which introduces the risk that other forms of rationality are neglected and that there is no shared understanding. Habermas advises to restrict the systemic world and reinforce the social world.

Habermas' theory is consistent with the PoT with respect to its focus on interactions. However, Habermas is too modernist when he aims for consensus regarding social issues. Even if the communicative rationality was much stronger than she is today, pluralism and fragmentation would result from the multiple perspectives available in today's society.

In ancient society, the economy was necessary, but not in the core of society. The quest for knowledge was much more important. Modernist society in the end struggles with the domination of the economy which has grown in tandem with modernist science. In postmodernist society we will see that the progress of knowledge becomes questioned.

8.4.1.4 Postmodernist society

In Postmodernist society, the belief in progress is seriously hampered. This coincides with the belief that there is no universal norm to assess reality, ie. there are no grounds to assume universal knowledge is possible. Knowledge is not universal, but dependent on local circumstances. Also see § 5.2.3 for characteristics of Postmodernity, referred to as the complicating factors.

With postmodernist thinkers we find large similarities with the PoT. For example in the notion that relationships determine meaning, that things are determined in their mutual relationships with other things. Recall that earlier thinkers are still based on the conceptual morphology of the circle or globe, where the centre determined the thing.

In postmodernism we find notions of differentiation, of the participant instead of the observer, and of pluralism, which all are common with the Philosophy of Travelling.

First of all, **Foucault** (1926-1984) will be discussed as a poststructuralist. Structuralism goes back to the Swiss de Saussure who perceived language as a system of signs, where the signs are determined in their mutual relationships. More in general, the assumption is that mankind is determined by the systems and structures in which he is involved. Not the subject is the basis of language or reality, but the structures that man has created. For Foucault, the structures of language, knowledge and power determine being. However, these structures are not complete, they are not closed systems, but developing continuously. Modernist societies develop according to the battle to establish the normal and redefine continuously what is abnormal and exclude it from society. Structures of power, science and language join forces to establish the required discipline in society by mechanisms of social inclusion or exclusion. For example, science does not emancipate mankind, but disciplines him. Science serves power to “normalise” society. In this respect we recognise the EC movement also as an attempt to normalise society, but in the EC movement this is taken very formally. The EC movement assesses the credit risk of companies by their deviation of the average of a specific reference class. It takes the average as a norm and imposes that norm on the companies in the terms and conditions of finance (eg. interest rate) offered to those companies.

Foucault is already postmodernist in his resistance against unity theories and advocates structures as related, but not formal systems. Language for example consists of the set of written and spoken texts actually produced by a people. It is a related set, but it is not closed nor strictly adhering to one standard.

Next, **Lyotard** (1924-1998) as one of the first to mention the term postmodernism in philosophy in 1979, will be discussed. Lyotard holds that the age of the great stories, the great explanations of modernity, is over. Church, democracy, communism, no one could offer an universal explanation anymore after Auschwitz; after the revolution of the workers against the communist party in Berlin and Prague; after the revolution of the people against the government in May '68, etc. Lyotard then introduced "la difference" as a concept to denote thinking in terms of differences, instead of unity. Society is not one, but must be studied as a group of different entities forming one whole. The differences between the components determine their character. As modernity aimed for unity and progress, Lyotard now advocates differences and plurality, opening up for the other, the unknown. Note that this attention for the unknown makes a theory risky, see §7.1.1., which puts it in the same class of theories as PoT.

If one theory or genre²⁶² would dominate, and establish unity, this will lead to totalitarianism. Differences between different theories or genres must be discussed, must be emphasised. Lyotard believes in a democracy based on politics of heterogeneity, a deliberative ordering of society. Domination over other genres is an act of violence, requiring the other genres to accept our norms and beliefs. For example, the capitalist genre is dominating in current society over other genres like art and culture, education and science and thereby creating relative poverty.

8.4.1.5 Network society

Castells fully agrees to the dominance of man made systems over our lives, but he focuses on a particular type of systems. He concludes that we more and more live in a network society, or, better stated, networks are playing an increasingly dominant role in current society. They are centred around global flows of finance and impose their logic on important elements of our social and individual lives, such as work, politics and the state, gender relationships, construction of identity, etc.

According to Castells²⁶³: "...as an historical trend, dominant functions and processes in the Information Age are increasingly organized around networks.

²⁶² Think of a genre as a coherent set of statements.

²⁶³ Castells, 2003. p. 500...

Networks constitute the new social morphology of our societies, and the diffusion of networking logic substantially modifies the operation and outcomes in processes of production, experience, power, and culture... Presence or absence in the network and the dynamics of each network vis-à-vis others are critical sources of domination and change in our society.”

This networking logic revolves around connected nodes. A node is “the point at which a curve intersects itself.” Practically a node is defined by the type of network which we analyse. For example, nodes may be financial centres such as New York or Tokyo in the network of the global financial system.

Distance in a network is either one or zero, depending on whether there is or there is no connection. If there is connection, distance is annihilated by the speed of light technologies of ICT, Information Communication Technology. If there is no connection, distance is infinite. If an entity shares communication codes and protocols it is welcome to join in and connect to this open system of flows. Power in these systems is in the switches, which connect the networks²⁶⁴.

Castells²⁶⁵ points at parties who control access to networks as the power-holders of this new network society: ”Switches connecting the networks (for example, financial flows taking control over media empires that influence political processes) are the privileged instruments of power. Thus, the switchers are the power-holders. Since networks are multiple, the inter-operating codes and switches between networks become the fundamental sources in shaping, guiding, and misguiding societies.”

Castells describes how the new economy is organized around capital, management and information, whose access to technological know-how is at the roots of production and competitiveness. Hence, the network society is a capitalist society, with global presence and to a large extent structured around a network of financial flows, ie. as finance capital. The global financial market has become a place where a multiple of income is earned compared to all productive sectors together. However, stable and increasing values on financial markets depend on the interaction between investment in profitable firms and using accumulated profits for these investments, and it requires adequate information on investment and long-term planning in every sector of industry, it depends on actual productivity and competitiveness. Capitalism in its purest form: one global marketplace. Work on the other hand is local, and more and more differentiated, individualised in its capacities, in its working conditions, and loses its collective identity. There is

²⁶⁴ An EC based assessment connects the loan to the financial markets, ie. EC theory enables switches.

²⁶⁵ idem, p. 502

on the one hand growing unity in the work process throughout the complex, global networks of interaction. But in the other hand there is differentiation of work, segmentation of workers, and dis-aggregation of labour on a global scale. This double effect, of connection and fragmentation, is the logic of the network. The node is connecting to the flows in the network, while fragmenting subordinate functions. Information allows to communicate **and** to differentiate.

A typical example is the nation-state²⁶⁶, which is a locally bounded democratic representation (it represents the inhabitants of a specified piece of land) that has to intervene on the global (non-local) market place. In connecting to the global it loses its legitimising local representation. Taken up in the network, one automatically loses connection with the world outside the network. On the one side, to join the network an entity has to adhere to codes and protocols, which means that some of its authentic character must be changed into the standard. On the other side, as the network enables the entity to much more than its local (non-connected) neighbours, it will differentiate the entity further (from those physical neighbours).

Finally, according to Castells really a new age has dawn in the sense that for the first time in history culture no longer refers to the battle against nature, as was the case for millennia of years. This new age, the Information Age is marked by the autonomy of culture vis-à-vis the material bases of our existence and it allows us to live in a predominantly social world.

In § 8.5.2, the network society will be elaborated further.

8.4.2 Philosophy of travelling view on society.

The Philosophy of Travelling (PoT) is based on the idea that the relationship with the environment is the dominant factor for any identity, be it a human, an organisation, a corporation or the state. In PoT focus is specifically on the dynamics in this relationship, on changing patterns of interactions between identities and their environments (which may comprise other identities). Application of PoT to the domain of social studies provides an alternative perspective to analyse society and its major developments.

Typically, for social analysis in terms of PoT one has to identify the major form of travelling in society. Travelling means changing environments. The changes in the relationships between humans and other humans, and between humans and nature shape current society. Norms and values are only visible in interactions with others or other things, ie. while travelling. Norms and values only exist in their

²⁶⁶ Castells, 2003, part two, ch. 5

application, ie. when expressed in interactions. Changing patterns of interactions will drive changes in norms and values.

When Castells points at networks and the technology revolution to indicate social change, PoT would see the networks as the new roads and analyse the traffic, ie. the interactions, the flows over these networks. Castells is reconcilable with the PoT in the sense that Castells also focuses on flows, even presents the terms “space of flows”.

PoT would look at the constraints of the roads that prohibit specific types of interactions and flows, or look at the new possibilities offered by the new roads. The network society is new in as much as it enables a new way of travelling.

As we have seen before (see §7.2), PoT also extends to a genealogy of travelling, identifying the developments in the major form of travelling used in society through time.

From hunter, unable to create such stability and productivity that he could stay in one place, to farmer, when man has learned to master a specific environment, to merchant, starting to link different environments (in terms of supply and demand) by means of transportation.

Now the fourth stage has emerged, the Age of Information as Castells describes, in which humans can use speed of light technologies to travel virtually, annihilating classic time and space, being globally present at any one moment. However, in order to achieve this speed of light, mankind had to leave behind his body, physical reality. His travelling is mostly spiritual, in the mind only. The only physical motion that takes place belongs to the bits and bytes travelling between his desktop, a local server somewhere and the millions sites of input into the network. Electronic impulses do all the physical travelling. Without electricity, this traveller would literally get nowhere!

A social analysis in terms of PoT focuses on this virtual form of travelling and its characteristic influences on mankind. As Castells describes, man is no longer dominated by a hostile nature, and in effect has to live within and between themselves. Nature is preserved and therefore cultivated. Questions rise as to the influence of this changed resistance which the traveller encounters on his journeys; what does it mean to lose connection with physical reality? Can man live without his body? Is man bound to nature, to Earth?

Turning to the EC movement specifically, we can observe that, in the EC movement, a *comparative assessment* is the basis of valuation, which displays *historical ignorance*. Real life situations are categorised according to average reference classes in order to enable comparison and choose the optimal

environment. Historic times and particular (local) characteristics of places are ignored and mixed by the intense transportation and communication systems that move meanings and matter to and from places. There is a universal reference which is essential to allow the global investor to compare investments and choose where to allocate his capital. In order to become eligible for these investments, each investible proposition has to give up claims of specificity and abide the universal laws of financial market valuation.

Instead of respecting the historic origin of wealth, this EC movement heads towards colonising the future, and only respects the proposition with the best (most profitable) future.

All economic activities will be marked to a universal (global) standard to provide standardised valuations. EC is such a universal measure, a universal language that pulls all assets out of their local closure and puts them before the universal light of global financial investors.

Furthermore, the internet has emancipated mankind - to the extent that one is connected - in the sense that every individual has access to the most important resource: information. Everyone can learn whatever is in his interest, depending only on effort and psychological capacities. Constraints are set by the ability of the mind and technology, not by physical constitution or space. Man is now much abler to inform himself and organise to get what and go where he wants. But, the open source architecture of internet also leaves man free to pursue whatever he is interested in, which may not always be an ethical interest.

However, consuming new information and climbing up the learning curve truly emancipates: it provides reference as to identify one's own position. This allows to renegotiate existing arrangements, which causes relationships to be in continuous reconstruction, balancing out in accordance with renegotiation powers of each position in the relationship. Traditional power structures become renegotiated, in line with the increase of available knowledge over negotiable factors.

In terms of social (as in concerning more than one person) effects, every single individual is enabled to make his own journeys, choosing his own travelling companions and the communities he transits. Virtual travelling is so physically demanding that anyone can do it by himself, doesn't need anyone else. These solitary journeys in turn contribute significantly to individualism fostering further differentiation of experiences and fragmentation of communities to the extent that man is connected. On all his travels, man's only companion is his own individuality, that which can not be separated from him, not even while virtual travelling. Being together against all kinds of strangers fosters the bond between him and his individuality, ie. stimulates individualism, and meanwhile reduces

feelings of commonality and solidarity. Solidarity is found with travel companions only, however temporary they may be.

As a conclusion from a PoT perspective, we may state that place is becoming increasingly irrelevant in several instances:

1. in the new society we can have a global presence: being everywhere in a handicapped mode
2. travelling is in the mind, or by way of representations, ie. without the body. Therefore, there is no physical resistance anymore. Furthermore, mind-travelling is quite individual, further fragmenting local communities.
3. the internet offers an a-historic collection of representations. Comparisons are made without taking into account historical origin. We look at future cash flows only, regardless of history.
4. People may connect to each other via the internet, creating scattered communities, communities that do not share space and time.

8.4.3 Conclusions regarding the overview of social philosophy

The development of social science in §8.4.1. shows the emancipation of man from the powers of higher orders, such as the ideal Good or God, into a stage where man is dominated by self-created structures, such as the economy or power structures. In the same development, the economy and private property have marched into the centre of society. Knowledge, while in ancient times the ultimate objective, now serves the economy as competitive factor and has lost its monopoly on universal truth, as it is available for anyone.

Furthermore, in the development of thinking about society, especially of more recent thinkers, we can discover more and more elements of the Philosophy of Travelling. This leads us to conclude that there is a general awareness emerging regarding the dynamics in reality, and this contrasts with the conventional view of universal values more and more. An explanation for this development is the actual increase of the intensity of travelling in society. In other words, society is picking up mobility, and in doing so, is shifting its orientation.

In order to further detail the analysis of current society, in the rest of this chapter we will analyse the EC movement and its three underlying developments (ICT, Risk and Global economy) from a social perspective and try to assess their social implications.

In chapters 9 to 11, generalisations to a wider context than the banking industry will be made.

8.5 Information & communication

8.5.1 Introduction

As we saw in earlier chapters, CRPM, ie. the application of EC theory, requires risk identification, risk measurement and the management of deviations in order to achieve pre-agreed objectives. In all these activities, information and the processing of it between humans (ie. communication) is a prerequisite. In fact, risk management is as good as the information and the communication it is able to generate.

Also in external literature (see § 7.2.2.5), we saw that ICT developments are the enabling factors that made possible the emergence of an EC movement.

In this chapter we will explore this (social) development, ie. the development of ICT and its embedding in more and more aspects of social life. The chapter has a wider focus than just the EC movement. ICT is implemented in a lot more contexts than the banking environment. And as a matter of course, ICT was developed outside the banking world²⁶⁷ and its embedding can be framed as a rippling effect, extending itself in all directions simultaneously.

In this respect, we can conclude that the EC movement is a child of its time; part of a larger movement. This means that the social implications of the EC movement are amplified by its brother and sister, or maybe mother, movements in other areas of human activity, ie. EC is influenced by more fundamental developments. Therefore, the impact of EC on society can not be described in isolation.

Below an investigation is provided of the emergence of information and communication in society. As one of the leading authors, the network society according to Castells will be elaborated. He shows us that an informational society is emerging rapidly to already dominate important aspects of society. After describing Castells theory, a conclusion is presented on the impact of the ICT issue on society.

8.5.2 The network society

According to Castells²⁶⁸ “A new world is taking shape at this turn of the millennium. It originated in the historical coincidence, around the late 1960s and mid 1970s, of three *independent* processes: the information technology revolution; the economic crisis of both capitalism and statism [eg. the Soviet approach to the

²⁶⁷ For example the Internet has its predecessors in the military environment, it started as the so called ARPA net.

²⁶⁸ Castells, 2003

economy] and their subsequent restructuring; and the blooming of cultural social movements, such as libertarianism, human rights, feminism, and environmentalism.” According to Castells society is transforming into a network society at the current dawning of the Information Age.

Castells wrote a three-volume book, *The Information Age: Economy, Society, and Culture*, to argue that the Information Age has emerged which creates new relationships between production, power and experience. For production, the information age puts emphasis on innovation and comparative flexibility, supported by Information Technology development and use. This allows a differentiation of labour into generic (mass) labour, consisting of workers who are necessary as a group, but individually expendable, replaceable, and into self-programmable individualised labour, which is person or location specific, and cannot be replaced by someone else.

For power, a crisis of the nation state and related crisis of the political democracy can be observed currently. In the information age, power is inscribed in cultural codes which are subject to the symbol manipulation by the media. Sovereignty, a characteristic traditionally ascribed to nation states, is faded and blurred.

For experience, the cultural movements of the 1960s and early 1970s, in their affirmation of individual autonomy against both capital and the state, placed a renewed stress on the politics of identity. For instance, their libertarian spirit considerably influenced the movement towards individualised, decentralised uses of technology.

Castell has identified a few decisive features of this new society:

1. the information technology revolution induced the emergence of **informationalism**, as the material foundation of a new society. Under informationalism, the generation of wealth, the exercise of power, and the creation of cultural codes came to depend on the technological capacities of societies and individuals, with information technology as the core of this capacity.
2. the crisis of models of economic development for both capitalism and statism prompted their parallel restructuring from the mid 1970s onwards. (p. 368, part III) “In capitalist economies, firms and governments proceeded with a number of measures and policies that, together, led to a **new form of capitalism**. It is characterised by globalisation of core economic activities, organisational flexibility, and greater power for management in its relation to labour. Competitive pressures, flexibility of work, and weakening of organised labour led to the retrenchment of the welfare state, the cornerstone of the social contract in the industrial era. New information technologies played a decisive role in facilitating the emergence of this rejuvenated, flexible capitalism, by providing the tools for networking, distant

communication, storing/processing of information, coordinated individualisation of work, and simultaneous concentration and decentralisation of decision making.”

3. Networks of capital, labour, information and markets are connecting valuable functions, people and localities around the world, supported by technology. But at the same time, they are switching off from their networks those populations and territories which have no value nor interest for the global capitalism. Global capitalism is highly selective and causes a social exclusion and economic irrelevance of segments of societies, of areas of cities, of regions, and of entire countries, constituting the “*Fourth World*”. The desperate inhabitants of this fourth world too often can only link up with the global economy in the perverse connection: organised crime (or terror).

Castell (p. 372 ...) shows how the network society is different in terms of the relationships of production, power and experience, compared to the industrial era.

The transformation of relationships of production: production process, labour and capital.

Productivity and competitiveness are the commanding processes of the information/global economy. Productivity essentially stems from innovation, competitiveness from flexibility. Simultaneous adaptability and coordination become the basis for the most effective operating system: the network enterprise. But if innovation is the main source of productivity, knowledge and information are the essential materials of the new production process. For labour this means a clear distinction, for example in generic versus self-programmable labour. The critical differentiating factor will be education, which is embodied knowledge and information. Generic labour is given a specific task, with no reprogramming capability, but the assignment to become more and more efficient. These ‘human terminals’ can be replaced by machines, or cheaper and better generic workers elsewhere.

Flexibility requires networkers and fleximers, as well as a wide array of working arrangements, including self employment. The new society drives individualisation and differentiation of labour, which at the end of the day is “leading to the gradual dissolution of the remnants of class solidarity of the industrial society,” according to Castells²⁶⁹.

In the information/global economy, capital itself is transformed in terms of the appropriation of profits. In the new economy, any surplus capital is invested somehow in the global financial markets, and given the competitiveness embedded in capitalism the global financial markets (GFM) provide a benchmark reference

²⁶⁹ Castells, p. 376

for alternative investments. New in this respect is the technological support level currently achieved in the operation of the GFM.

This new technology affects our basic orientation references according to Castells²⁷⁰: “Namely its annihilation of space and time by electronic means. Its technological and informational ability relentlessly to scan the entire planet for investment opportunities, and to move from one option to another in a matter of seconds, brings capital into constant movement, merging in this movement capital from all origins, as in mutual fund investments. The programming and forecasting capabilities of financial management models make it possible to colonise the future, and the interstices of the future (that is, possible alternative scenarios), selling this “unreal estate” as property rights of the immaterial...

global financial markets are the nerve center of informational capitalism. Their movements determine the value of stocks, bonds, and currencies, bringing doom or bonanza to savers, investors, firms and countries. But these movements do not follow a market logic. The market is twisted, manipulated, and transformed, by a combination of computer-enacted strategic manoeuvres, crowd psychology from multi-cultural sources, and unexpected turbulences, caused by greater and greater degrees of complexity in the interaction between capital flows on a global scale. While cutting edge economists are trying to model this market behaviour on the basis of game theory, their heroic efforts to find rational expectation patterns are immediately downloaded in the computers of wizards to obtain new competitive advantage from this knowledge by innovating on already known patterns of investment.”

Given the still increasing importance of the GFM as benchmark for valuation, all workers, firms and countries become somehow dependent on the developments within the GFM; all owners of value are somehow measuring based on GFM references. A recent example is the change in International Financial Reporting Standards, which propagates marking-to-market as superior valuation technique. Another example in Western Europe is the move of generic labour to Eastern Europe, the new entrants to the EU, which can provide labour at a rate which allows competition on the global markets for labour-intensive mass products. Although we would like to keep our jobs, absolute cost price of products is a stronger force. If earnings fall behind those of peers, share holder value is destroyed.

If the basis for valuation changes, the definition of capital itself changes, capital being the surplus or Net Asset Value. Capital itself becomes connected to the GFM network, which is characterised by a space of flows and timeless time. Capital is

²⁷⁰ Castells, p.374

separated from any place of origin, from any history of origination and functions as a hyper commodity on the global markets.

If risk, in itself already a dynamic variable, should be confronted with capital that is as dynamic as the GFM, then what does this risk/return on capital ratio tell us, once it has reached us? How stable or transparent is it? Recall our earlier remarks on the blurred nature of the concept of capital in §7.2.3.2. (capital ontology).

Transformation of relationships of power.

The main transformation concerns the crisis of the nation state as a sovereign entity, and the related crisis of political democracy, as constructed in the past two centuries. Since commands from the state can not be fully enforced, and since some of its fundamental promises, embodied in the welfare state can not be kept, both its authority and its legitimacy are called into question. Because representative democracy is predicated on the notion of a sovereign body, the blurring of boundaries of sovereignty leads to uncertainty in the process of delegation of people's will. Globalisation of capital, multilateralisation of power institutions, and decentralisation of authority to regional and local governments induce a new geometry of power, perhaps inducing a new form of state, the network state. Under such conditions, informational politics, enacted primarily by symbol manipulation in the space of the media, fits well with this constantly changing world of power relationships. Strategic games, customised representation, and personalised leadership substitute for class constituencies, ideological mobilisation, and party control, which were characteristics of the industrial era.

Transformation of relationships of experience

The most fundamental transformation of relationships of experience in the Information Age is the transition to a pattern of social interaction constructed primarily by the actual experience of the relationship. This marks a clear distinction with the traditional patriarchy, which was the basis for definitions of family, gender relationships, sexuality and personality in the industrial era. In the network society people produce forms of sociability, rather than follow models of behaviour, which leads to a continuous reconstruction of interpersonal relationships.

According to Castells²⁷¹: "Capital circulates, power rules, and electronic communication swirls through flows of exchanges between selected, distant locales, while fragmented experience remains confined to places. Technology compresses time to a few, random instants, thus de-sequencing society and de-historicising history. By secluding power in the space of flows, allowing capital to escape from time, and dissolving history in the culture of the ephemeral, the

²⁷¹ Castells, p. 380

network society disembodies social relationships, introducing the culture of real virtuality.”

Traditionally cultures have been generated by people sharing time and space. However, under conditions of virtual reality, social relationships are independent of time and place while completely technologically supported.²⁷² Relationships must be explicitly “switched on” and can easily be switched off, granting anyone an option to exit the relationship.

Handicapped experiences emerge everywhere as people travel without the body. These are universal (as in global), though individual experiences, shaping peoples beliefs and behaviour.

Societies of the information age can not be reduced to the structure and dynamics of the network society. They are constituted by the interaction between the “net” and the “self”, between the network society and the power of identity. There is a reality outside of the networks, which is the place to create identity and meaning. According to Castells, identity can not be global, as it requires a border between me and the rest, identity is local, meaningful experience is local, time/place/context dependent. But to what extent could humans get used to a virtual, a-historic and global context as reference for giving meaning to life? Undoubtedly, for some young people, it already is very important to be up to date with the newest version of a temporarily existing computer game; they can derive social status by showing that they know the newest tricks on internet.

8.5.3 Social implications of ICT developments

ICT is fundamental for the emergence of the EC movement, but ICT has a much wider impact than through EC only, although the EC movement also provides a strong impetus for ICT development. ICT developments have enabled the emergence of a network society, and as such are changing society significantly. Castells sees three areas of major impact:

- Production; ICT enables the differentiated approach of workers, with a major distinction in self-programmable workers and generic workers. Furthermore, the differentiation puts an end to classic workers solidarity, as it breaks down classic workers segmentation to replace it for education based segmentation. Hence, the basis for solidarity is rapidly eroding. Competition and productivity, respectively flexibility and innovation become the key factors for success in the informational / global economy for which the global financial markets are the nerve centre.

²⁷² One could think of something that is not capable to perform all its required functions autonomously, without technology, as being handicapped.

- Power; the legitimacy and authority of the nation state becomes problematic, as networks do not consider country borders to be relevant. Informational politics focus on the symbol manipulation in the media, with no respect for representative democracy.
- Experience; the actual experience becomes the main driver of a relationship, instead of tradition or culture. This leads to a continuous reconstruction of relationships. Cultures are no longer constructed by people who share place and time, but by people or machines that interact over the net. Some first instances provide support for the idea that the network can give meaning. According to Castells meaning is always based on local (closed) experiences.

As major features of the network society, Castells furthermore points to:

1. the technological dependence, especially relating to ICT.
2. the new form of capitalism, with increased competition, flexibility of work and weakening of the power of organised labour.
3. the capacity of networks to connect specific localities, but also to exclude large parts of the world, leading to the so-called Fourth World.

Castells does not particularly focus on the EC movement and made his analysis when the EC movement was still in an infancy stage. However, projecting the characteristics of the EC movement on the descriptions of Castells, we can expect several issues:

- The EC movement is focused on credit, on a selected part of the financial flows. Credit assets comprise the majority of most balance sheets of corporations, ie. for most corporations, the majority of sources of finance consist of credit assets, such as bonds or loans. If those corporations perform weak, control over operations is transferred to the banks and bondholders. Hence, our corporations can become controlled by EC.
- The EC movement adheres to the principles of the new economy as described by Castells. It offers a framework to evaluate the performance of fixed income financial instruments based on principles of standardised and quantified differentiation. It requires the existence of networks of information, but also generates the required information that legitimises the existence of the networks. Such models that can generate content for the improvement of the performance of capital investments in credit assets contribute significantly to the advantage of having such networks. For example, the quantitative turn in banking has stimulated many banks to

upgrade their IT infrastructure and improve the quality of risk information for portfolio management.

- The EC movement is expected to further increase the mobility of capital. By standardising risk assessments, the EC movement contributes to the widening of the investible universe of a portfolio manager (a bank). Capital and externally funded financial flows can be allocated over a wider area, which forces finance to travel faster.

ICT is what pulls the EC movement in the timeless time and space of flows, but not completely. The EC movement also involves the actual credit risk, resulting from actual companies that are not able to repay their loans orderly. In other words, the EC movement is only partly virtual. For EC based portfolio management, there is an actual, as in non-virtual, feedback mechanism.

8.6 Social implications of Risk concepts

8.6.1 Introduction

Considering the social implications of risk concepts, two views are presented. One view looks at the concept risk in society. In short, current society is a risk society, according to some writers. The other view looks at social aspects of risk, inverting the direction of analysis. As we saw before, in the cognitive analysis of the concept of risk (see §7.3.1.3.2), risk also answers to a social rationality, which is different than, for example, the scientific rationality. Social implications constrain risk concepts.

Hence, in describing the social implications of the concept of risk, we see implications for society as well as implications for the concept of risk itself. The concept of risk was also elaborated from a cognitive point of view in § 7.3.1. It is rediscussed here from a sociological or psychological point of view.

The concept of risk is in itself quite old (see § 7.3.1.2, the history of risk). But currently, risk has developed a new dimension. The most important risks are currently caused by humankind, as an aggregate, as a social system. In risk thinking we see a gradual shift from natural or personal risks to systemic risks (risks that are caused by the social system itself). An actual example of latter is the risk of terrorism in western countries. Societies are aware of these new risks and act upon them, organise for risks. In that way, society has evolved into a risk society. In the next paragraph, the theory of reflexive modernisation, involving the risk society according to Beck is elaborated.

Although Beck is not focused on the risk/return features of wholesale credit assets, the risk society is the social context in which the EC movement takes place. In this part of the thesis we will analyse the extent of the applicability of Beck's theory for the EC movement.

However, risk also has a social rationality, or a psychological aspect, in the sense that risks must always be perceived before they can be observed. Remember, risks are about future consequences, ie. are yet still invisible or even not yet there! Perception in turn is highly sensitive to issues of communication and trust. In the third paragraph risk perception, communication and trust will be discussed, next to the management of expectations.

8.6.2 Risk society: Reflexive modernisation

The EC movement develops against the background of current society. Beck²⁷³ conjectures that a risk society is emerging, as the third phase of modernisation. In the first phase, pre-modernisation, during the nineteenth century, privileges of rank and religious world views were being demystified, dissolving the structure of feudal society and producing the industrial society. This happened against the background of a traditional world of mores, and a nature which was to be known and mastered.

“Today, at the threshold of the twenty first century, in the developed Western world, modernisation has consumed and lost its other and now undermines its own premises as an industrial society along with its functional principles...

Modernisation is being displaced by reflexive modernisation.”

Nature, as the opponent to be defeated, today is no longer the prevalent resistance which dominates social processes. Man is now capable of mastering nature to such a degree that attention has shifted to internally/socially generated resistance, ie. risks. Man has progressed himself into Risk Society.

In classical industrial society (post WW II, phase two: semi-modernisation) the ‘logic’ of wealth production dominates the ‘logic’ of risk production. However, in the new risk society, this relationship is reversed. In the early stages, risks were seen as latent side effects of production of wealth. However, the risks and consequences of modernisation now lie at the centre of attention. Risks are revealed as irreversible threats to the life of plants, animals and human beings, and, unlike the nineteenth century factory-related or occupational hazards, these can no longer be limited to certain localities or groups. Risks have transformed from personal risks to systemic risks, ie. risks produced by the social system itself and with a tendency to globalisation which spans production and reproduction as well as national borders. Risks have their own logic, quite different from wealth production. Risks are a mix of interest and fact, requiring normative statements, such as acceptance levels, within cognitive statements, such as theories and information. Distribution of risks does not adhere to class or other traditional stratifications, such as countries. The visible wealth can not compete with the invisible risks, or lose.

Examples mentioned by Beck are nuclear threats, pollution of water and air, chemicals, etc. It is easy to add a whole bunch of examples to the list of systemically produced risks. Industrial society has shown such progress that it’s largest threat is itself, and therefore it may be called reflexive industrialisation.

Beck provides an analysis of three social areas to indicate the changes brought by the emergence of the risk society: 1) politics, 2) economy, 3) science and media.

²⁷³ Beck, 2002, p.10...

In the classical industrial society, politics, science and business were on a blind march towards achieving progress in terms of economic expansion. With the help of scientific and technological progress immense economic expansion has been realised, that made possible today's levels of production and consumption. Against the background of WW II, it was sensible for politics to support this development towards the increased production of wealth. Job creation is still an important indicator of political success. However, given that the capitalist structure is based on private property and competition, this has resulted in differentiation and pluralism of social environments where there is not one best way of handling matters: there is no single guidance.

Science and the media have made available theories and facts that show that the economic developments have side effects which are becoming larger than the intended effect, ie. the side effects move into the centre of attention because of their size and impact.

It is paradoxical that on the one hand science enabled the economic expansion in the first place, for example in movements like Taylorism within management circles, and has shown immense progress in explanatory power and scope and depth of theories and tests. Our view (and control) of the world has increased both in terms of the micro-worlds of micro-organisms and material particles, such as atoms or even quarks, and in terms of the macro-world, visiting other planets and observing the outer skirts of the galaxy.

On the other hand, it is clear that science had to give up claims of everlasting progress, objectivity and validity after Kuhn's paradigm-based theories regarding the development within science. See also § 4.1 for an elaboration of the post-modern characteristics of current scientific development.

While science is more and more used in both business and political decisions, it provides less and less of an unambiguous answer. Science is democratised in the sense that the monopoly on scientific rationality is broken and is now also available for politicians and businessmen. Instead of universal knowledge, scientists oppose each other in courts and media, depending on type of funding sources.

According to Beck²⁷⁴, in risk society "Risk laden consequences and alternative possible arrangements are bursting forth everywhere." But this increased sensitivity to risks and access to information puts a pressure for legitimization to a degree previously unknown. In fact, we can speak of a pressure for moralisation of industrial production. Or stated differently²⁷⁵ "where everything has become controllable, the product of human efforts, the age of excuses is over." With the

²⁷⁴ Beck, p.222

²⁷⁵ Beck, p.234

democratisation of science, risk awareness caused by the availability of theories and information demands legitimization of the risks of wealth production. Several factors, such as the rush of women into the labour market, emancipation of alternative groups, increased individualisation and the crumbling of class society, demystification of scientific rationality, the disappearance of the belief in progress, changes of the political culture which are accomplished outside of parliament, characterise and contribute to the rise of the risk society. We can summarise all these developments into an emancipation process following the shock of the breakdown of the modernist belief in progress. Emancipation of civilians of various breed and background has made them aware of all sorts of risks that are affecting them because of production of wealth somewhere. Nowadays some of them are able to communicate and organise themselves into effective lobbies that can put issues high on the political agenda, as and when relevant knowledge comes to light. In general, civilians have access to science and scientific rationality in order to develop and propose alternative arrangements.

This also reflects the dependency of industrial operations on the political culture in which they produce. The economy, more in particular the approach towards valuation (allocating value to objects or artefacts), is a cultural artefact in itself. It is dependent and shaped in a specific culture. And precisely because of the capitalist structure of Western society, the political arena has lost significance as the determinant of political change. In capitalist economy, business has both the autonomy for decisions regarding investment in technologies, and it has the monopoly on the application of technology. The government can only support business in fear of job losses or an investment strike. In fact, the industry has the decision making power over technology, while it is not responsible for the side effects. If the side effects impact society at large, the politicians are responsible, without having the decision making power.

In this respect, Beck points at the social consequences of micro-electronics. With this technology, the governance of the workplace can be changed without having to adhere to classical forces. For example, trade unions can be bypassed. An example of this is the observation that multinationals can control their primary processes with ICT technology, *independent of their location*. This means that routine jobs may be automated, or moved to environments with less strict conditions as how to treat the workforce. Already lots of primary production, routine administrative tasks or software programming are outsourced to lesser developed countries with cheap labour and lenient business conditions. ICT technology allows full control over every detail in the primary process, as long as it is connected, in fact as soon as or wherever electricity is available.

It is the business which decides about which investments will be made in what type of technology, and increasingly important, where. However, the technology push

also enforces another type of organisation, away from the hierarchical, domination based organisation, into decentralised and delegated authority combined with strong monitoring made available by mentioned ICT technology. This produces the transparent organisation, with implications both for the management of an organisation, as well as for other stakeholders, such as employees, shareholders or the public at large. And given the importance of ICT, we can also observe that the distribution of information becomes an important source of conflict, because control over the production process depends on manageability of information and information networks. Due to the ever more concentrated capital, we can expect a reinforced monopolisation of decision-making power, and hence strategic need for information and control over its distribution. This is exactly where science and the media have “earned” their strategic position within the economy.

As explained above, the economy has become global, in terms of independent of a specific location. And because of the monopoly on technological research and application, the economy is gaining political power, or creating political changes outside of the parliamentary structure. As Beck²⁷⁶ states: “In contemporary discussions, the ‘alternative society’ is no longer expected to come from parliamentary debates on new laws, but rather from the application of micro-electronics, genetic technology and information media... Here the structures of a new society are being implemented with regard to the ultimate goals of progress in knowledge, outside the parliamentary system, not in opposition to it, but simply ignoring it.”

A social system has emerged in which many relatively autonomously operating corporations try to achieve maximum economic expansion. In their aggregate and because of the competitive context they produce a highly dynamic society where large wealth is produced next to selective risks. In risk society, uncertainty and the unknown, become prevalent according to Beck²⁷⁷ “it is no longer possible to forecast... many corporations have difficulties arriving at comprehensive strategies for the future...” In this respect, and with a hindsight that Beck did not have in this book, the governance of the production system becomes a material political factor. Systemic errors in production factors can affect society materially, creating political effects. Simultaneously, risks can materially affect the corporations that produce them as well. If suddenly the public becomes aware of the risks in a particular product, economic viability may be seriously hampered.

What does all of this mean? Is risk society an opportunity or a threat?

²⁷⁶ Beck, p.223

²⁷⁷ Beck, p.215

Risk as a concept within a language enables us to identify, assess, discuss and decide on consequences before causes have happened. It allows our future to shape our past, and in that sense is new and opposite to the classical view that the past determines the future. Risk is thus a time-management tool. It can help to focus attention on current developments with the aim of avoiding future disasters. Therefore, social risk identification is a political process, focusing the attention of the public at large. It can support the steering of developments to avoid social hazards before they materialise.

According to Beck²⁷⁸: “Under the conditions of risk society, acting like this [like in the classical industrial society, where politics, science and business were focused and joined forces to achieve economic expansion] would mean a great confusion. The structural differentiation of situations across the institutional boundaries of business and politics would then be as invisible as the distinct interests of particular sectors or groups. In this way, for instance, it is impossible to speak of a uniformity of economic interests with respect to the definitions of risks. On the contrary, risk interpretations drive wedges into the business camp. There are always both winners as well as losers from risks. But that implies that risk definitions do not deprive us, but rather make political decisions possible. They are a highly effective instrument for steering and selecting economic developments...perceptions of risk contradict economic interests only selectively.”

Risks, as the ones which are subject of Beck’s analysis (e.g. environmental hazards), structurally cause differentiation between economic actors; risks divide them into winners and losers. Although the differentiation is economically indifferent²⁷⁹, it is proven that people perceive a lot more aspects of one risk position than just the economic aspect, as will be elaborated below. Therefore, to people it can make a lot of difference whether one risk is larger than another one. And when the people act and move, the polis is moving, and politics are affected. We do not have to make it a political issue; it will become one when large amounts of people become affected enough to respond.

The EC movement fits in nicely in the risk society. The EC movement creates significant risk awareness and progress in risk measurement. It is a privately owned technology that will definitely have effects on society in the terms and conditions of financial arrangements offered by banks. It allows the de-location of activities by using ICT technology and is knowledge dependent. It links risk, science and economy.

²⁷⁸ Beck, p.226

²⁷⁹ It is useless to say that it is economically better that an earthquake should happen somewhere else. Risks have a stochastic feature, as if they happen at random to a certain extent.

But it lacks the social rationality, as we have seen in the cognitive analysis in part one. The formal theory assumes objective risks and thus misses all judgemental knowledge and social rationality. But in contrast to the civilisation risks described by Beck, in the EC movement there are no emancipated groups who can act as countervailing power and provide alternative proposals. There is only the risk itself, that, if risk expectations come true, can falsify statements. However, credit risks are rare, the underlying knowledge is private and proprietary, and information regarding the risk positions is sensitive for the competition, hence is also confidential knowledge.

8.6.3 Risk perception, Risk communication & Trust

8.6.3.1 Introduction

In the previous chapter (§8.6.2.) the focus was on risk in society; on the role of risk in society, its impact on social processes and structures. The focus was on risk, as an actor or factor in society. The chapter showed that a risk society is emerging. In this chapter we focus on the social factors that determine risk, ie. on the impact of social processes and structures on risk itself. In a way, the analysis is inverted: from the impact of risk on society, we now focus on the impact of social factors on risk. In this chapter we focus on the social aspects of risk, that is, on the human interface that is always and necessarily involved in any risk situation. In its simplest form, risk is a negative deviation of an expectation. The only species that we know of which can have material and extensive expectations are humans. In this way, we may conclude that risk is essentially a human artefact: risk is produced by humans. Humans lay its foundations in the sense of creating expectations of the future and establishing normativity to judge developments regarding the realisation of the future in the moving present vis-à-vis the expectation.

Pidgeon et al.²⁸⁰ studied the perception of risk from a social science perspective. p.89: “From the perspective of the social sciences, risk perception involves people’s beliefs, attitudes, judgements and feelings, as well as the wider social or cultural values and dispositions that people adopt, towards hazards²⁸¹ and their benefits.”

Being the sine-qua-non, humans will eventually determine the risk of any situation. After postmodernism, it is clear that human behaviour can not always be explained

²⁸⁰ Pidgeon, N.; Hood, C.; Jones, D.; Turner, B.; Gibson, R., in of Risk Analysis, perception and management, Chapter 5, Risk perception, The Royal Society, London, 1992

²⁸¹ Hazards are defined here as threats to people and the things they value.

by rational economic decision making, at least not according to current economic and rationality theories.

Humans do not always adhere to economic theories, they deviate from them in their actual behaviour in many and important occasions. Not recognising this potential for deviation of mainstream expectations will create a risk in itself.

On the same page 89, Pidgeon et al. conclude that it is clear that risk perception can not be reduced to a single subjective correlate of a particular mathematical model of risk, such as the product of probabilities and consequences, because this imposes unduly restrictive assumptions about what is an essentially human and social phenomenon.

Given that the subject of investigation in this PhD project is EC, calculated as a function of a probability times a consequence, we should investigate these human and social aspects of risk, in order to identify possible shortcomings in EC theory.

Pidgeon et al. summarise the emerging trends and debates in the social scientific study of risk perception and they observe four major trends in the recent²⁸² literature:

1. A separation between objective risk and subjective or perceived risk can no longer be maintained. Physical consequences of risk may be objective facts, but the assessment of risk necessarily depends on judgement, according to mainstream thinkers.
2. The approach to study risk by combining cognitive psychology (the study of human memory, sense perception, thought and reasoning) and the study of human decision-making behaviour can be characterised as a fully mature discipline.
3. Many researchers have extended their analyses beyond the purely individual or psychological explanations of responses to risk, to now also include social, cultural and political arguments.
4. Risk communication has come up as a topic of study. The study of risk communication relates theory and findings from basic risk perception studies for the formulation of policy, and to the key question of public involvement in decision making about hazards.

The early psychological studies (eg. Slovic, 1987) already suggested that risk means much more to individuals than number of fatalities in a particular time unit. Several qualitative aspects are considered important, such as an activity's voluntariness, its personal controllability and familiarity, and differences and similarities in expert or lay judgements of risks. For example, a risk that a

²⁸² Note that recent refers to the year 1992 in which mentioned study was published.

mountain climber would be killed is considered less problematic than a risk that water pollutants kill people, the risk of death by smoking is less problematic than the risk of being shot in a public area, even if all these risks would be of equal size according to some measure of risk.

These suggestions put doubts on the idea that risk can be defined in a single measure of the objective risk itself.

An example of the above discussion is the issue of acceptable risk. Pidgeon et al. identify three generic approaches that institutions typically use to resolve questions of acceptable risk:

- I. Professional judgement, as embodied in individual professional skills and knowledge or in institutionally agreed standards, such as engineering codes of practice.
- II. Formal analysis, such as cost-benefit or decision analysis, which is the basis of many mathematical risk models.
- III. Bootstrapping approaches, which base acceptability on statistics regarding behaviour towards existing risks. The assumption is that the new hazards may not impose a larger risk than those already tolerated by society.

The conclusions in literature show that no approach is comprehensive and, hence, a choice is involved about what elements to include in the analysis. Next to that, one could argue that what is tolerable is not a scientific, but a political matter. This is especially so for large risks, which affect society at large. For example, the current war on terrorism definitely is a political matter, not an objective risk.

8.6.3.2 Subjectivity in risk

Watson (1981) provides the term the “phlogiston theory of risk”, which²⁸³ caricatures objective risk as a unique substance, given off by a physical process, and at a rate which can be determined precisely by risk assessment.”

Judgement is inherent in, and essential to all forms of risk assessment, from selecting a risk indicator, identification and valuation of consequences and uncertainties, as well as in the initial structuring of the risk problem. Literature shows at least ten formal definitions of risk, which indicates the various possibilities to interpret risks. Indeed, as Pidgeon et al. state:” Perhaps the most fundamental point at which judgement is needed is during the qualitative structuring of a risk model.”

²⁸³ Pidgeon et al, idem, p.94.

Most quantitative risk models assume a closed world, in which all paths to failure can be unambiguously defined. In these models, uncertainties arise both due to parametric or stochastic ambiguity, and due to systemic ambiguity, caused by appropriateness or completeness of the model itself.

Even for the most formal risk models, the conceptual structuring of the risk relies on tacit or personal knowledge, as well as on the social network of the risk analyst. A radical position concludes that all expressions of risk are derived from social and institutional assumptions and processes, ie. risk is socially constructed.

Pidgeon et al. (p.101) provide a table with twelve qualitative characteristics that may be involved in risk perception:

1. Involuntary exposure to risk.
2. Lack of personal control over outcomes.
3. Uncertainty about probabilities or consequences of exposure.
4. Lack of personal experience with the risk (fear of the unknown).
5. Difficulty in imagining risk exposure.
6. Effects of exposure delayed in time.
7. Genetic effects of exposure (threatens future generations).
8. Infrequent but catastrophic accidents (kill size).
9. Benefits not highly visible.
10. Benefits go to others (inequity).
11. Accidents caused by human failure rather than natural causes.
12. Individual or societal risks.

Research shows that people estimate fatality rates differently, according to the variations in one of the twelve aspects above. This type of research is known as the psychometric approach which is often employed to study individual risk perceptions. Subjective scorings or ratings of types of hazards are statistically analysed, using for example multivariate or principal component techniques, to derive significant differences between respondents due to individual or group differences. The results of this type of studies show that ratings may be characterised by a systematic pattern, with three important factors emerging:

1. ***Dread*** risk, relating to uncontrollability, dread (or fear), involuntariness of exposure, and inequitable distributions of risks.
2. ***Unknown*** risk, relating to the observability of risks, whether the effects are delayed in time or not, the familiarity of the risk, and whether the risks are viewed as known to science or not.
3. ***Number of people exposed***.

The higher the perceived risks according to the three factors above, the more people want to see its current risks reduced, and the more they want to see strict regulation employed to achieve the desired reduction in risk.

Further research also shows that socio-demographic factors are of less weight than the three factors above, which are qualitative properties of the risks themselves.

Other studies show that individuals may show significant biases of judgement, resulting from over-reliance on cognitive heuristics, or rules of thumb for frequency estimation. Of course, it matters whether the respondents have knowledge and experience with the risk. Further studies also show that experts²⁸⁴ “have been found to be highly accurate in their predictions. The key question, therefore, becomes the conditions under which accurate judgement can be fostered.” One suggestion is that judgement as a learnt skill will improve with the provision of prompt, unambiguous feedback that rewards them for candid judgement.

But subjectivity, or non-objectivity, does not only arise from individual differences, but also from group characteristics. Pidgeon et al.²⁸⁵:” Orthodox social scientific evidence for individual and group differences in risk perceptions derives from a variety of sources, including psychometric, social psychological and cross-cultural studies, but some ambiguity remains.”

Studies in the Netherlands in 1981 already conclude that riskiness may be characterised by two dimensions labelled ‘size of a potential accident’ and ‘degree of organised safety’. Material differences in risk perception within groups of respondents have been found. Therefore, the use of group average ratings makes far less sense than is often believed.

8.6.3.3 Social and cultural approaches

Any perceiver of risk is rarely an isolated individual, but a social being who necessarily lives and works, plays and rests, within networks of informal and formal relationships with others.

The central claim of the cultural theory approach to risk perception is that human attitudes towards risk and danger are not homogeneous but vary systematically according to cultural biases. Cultural bias means attitudes and beliefs that are shared by a group.

For example, Rabobank International has a focus on clients in Food & Agri type of industries, it is a relationship bank and has a conservative risk appetite. These beliefs and attitudes shape the risks in our portfolio for example by way of the selection criteria applied in the credit committees.

The cultural theory holds that there are a limited number of cultural biases that can be identified. An individual’s cultural bias is linked with the extent to which he or

²⁸⁴ Pidgeon et al, p. 107

²⁸⁵ Pidgeon et al, p. 108

she is incorporated into bounded groups (*group*) and with the extent to which the interactions of social life are conducted according to rules rather than negotiated or adhoc (*grid*). Linking grid and group, four major cultural biases can be identified:

- I. Hierarchists (high grid, high group); are willing to set acceptable risks at high levels so long as decisions are made by experts or in other socially approved ways
- II. Sectarians or egalitarians (low grid, high group); accentuate the risks of technological development and economic growth so as to defend their own way of life and attribute blame to those who hold to other views.
- III. Fatalists (high grid, low group); do not knowingly take risks but accept what's in store for them.
- IV. Individualists (low grid, low group); see risk and opportunity go hand in hand.

This implies that people select certain risks for attention to defend their preferred lifestyles and as a forensic resource to place blame on other groups. That is, what societies choose to call risky is largely determined by social and cultural factors, not by nature.

However, the grid-group explanation is also criticised, specifically for its simplification. Individuals may move from one risk culture to another and it is difficult to classify existing social units.

A theory that combines social and psychometric traditions of risk research is the social amplification of risk theory. It is based on the observation that most of our knowledge, and this includes our knowledge of hazards and danger, is second-hand; that is, we come to know about the world through various communications that we receive in the form of signs, signals or images from various sources. Furthermore, signals can have rippling effects, secondary order effects that may go far beyond the impact of the initially unrelated hazards.

This emphasises the point that risk should be studied from a multi-disciplinary perspective, rather than from one 'superior' approach.

8.6.3.4 Risk communication

The study of Risk Communication raises issues, such as the relation between basic risk-perception research and public policy and decision making, as well as the processes of risk management. How should the public be involved when it is clear that particular risks (scoring high on the qualitative factors mentioned above) are of great concern to them? How should the risk managing institutions be informed and how do they inform stakeholders in case of acute risk?

Pidgeon et al.²⁸⁶ see at least four partially overlapping conceptual approaches to risk communication that can be identified in the literature. These are:

- The simplest approach defines risk communication within an ***engineering communications framework***, in terms of a top-down or one way transmission from an expert to a non-expert stakeholder. Focus is on the source, the channel, message and receiver and potential hindrances.
- A second approach stresses the ***risk communication process***, as an interactive process of exchange of information and opinion among individuals, groups and institutions. Minimally, such a definition highlights the critical role of feedback and interaction. Maximally, it implies that risk communication necessarily involves a fluid and dynamic interchange of information between the parties to a risk issue or conflict in the search for mutual understanding.
- A third approach stresses not only the process, but also the wider ***institutional and cultural contexts*** within which risk messages are formulated, transmuted and embedded. In this cultural approach it is recognised that all hazards have a history, and that this will influence the interpretations that are placed upon particular messages at any particular point in time. The trick is to fully understand the context in which risk communication occurs.
- A final approach views risk ***communication as part of the wider political processes*** that operate (or ought to operate) within a democratic society. Here communication is seen as an essential prerequisite to the enabling and empowerment of the risk-bearing groups in society in ways that allow them to participate more effectively in decision making about risks.

Another issue is the relationship between risk communication and trust. According to Pidgeon et al.²⁸⁷: "If we do not trust the source (perhaps because of current evidence that contradicts past messages), we do not trust the message! It is also the case that trust is hard to gain, but easy to lose. A particular dilemma is raised here by the uncertainties that often surround any particular risk assessment; under such circumstances too precise a prediction which unintentionally neglects areas of uncertainty or incompleteness in a risk model might, in the light of subsequent events, be interpreted to have been flawed, thus undermining the credibility of the risk analyst." Similarly, trust may be lost if the responsible authorities do not respond or learn adequately.

Pidgeon et al. conclude their summary of risk perception literature with the statement that the psychometric school has grown mature and is backed by

²⁸⁶ Pidgeon et al., p. 119

²⁸⁷ Pidgeon et al., p.122

significant empirical evidence, but lacks grounds for theoretical explanations. The cultural and communications school are much newer and very promising in their theoretical explanatory power, but (still) lack the empirical basis.

8.6.4 Managing expectations

Risk communication can be focused on two different *ends of the equation*:

1. Risk measurement and risk reporting to indicate the potential negative deviations of expectations. For example the estimation of potential unexpected losses in credit risk portfolios.
2. Expectation management, in order to adjust expectations to the likely outcome of independent processes which are the subject of the expectations. For example, if the actual risk that a project does not finish in time (ie. as expected) becomes acute, risk communication may aim for adjustment of the expectations with respect to time of finalisation. The aim is to change the expectation in such a way that it fits the likely realisation better.

In the art of managing expectations, the manager is focused on the aspect of risk perception. Risks must first be perceived before they can exist, because risks concern future events. The art of expectations management is in finding the boundaries of the purely perceptual nature of the respective risks. If once the perception that an earthquake may happen has settled, and the mountain starts shaking, the scope to manage expectations diminishes quickly. This example shows that there is more room for management of expectations of risks concerning events that are far in the future than concerning events that happen tomorrow or are already starting to happen.

From a psychological perspective, managing expectations can indeed add value. People dislike negative surprises and the management of their expectations can add value in two ways:

- reducing the size of the surprise by dividing the total surprise in smaller steps. In this way, managing expectations means that communication should focus on reporting the slightest downward trend in achieving the expectation immediately. In this way, negative deviations can be reported earlier and in smaller steps. Instead of reporting at the end of a project that it has completely failed, many intermediate reports could have reduced the total amount of shock. This is management of performance monitoring information to change expectations. Next to managing expectations, this

- intermediate reporting also has the benefit of raising attention when the problem is still small. Smaller problems are usually easier to solve.
- avoiding too high expectations by communicating realistic or slightly conservative plans. People have a tendency to overestimate their own capacities, and especially in a competitive environment, one has to look better than the competitor. Managing expectations in this way focuses on setting realistic targets and timelines by considering all relevant aspects that affect the risks. It is better to achieve less but according to plan than to have high plans that will not be achieved. This is management of target setting, or the management of initial expectations.

8.6.5 EC based risks

The risk studies described above do not specifically focus on the EC movement. Therefore, in this chapter, the potential social effects of EC based risk management will be described. Next to that, an analysis is presented on the subjectivity in EC frameworks.

EC frameworks measure risks according to a quantitative reductionist /statistical approach and use averages as the norm and volatility as risk. It expresses risk in two numbers, which are highly correlated with each other, in terms of using the same basic information²⁸⁸. It covers a wide range of economic activity, as it is intended to serve large banks, which are diversified into corporate banking, investment banking, retail banking, corporate finance, eventually insurance, etc. Hence, it applies these two risk measures on a whole scale of activities, applying one standard bank-wide. This serves the bank in centrally managing portfolios of risk, it serves the concentration of management. On the basis of EC measures, the central management can perform portfolio management actions, changing the content of the portfolio. For the local situations that represent the risk positions, this may have severe consequences. For example, a factory may be closed, not because it is not operating properly, but just because somewhere else performance is even better. Or capital may be re-allocated because the old allocation does not fit the portfolio strategy anymore.

8.6.5.1 Measurement by quantitative reductionism

All EC frameworks apply quantitative reductionism as a means to connect to reality. It means that real world events and entities are reduced to effects that can be measured according to a universal standard. This standard translated all risks in

²⁸⁸ ie. both use PDs, EADs and LGDs

EL and UL, respectively averages and volatilities around these averages. The actual risk is in the volatility. The use of average and volatility has several social implications:

- averages
 - Level argument. EC / EVA theory implies an objective to maximise return and/or minimise volatility, that will yield the best EVA. Minimal volatility occurs when the risk is exactly similar to the average of its class. Volatility then is zero. If the risk deviates from the average, it is *penalised* in terms of having to bear higher EC, ie. higher risk costs. If we consider which kind of activities are deviating from averages, we must first establish the level at which the average is calculated. For example, the average within the class of artists is quite deviating from the average on the level of the total population. Risks costs are thus highly determined by the level of detail in the EC framework. If the framework is rough in terms of distinguishing only a limited number of reference classes, artists or other innovators are bound to be subsidised.
 - Diversity argument. Another implication of EC theory is that investors should always diversify in order to decrease portfolio concentrations. Selection of risks that are exactly similar to the average of a particular risk class would then contribute to concentration and, hence, increase risk. If all banks would only select risks that are similar to the average of their portfolio, this may cause large volatilities on the GFM, the backbone of the network society. If all banks would just use one standard for EC (all use the same framework) this may aggravate matters seriously.
- one-dimensional volatility; the volatility measure chosen is always one-dimensional. For example, in the Rabobank case, only volatility of defaults as binomial event is included in the capital calculation (see appendix for a description of the Rabobank model). That does not include the volatility caused by estimation errors, nor volatility caused by the specific business context of the debtor. Furthermore, it may be doubted whether this one-dimensional volatility as a concept is rich enough to capture all risks. For example, in statistics, volatility is called the second moment of a loss distribution; the standard deviation. There are ample higher moments, which are not included in the volatility measure. In normal language, a volatility around averages does not necessarily predict losses in extreme cases, ie. in cases when the bank as a whole is at risk. For example, in the Rabobank case, already more than 100 years the bank has survived. The likelihood of non-survival because the bank does not have enough capital can be considered a rare event, not in line with **standard** deviations. EC frameworks may measure the wrong things, may

provide cheap funding to activities that can cause large risks in the extreme cases and vice versa. For example, large well diversified companies that resemble portfolio averages may benefit while small innovating enterprises may be penalised. It is clear that in extreme cases, the large company's default may cause a lot more loss to a bank.

EC frameworks measure risks according to a specific portfolio risk model, in which the potential risks are pre-specified. The model is intended to focus on the right indicators of risk. As such, EC frameworks have a large dependency on knowledge, model risk, and informatisation.

- Technology dependence; EC frameworks require technical support in terms of ICT technology. The more sophisticated the technology, the more sophisticated the model. The model needs data on actual positions in terms of money given to the client, financial condition of the client and value of risk mitigation provided by the client. All this data must be captured and processed to central databases and calculation engines to calculate the correlated economic value of all positions in the particular portfolio. As this technology is relatively expensive and rapidly developing, the largest and richest parties will have an advantage in application of EC. Furthermore, technological constraints may hinder appropriate risk measurement. For example, the pair-wise calculation of correlations in the portfolio is replaced for the calculation of correlations with indices to reduce the number of calculations required so that models can run on current computers. The technology thus shapes the risks captured.
- Cognitive dependence; EC frameworks require knowledge of factors that determine credit risk. Rating models, which translate annual accounts and softer information into probabilities of default, as well as exposure and loss models are required to estimate the risk in any singular risk position. Then models are required to estimate the correlated effect of all singular risk positions in one particular portfolio, next to knowledge of exogenous variables that drive the value of the portfolio. For example, one needs to know whether specific industries are correlated when they are represented in the portfolio, but one also needs to know how the industries will be doing.
This cognitive dependence will drive banks into investments in science and media in order to get the best models and economically relevant information.

8.6.5.2 EC based Management

EC based management has an impact in two different social areas:

1. Users of EC frameworks, ie. banks, the supply side of finance;
2. Credit clients or debtors to the banks, the demand side of finance.

Actually, EC based management has an impact on the exchange between the two groups of entities. In providing and managing the loan, the supplier will apply EC frameworks for risk assessment, while in accepting a loan, the demander will be subject to EC frameworks in the way finance for his operations is provided.

On the supply side, two potential risks can be identified which can be caused by using EC frameworks.

- I. Concentration: application of EC frameworks by banks is likely to lead to concentration or consolidation in the banking industry.

First of all, BIS II provides an advanced menu for large/international banks. This advanced menu is based on most sophisticated risk measures and risk management. Capital requirements within this menu are set such that they provide an incentive for banks to aim for the advanced menu solvency regime. Explicitly, sophistication of risk management is rewarded, ie. given a competitive advantage by the regulator in terms of a lower cost price of solvency. Implicitly, BIS II benefits large banks that are able to carry the required investments in science and technology, respectively in risk models and IT data processing, calculation and reporting systems. BIS II sets a specific economic size standard for banks. If banks are too small to carry the required investments, they will be competed out of the markets where the large banks are active. That means that small banks will be doomed to niches, that are uninteresting to large banks.

Secondly, portfolio theory works best for large portfolios. Large portfolios can be diversified more than small portfolios, which is a direct economic benefit. Next to that, if the portfolio is large enough (in statistical terms: when the population is significantly large) metrics will be more accurate. An average of only two different loans does not provide much information, the average of a million different loans does.

Thirdly, knowledge efficiency²⁸⁹ drives concentration. The larger the bank, the more funds it has available for technology and cognitive investments. The new thing with these investments is that they are not scaled to the number of potential users. In other words, they have the character of fixed costs, not related to the size of the operations. If,

²⁸⁹ knowledge efficiency: given the available information within a horizon, how much use do we make of it?

however, the fixed costs can be spread over many profit centres, the investments are only a small portion of the costs of operations.

- II. Herding: herding occurs when all (market) participants are acting the same, moving in the same direction. Usually, buyers and sellers have opposite interests and keep each other in balance. In case of herding, all move the same. Cases of herding have been observed in major financial crises, such as the Tequila crisis in 1996, South East Asia in 1997, etc. Common in these situations is a loss of trust in local developments together with a shortage of proper information. Uncertainty is very large in these cases. Market participants are *bearish*, negative, and react to the scarce information once it becomes available.
- In a world where banks are using EC frameworks, and especially if this indeed has led to the concentrations as described above, large parts of the market will move simultaneously, either because they all use the standard EC model, or they all use the standard source of information (eg. from the monopolised rating agents). The standardisation, commoditisation if you like, of credit assets is a fundamental impact of the implementation of EC frameworks. As is the case in standardisation, the intention is that as many people as possible will adhere to the same standards.

On the demand side, debtors will be faced with EC aligned loans, if they have no alternative. That means that the interest rate of the loan (the price) is determined by EC calculations, and that the structure of the loan is such that it attracts minimal EC. Regarding the price, strong debtors, with strong earnings and Net Asset Values, will benefit, while weak debtors will be penalised. Especially if weak debtors operate in a competitive market, they will not always be able to transfer these increased finance costs to their clients. That means that their margins will be too low to cover costs which will make them go bankrupt. This again drives a development towards concentration, this time of operating companies. The large Coca Colas do have an alternative in the first place. They can also access the capital markets to raise debt and equity finance. Next to that, they have a lot of bargaining power towards banks, as they are international and operate in many different bank markets. For such companies, it does not matter whether Dutch, English or US banks provide finance, or other investors. To a certain extent, the implementation of EC is contributing to the trend that all of us eat the same cookies, drink the same sodas, wear the same clothes and drive the same cars. The only way weak debtors can be financed cheap in an EC framework is if there is a lot of effective risk mitigation. In that case, EC can be as low as with strong debtors. This means that the debtor should provide collateral, adhere to conditions

and covenants, provide information and ultimately transfer control over the company to the banks. All of this should ensure the bank that it is covered in case the debtor defaults.

The conclusion is that in the future, when EC frameworks are fully at work, deviations of the global standard will either become expensive, or will become controlled by banks.

8.6.6 Social implications regarding risk management.

The emergence of risk management has a large impact on society, but society also has a large impact on risk management.

Risk society

Current society may be described as risk society, because the nature of the risks it faces changes from personal or natural risks to systemic risks, caused by the social system itself.

This situation is the result of several developments in science, media and the economy.

Science has made such progress and is now widely available, both as product in terms of scientific knowledge, as well as process to find out more about the world around us. Science is democratised in the sense that it is now also available for politicians and businessmen. Specific groups that have become aware of issues relevant for them are now able to organise and form effective lobbies that can put issues on political agendas.

However, both development of technology as well as application of technology are monopolised by business, while the effect of that has political consequences. This leads to the ineffectivity of the democratic system.

Furthermore, especially the application of ICT technology has made the management of business independent of location, allowing a global economy to emerge. Production phases can be completely separated from marketing and financial management, allowing to bypass any specific laws in the home country, and even making countries vulnerable for the nomadic capacity of industries.

The ever more concentrated capital will have a strategic need for information and the control over its distribution. But as long as there are many autonomous corporations in a capitalist (competitive) economy, society will be highly dynamic, and uncertainty will become prevalent.

Social and psychological aspects of risk

In current literature regarding social or psychological approaches towards risk one can conclude that risk perception can not be reduced to a single subjective correlate of a particular mathematical model of risk, such as the product of probabilities and consequences, because this imposes unduly restrictive assumptions about what is an essentially human and social phenomenon. Risk has an essential subjective

component, requiring human judgement, which makes that objective risk can not be separated from subjective risk. Psychology shows that risk assessment is a pluralist discipline that considers many dimensions of risk, such as involuntariness, uncertainty, people involved, equitable distribution, etc. Furthermore, risk appreciation may be socially or culturally determined, or the result of historical developments. Finally, risk perception may be influenced by communication and subsequent management of expectations.

The EC movement

Again we may conclude that the EC movement is a child of its time and answers to the descriptions given by Beck, who was not aware of the EC movement. Beck mentions an interesting issue when he refers to the trend of concentration of capital. The EC movement is a portfolio approach, which accommodates a concentrated management of capital. Furthermore, it is focused on improving the risk adjusted return on capital of the portfolio manager. The larger and more diversified the portfolio is, the better the EC model performs. Therefore, it is expected that the emergence of the EC movement will stimulate further concentration of capital. This development is supported by the required investments in risk information systems. In a competitive environment, the party with the biggest wallet to invest in ICT and risk models can outperform all other parties on its market and hence create monopolies.

The social and psychological aspects of risks indicate that EC modelling is no objective activity. As it is highly dependent on judgements, any EC model will be coloured by the personality of its creators. For example, the level of detail in an EC model is an arbitrary choice, but creates distinct effects in terms of differentiation. Increased levels of risk differentiation contribute to a mechanism where the party who causes the risk must pay for it. Instead of solidarity, the weakest party must pay highest interest. Whether that is always a preferable feature is a political decision.

8.7 Capitalist economy

8.7.1 Introduction

The EC movement is all about capital. EC theory promises to calculate the appropriate amount of risk bearing capital as buffer for specific risk positions as well as for portfolios. Furthermore, it allows to make standardised risk/return assessments, which enables improved performance measurement and capital allocation. In short, EC theory is about the fundamentals of capitalism, it is about capital itself, especially the dynamics of capital in terms of value added or destroyed by specific risk positions.

Capitalism itself is one of the key issues in any social science debate, whether it concerns Marxian class struggle debates, driving forces behind social construction of reality, or criticisms on globalism. Capitalism is a major factor in all the worlds' societies. In each society there is a shading of capitalism, ranging from China, Russia, Europe to the US, but also along other lines. Since the end of the Cold War and the collapse of the Soviet System, some argue even that there is no alternative for capitalism as dominant social fabric. Nearly every aspect of society can be capitalised, and the rate in which matters indeed become capitalised is ever increasing. Care, leisure, entertainment, politics, dating, sex, adventure, etc. all have become targets of capitalisation, are all influenced mainly by money exchange, monetary interactions between regulators, producers and consumers. Capitalism is at the top of its powers!

Inherent in my thesis is the belief that EC theory can²⁹⁰ be one of the main vehicles to transform societies from a monetary society into an informational society, shifting the emphasis from money to information. Information follows different rules than money. Therefore, it will be interesting to see what the impact of EC theory and application could be on capitalism.

A first suggestion is hyper-capitalism. In this phase of capitalism, it becomes so powerful that it destroys its fundamentals, and therefore has to transform. As such, capitalism will kill itself.

The reasoning is as follows: EC theory and its social context of ICT revolution, and increasing risk awareness, actually contribute in making markets more perfect. With EC it becomes possible to compare all different sorts of financial investments on an equal basis. In effect, it can calculate the complete countervalue²⁹¹ of any economic activity. Such information both widens the market place, in terms of

²⁹⁰ Depending on the scope of implementation in real world businesses.

²⁹¹ countervalue as economic value added, the net present value of all future cash flows.

increasing the *investible universe*, for example, by allowing a comparison between corporate loans backed financial paper and Treasuries. And it also deepens the market place in terms of providing the information for superior differentiation of assets on the market. For example, a proper EC framework allows a bank to pro-actively manage a risky portfolio. This is an additional activity focused on the same assets that were already on the market place; from the market a sub-market emerges, deepening the market.

However, this hyper-capitalism will more and more depend on superior information, increasingly accurate and forward looking, to such a degree that the information may become more important than capital. Furthermore, increased and improved information allows superior management and performance. Money will become a direct function of information and information still is an indirect function of money.

In this chapter, we will investigate the impact of EC theory on capitalism as social ordering mechanism. First, a critical analysis will be presented. Since all societies seem somehow to follow the principles of capitalism, we do not need to spend too much time on the benefits of capitalism. In short we may conclude that it seems to convince most societies of its superiority. Therefore, we will start with an analysis of the difficulties of a capitalist order.

This will allow asking whether the EC movement will improve these difficulties, or whether it makes things worse.

8.7.2 Critical analysis of capitalism

In this paragraph, capitalism is analysed for its undesired social effects. Not all of us are convinced of the proper level of the cost/benefit ratio of capitalism.

Fortunately, there are indeed a number of countervailing powers to the formal capitalism. In fact, no country adheres to its principles consistently. Import and export restrictions hinder the free flow of capital and goods significantly, tax and subsidies redistribute large flows of income, etc.

Schweickart²⁹² in my opinion criticises the strict formal capitalism when he states that: “I have argued that capitalism is plagued by insurmountable difficulties: staggering inequality, systematic unemployment that globalisation will almost certainly make worse, an unnecessary and undesirable intensification of work, poverty that wrecks minds as well as bodies, a perversion of the democratic process, and an inherent ecological destructiveness.”

292 Schweickart, D, 2002, p. 127

Most societies in the world are turning more and more to capitalism and subsequent market economies. Capitalism must have its benefits. P. 87: “In essence, the grand comparative argument for capitalism (TINA, for There Is No Alternative) claims that there is no alternative to capitalism that is

- As efficient in the allocation of existing resources;
- As dynamic in its innovative growth;
- As compatible with liberty and democracy.”

Capitalism is optimally efficient, innovative and free. However, capitalism certainly has its drawbacks.

Schweickart’s book is about providing an alternative in terms of economic democracy, which is democracy on the workplace and in investments. He sees six social negatives of the formal capitalism:

1. Inequality
2. Unemployment
3. Overwork
4. Poverty
5. The mockery capitalism makes of democracy
6. Environmental degradation.

Inequality

The distribution of wealth in a capitalist society is unequal. The owners of the means of production can become incredibly rich, while many unskilled and disabled people have barely anything at all. According to Schweickart²⁹³: “In the US, the top 1 percent is now estimated to own between 40 and 50 percent of the nation’s wealth, more than the combined wealth of the bottom 95 percent.”

Inequality is not wrong per-se. The nature is full inequalities, and we all know that not every one has equal skills or minds. The problem is when one party gets too much and others receive too little of the cake. In our world about 1 bln people are starving to death in poverty, while some others are overly rich.

Schweickart²⁹⁴ points at two long-known objections at such inequalities, which I think still hold,: “Plato voiced the two most common objections to inequality long ago. First of all, excess at either end of the economic spectrum is said to be corrupting. Excessive poverty corrupts, but so too does excessive wealth. Secondly, inequality is said to undermine the unity of society, the “community” of people. As

²⁹³ Schweickart, p. 92

²⁹⁴ Schweickart, p.92

Plato noted, within most societies there are really two societies, one rich and one poor, with decidedly different interests.”

Unemployment

Under capitalism, we were used to exporting goods and services and importing cheap materials. However, with global capitalism, also jobs can be exported, creating a new impetus for unemployment. According to Schweickart²⁹⁵: “What is new for Western societies is that we always have benefited from low labour costs abroad. Such low wages translated into low-cost raw materials and mass-affordable coffee, tea, chocolate and bananas. The workers of the Third world worked for us, not in competition with us. Now, for many in the West, the game has changed. As consumers we still benefit; as workers we are threatened.”

The reason for this change lies in the hyper mobility of capital. Recent technological developments regarding transport and communication have allowed widening the spectrum of capital allocation to a global scale. Anywhere could be a production site, if proper logistics and communication is assured.

Schweickart²⁹⁶ refers to Keynes who pointed out that the key to capitalist production is *effective demand* –needs or desires backed by purchasing power. This effective demand comes from three sources: private consumers, private (real) investments, and from government expenditures. The health of a capitalist economy depends on investor confidence. If that is lacking, the government should step in to fill the gap in effective demand. However, in a global economy, the magic multiplier of Keynes (magnifying the effect of government spending) is not working anymore, as money may flow out of the country. In an open economy, the old recipe from Keynes does not work: excess government expenditure is leaking away out of the economy.

One of the central contradictions within capitalism involves wages, which are both a cost of production (should be kept as low as possible) and an essential source of effective demand. Capitalist firms are always interested in further cost cutting to improve performance, especially if performance needs a boost, ie. in recessions. In such cases, the other options for the capitalist are not available²⁹⁷. However, if cost cutting is applied on a large scale, this is affecting consumer confidence and reducing effective demand. This may well turn in rising unemployment and stagnating economy.

²⁹⁵ Schweickart, p. 94

²⁹⁶ Schweickart, p. 95

²⁹⁷ These other options are: 1) expanding markets, 2) developing new products

A laissez-faire capitalism has no tendency whatsoever toward full employment. It can stabilise at any level of unemployment. In fact, a healthy capitalism requires unemployment. It is precisely this reserve army of the unemployed that serves to discipline the workforce. Because of the unemployment there is workers competition for jobs, which makes wages efficient.

It is quite possible for a capitalist economy to marginalise large numbers of people, who, in the absence of government intervention, will remain permanently unemployed. In a globalised capitalism, large sections of the world can become marginalised, and in fact there are.

Overwork

According to Schweickart²⁹⁸, the more open or competitive an economy becomes, the harder the treadmill effect: all workers must intensify their efforts, or at least increase their output, just to remain in place. In an open economy, there always can be someone to replace you in your job. Or, on a larger scale, firms might decide to take all jobs to cheaper environments.

But not only income is unequally distributed, also is leisure. Millions of unemployed have more leisure than they want, while million others have to work harder and harder to keep their jobs.

A bias for consumption is built into the structure of capitalism. Even though workers in an enterprise might prefer to take a part of their productivity increase in leisure rather than income, the owner of an enterprise has nothing whatsoever to gain from such a trade-off. A capitalist wants to get as much work from his workforce as possible. Unless it can be demonstrated that there would be a significant gain in worker productivity, the capitalist has no reason to consider such a proposal. The fact that workers might be happier is irrelevant. Capitalist firms make a profit only from selling. If profit rates are to remain high, then goods and services must be consumed in ever increasing quantities. Consumption is good for business. Leisure –if not oriented toward consumption- is not.

Poverty

Living in poverty is something else than being poor. People may have no money, but can be quite capable of creating a good life. Material poverty refers to hunger and malnourishment, homelessness, pain, sickness, diseases that prey on weakened bodies. But poverty is not only a material thing, it can destroy the spirit as well as the body. In a society with the ethos of a meritocracy, it is your own fault if you don't make it. Poverty then destroys self-respect and becomes unbearable. The poor must help themselves in a capitalist economy, and are tempted to do that in a criminal act. In the US, with 5% of the world's population are 25% of the world's prisoners.

²⁹⁸ Schweickart, p98-100

Poverty must be conquered by providing work to all in society; work helps in generating sufficient income, and it provides a structure to give meaning to life. According to Schweickart²⁹⁹: “The only real cure for the material and spiritual ravages of poverty is decent work..., which gives structure and meaning to your life.” However, capitalism can not provide decent work for all, as unemployment is required to discipline the workforce.

Third world poverty is more a by-product of capitalism than a structural necessity. Experience shows that agriculture and local industries in poor countries are defeated and wrecked by cheap imports. The intention of the capitalist is to keep all countries open, not necessarily to liberty and democracy, but certain to Western capital and commodities. International aid agencies, such as IMF or Worldbank insist that countries who receive their “help” are made as attractive as possible to foreign capital.

The capitalist firm needs to make sure that its competitive advantage meets effective demand. Low-cost considerations drive it to low-cost countries for its resources; raw materials or labour. It has no drive to develop workers further than for the level of the labour it needs from them. Workers that have a more general education might choose to work somewhere else and increase alternatives. The capitalist firm will be faced with higher wages or more demanding workers, which will raise its costs. In fact, it will raise costs in the short horizon, and could be paid off by increased productivity on a longer horizon, but the risk that the worker chooses to work somewhere else grows accordingly. Any specific capitalist firm is likely to pay for the benefits of other companies when it invests too much in its personnel.

A similar argument goes for the income side. We all know that if worker’s salaries significantly change downwards, effective demand will decrease significantly. Current developed economies are driven by consumer demand, if that decreases, the economy is in recession, since the capitalist firm will just move its investments. However, if any single capitalist firm would act upon this knowledge by paying his personnel more in recessions, it would kill its own business, as competitors will use the occasion to lower wages, ie cost price. It is highly unlikely that it will reap the benefits of the extra income of its workers. Usually, workers get a big discount on the products of the company they work for. So actually, in no way, such a single capitalist firm is going to profit from such wage policies.

Lack of democracy

²⁹⁹ Schweickart, p. 101

Plato thought that democracy would always degenerate because the demos (the people) would insist on redistributing the wealth, which causes a backlash and ultimately leads to tyranny. And in fact, all classical liberal philosophers during the rise of capitalism worried about the threat to property that an extension of democracy to the propertyless masses would entail.

Schweickart³⁰⁰ mentions the emergence of a polyarchy which passes for a democracy in most of the countries in the world today. In a true democracy its members are reasonably well informed and participating in the political decisions, and no class is privileged. Schweickart makes the point that the capitalist class is a privileged minority class. This *ruling* class has enough wealth to generate a comfortable income and comprises the top 1 % of the population. Next to their uniform education at the top schools, some more mechanisms serve to exercise the power of this ruling class.

Especially in the United States elections are very expensive and must be sponsored significantly. Big contributors must be wealthy to provide adequate amounts. Being so dependent, the politician must court and woo these wealthy sponsors and make sure that the sponsors feel that their interests are protected by the particular politician. Fortunately, the interest of any specific sponsor is always specific, which means that not all interests can be served simultaneously. This at least leaves some room for genuine electoral competition.

What all capitalists do have in common is their reliance on the basic institutions of capitalism itself, for example private property and according legal system. Therefore, they have to make sure that their interests are well formulated and disseminated to the general public. Numerous (privately funded) foundations which undertake policy research, propose model legislation, bring together representatives from business, government and science, as well as the media to debate, discuss and influence perceptions. The mass media play a crucial role, but in themselves are also dependent on corporate sponsors for their advertising income. No single major newspaper will voice anti-capitalist sentiments in a principled, consistent manner. Another powerful tool of the capitalists is the *investment strike*, for which no explicit coordination is required, as it will automatically happen if a government comes to power that is deemed unfriendly to investors. These investors can easily find opportunities in another country. If that happens, the unfriendly government will create a recession (unemployment, decline in demand, etc.). And in a polyarchy, leaders are held responsible for the economic well-being of the nation. As long as investment decisions remain in private hands, any government has to listen to the capitalist class.

In fact, according to Schweickart³⁰¹ :”As long as the basic institutions of capitalism remain in place, it is in the self-interest of almost everyone to keep the capitalists

³⁰⁰ Schweickart , p.105

³⁰¹ Schweickart , p. 110

happy...Capitalist societies tend to be “tolerant” societies –unless the basic institutions of capitalism are threatened. Then the gloves come off, and we get death squads, military coups, and fascism. At least, that has been the historical record to date.”

Environmental degradation

According to Schweickart³⁰², there are three features of capitalism which, taken together, give the system its ecological destructive dynamic:

- Capitalism’s expansionary dynamic (not to grow is to stagnate, regress, slide into chaos). This results in an ever increasing need for resources, both natural resources as labour.
- Its peculiar crisis tendency deriving from its basis in wage labour (cost cutting means stagnating effective demand). This results in a volatile environment in which labour is usually over- or undersupplied.
- The unrestrained mobility of its defining element, “capital”. Capital can get away from its own responsibility. For example, owners of corporations who do not clean up the environmental mess they created themselves, but simply move their investments to cleaner environments. Capital can search for the places with minimum regulations with respect to natural resources and labour.

The information age has first focused on material production, increasing efficiency dramatically. For example, in the demand for labelling of ingredients in food products, democratic participation is increased. Knowing what specific products are made of and from, and having an alternative provides a choice to the consumer. According to Schweickart, democratic participation should also be increased regarding financial production. The public should be informed and involved in how their consumption is financed and how benefits and hazards are redistributed. Schweickart in fact suggests investment labelling for socially aware investors to allow them to choose between corporations with respect to the way in which these corporations are financed and how risks and returns concerning the operations of the corporation are distributed.

8.7.3 Social implications of capitalist aspects of EC

Capitalism is the major economic principle that governs countries. As Schweickart suggests, there is no alternative that is as efficient in the allocation of resources. However, capitalism benefits few while leaving large other groups out in the dark. Also Castells points at the emergence of a Fourth World of ignored citizens.

³⁰² Schweickart ,p.122

These others suffer from the inequality, poverty, and environmental degradation caused by the capitalist principle. It seems as if these negative effects are structural to capitalism. That is, structural to the capitalism which is subject to Schweickart's analysis.

In my view, he targets the formal capitalism, capitalism as pure laissez-faire. However, most countries have counteracted some of the detrimental effects of the open market economy by taxing and subsidising parts of the population. Therefore, I don't think that there is any country that displays all effects mentioned by Schweickart. However, his numbers on inequality in the US are staggering.

The EC movement in itself does not seem to make things better. It does not solve the inequality, the lack of democracy, or the unemployment. Its sole aim is to employ capital more efficient, to increase the returns on capital. Mainstream EC is based on portfolio theory and laws of large numbers, which causes concentration effects. This in turn increases the problems of inequality. Given that the EC movement will invoke a strategic need for information and the control of its distribution, it is highly likely that EC movement will increase the lack of democracy further. EC players will try to monopolise by using superior models and superior information, so certainly science will be colonised further by the EC movement.

However, whether banks will want to control the distribution of information, ie. whether they want to control the media is unclear for me. It would require a very pro-active risk management to try to influence the business context for the corporations to which the bank is lending. Some very big parties in specific markets, e.g. the Rabobank in the agribusiness in the Netherlands, already have influence in business contexts of their clients and some control over the respective media, as well as political influence.

EC theory and models are in principle neutral tools, like guns. However, they allow risk sensitivity, which penalises the weak; they have a concentrating tendency, favouring large portfolios, creating more inequality; and increase the mobility of capital.

Given the above analysis, owners of EC frameworks can know about these possible negative implications, and, therefore have a moral obligation to act on this knowledge.

8.8 Philosophy of travelling

The above analysis was based on (external) literature, based on conventional concepts. Now we turn to an analysis based on the traveller. In philosophy of travelling a type of travelling is analysed. In this case, we want to analyse the types of travelling which enable the EC movement. As has been shown above, the EC movement is dependent on:

- Technology, ie. ICT, on
- Risk management knowledge, as well as on
- New economies, ie. the creation of global financial markets.

Next to these, let's say, more general types of travelling, the EC movement adds specific types of travelling, for example in the quantitative modelling and portfolio management activities. Below, the various types of travelling involved in the EC movement will be elaborated.

Finally, a conclusion will be drawn from the PoT analysis with respect to the social implications of the EC movement.

8.8.1 ICT travelling

Type of travelling: Infrastructure for virtual travelling.
Technologically supported flows of representations, knowledge and meaning.

Already it was noted that the EC movement involves virtual travelling, or in fact, is a vehicle to transform society from a monetary society into an informational society. Essentially, the EC movement depends on (is a child of) Information & Communication technology. ICT is the main cause of the transformation of society into informationalism. EC theory is just one of the *contents* for the information and communication networks. The virtual travelling involves the visiting of places without significant movement of the body. Essentially, carriers of meaning (in terms of pieces of (valuable) information) do all the physical travelling required to visit places beyond the natural horizon.

As we saw above, ICT allows a virtual travelling with the speed of light and indefinite storage capacity in which meanings in the past can be stored, ready for access. On the net, all times and places are connected, hence annihilated according to the classic meaning of time and place as bounded periods or areas. Castells speaks of *Timeless time* and *Space of flows*, referring to another logic of space and time. In timeless time, all times are mixed, that is, history is as much available as is

the present or the future. Humans can make comparisons between times, by way of reviewing the representations of these times, without interference of physical reality, without real resistance. In space of flows, locations become characterised and determined by the flows they are connected to. It is not relevant where your hotel is, as soon as global business men visit it, it will adhere to global norms and values. Adherence to the protocols or codes of specific flows is a prerequisite to be connected. For hotels where no such flows are, these global norms are not requested for, nor rewarded. Also think of far away places with or without television to imagine the differences that are created by the (dis-)connection to flows. In the space of flows, distance is either one or zero.

The net is a global place. That is, sitting behind my computer I have immediate access to representations of any location on Earth, in principle. With this speed of travelling, there is no time to consider the environment one is travelling through, but only enough to focus on internally determined objectives. One surfs over the internet looking for something particular. That is, looking for something that was pre-determined. On internet, there is less room for a coincidental meeting, or for forced company. One can go in the direction that pleases, not hindered by other social beings directly. Resistance in interactions is absent in this type of travelling other than the resistance caused by the particular technology used. Global place in this case means that there is connection worldwide, but not every place is connected.

Next to the codes, there must be a physical reality (hardware, etc.) to exchange the representations with the net. That means that the entity that is connected must sustain a certain environment in which the technology can function. For example, the hotel must be able to deliver white toasted bread and bacon, or it can not provide the service requested by the modern business man. Not every entity is able to live up to the high and ever increasing standards of the global financial markets. For example, not everyone is able to pay for the computers, internet-providers, etc. This creates, what Castells refers to as, the Fourth World. Amongst us as well as in lesser developed countries, there are many people who can not live up to the new global markets standards. They have no access to the power of the GFM and will lose any confrontation. At best, such weaker entities will be ignored and left to them selves, will be given what is left. At worst, these weaker parties become target of the strong.

Furthermore, since internet is “democratised” every thinkable human desire can be used to deliver content for the net, to support the continued construction of the net. It truly has become a road to ecstasy, always offering a glimpse across one’s horizon, an open challenge to break limits. For example, it offers access to libraries and other public research, so that for every individual abundant knowledge is available in principle. With this invitation to cross borders, the internet has

addictive features. Widespread as it is, it offers an ever further escape out of the harsh physical reality into the virtual.

Finally, a typical feature of this type of travelling is that specific technology (computer and electricity) is required, next to only a head and hands for typing. For surfing the net, a body is useless. In fact, a body is a hindrance because it makes you stop surfing, for it needs food and rest. Negligence of the body is paramount in the typical pale whiz kid. While in virtuality, technology and attention determine the only constraints. In real life, the body can not be ignored completely. Virtuality is not completely compatible with real life.

If the travelling of information is assessed from the perspective of the three phases involved in travelling, it may be concluded that:

- **Departure:** when information departs from a specific place, the place is opened up to forces beyond its horizon. Information thus destroys the closure of any specific location. This is evidenced by the great discoveries in earlier centuries which have led to trade flows that changed the location. Similarly in recent times, information about a specific sight may invoke herds of tourists, spoiling the authentic character of the location. On the other hand, information departing from oppressed situations may cause mobilisation of forces elsewhere which can make an end to oppression. The free press uses this argument for its legitimisation. If information departs, the place will become connected. The protocol of any particular flow serves as a gate. If there are no telephones, spoken words will not depart so easy.
- **Transit:** information is in transit in the technological environment which enables the travelling in the first place. New industries have developed that offer mobile phones, flatscreens, chips, cables and wireless connections, and the networks. Switchers, those that actually connect various networks and locations, have become important new players in society. They determine the possible routes to transit. In fact, they control the distribution of information. Obvious examples include executive managers of the media.
As high-tech is capital intensive, new inequality is introduced by large differences in available technologies. This effect is increased by the private ownership of all new key technologies. Benefits are no longer shared with the people (as has been the case with the state monopolies for example in utilities), but exclusively allocated to the owner of the technology, to the owner of the key means of production, a private party. The only sharing is caused by the inherent principle of communication that connection to other people is required and beneficial.

- **Arrival:** there is no conventional logic in the connection between departure and arrival, because of the space of flows and timeless time. Times and places are completely mixed, allowing any comparison. Once departed from a specific location, information can serve anyone anywhere. Especially those that can steer productive processes can benefit from information that arrives. The value of information is in the changes it can bring, so especially those that benefit from processes of value creation (eg. factory-owners) or own large value itself appreciate information highly. Not all people have equal need for the arrival of information. Since information processes must be organised (ie. do not grow naturally) usually the beneficiary will have to organise them in line with his needs. The financing beneficiary will thus determine content and access. It is remarkable that the logic of places of arrival and departure of information can be completely random in their combination, although the place of arrival usually has more interest in the place of departure than vice versa. That is valid from all information that is organised from the “arrival” side.
At the same time, both the specific location of departure and, separately, the specific location of arrival of information require highly precise timing as to the travelling of information. I am working on this thesis to get it finished by a particular deadline, while on the site of arrival of that information, processes of value creation must have a specific moment in which they open up for this specific piece of information. However, the two deadlines are completely separate. For another example, the fact that a factory catches fire could have nothing to do with the sale of the factory the next week, although the buyer has a strong desire to know that before signing the deal.

8.8.2 Risk management travelling

Type of travelling: Into the future.
Risk management is appropriation of the future.

Risk management is concerned with future events, especially those which can have negative consequences in the respective field of risk. Managing these potential events is in fact managing the future. Risk management can be seen as a tool to colonise the future, to determine what may and may not happen in the future. For example, a bank would like to know exactly how his obligor (company that borrows from the bank) is going to develop economically until the time that the loan is repaid. If the bank is worried about these future developments, it will include the conditions and restrictions in the contracts to stimulate or prevent the

client from taking specific actions in the future. In this way, the future indeed is colonised in terms of not being free to act given the then prevailing circumstances. Possible paths in the future have become prescribed.

Risk management allows accurate investment in future (non-)events. The probability that something bad may happen to our investment, as well as the severity when it happens is taken into account in the investment-decision. For example, expected losses are priced for according to formal EC theory³⁰³. Usually, there is limited room to adapt the price in case the risks change after the start of the transaction. Since the bank ultimately pays for all realised losses (historic risks), this means that an accurate initial **risk assessment is essential for the survival** of the bank. If the bank would not generate enough return to cover its losses, as well as to allow some economic profit, it is bound to die as autonomous entity. If the bank is able to assess risks better than its competitors, it can offer sharper prices for its loans, thus winning market share.

In this capitalist timeframe, corporate risk management is usually concerned with issues that may cost money to some powerful party. In literature, there is hardly any voice of, for example, emotional risk management. Money rules, and money can organise risk management, according to its own best interest. First, risk management is *a cost centre*, it only costs money. This means that one must have money to start risk management. Next, risk management should minimise losses, ie. where risk management is performed, losses should be lower than when that that is not the case. That is, risk management has a positive economic effect, if properly applied. As such, risk management is a perfect case of money that makes more money.

However, risk management is not confined to issues with monetary effects, in principle. For example emotional risk management already exists in an unsystematic way when we raise our children. No parent will let a four year old watch a horror movie.

Risk management is an artificial thing, therefore it always requires human effort in terms of anticipation of the future. Technically, it requires a concept about a future state of being, an explanation of the factors that affect that state of being and monitoring of these factors, combined with corrective actions if required. It does not necessarily involve money!

Risk management focuses attention. Of all those things that may generate fear in people, only certain elements are selected by any risk model. The intention is to let management focus on these selected issues, and leave the rest. Of course, wrong

³⁰³ Of course, competition and all sorts of issues from the demand side are also involved in the economics of the deal, next to risk costs according to one of the providers of funds.

risk management may be proven wrong by realisation of events. However, large parts of risk management are focused on rare events, that is, on events which may hardly ever realise to prove the quality of risk management. Or it may be focused on those events that would extinguish us, so that we never want it to be proven.

By focusing, the open mind is blocked, and learned lessons are practised, as if a pre-programmed response mode is active. Not the best solution at that time should be executed, but the best solution at the time of pre-programming must be executed in order to maintain expected value of investments. A style of *fixed positions*, according to Bruce Lee, of pre-cooked solutions.

In that respect, Beck is right in claiming that risk management is the new political vehicle. If applied on the level of society, risk management is a political matter; it will focus the attention of society on some matters while essentially ignoring other matters. An example is Bush jr., who claims that the world should be focusing on terrorists, instead of on global heating, or the US economy.

When risk affects capital, private interests emerge that diverge as a whole. Since capital is privately owned in most countries, private parties (which are all too small to encompass a population of a country) are entitled to operate in their own best interest. Given that these capitalist economies are based on competition, all these interests will be different, in fact will be diverse. However, economic power is also distributed highly unequal. Some parties with large funds are able to invest significant in science, technology and media to help them chase their own interests, while other parties have none. In the US large corporations have more influence than individual voters. Risk management offers a powerful tool to manage one's own best interest.

If the travelling of risk management is assessed from the perspective of the three phases involved in travelling, it may be concluded that:

- **Departure:** risk management departs from an expectation, a specific view on future events. For example, when investing, one expects more return than costs regarding a specific activity. Risk management is initiated by a capitalist who wants to preserve his investments. In this way, the orientation of the journey (the destination) is set. The next step is the development of a causal framework that explains how respective values may be affected by various factors in a future horizon. Risk management is well under way when risk drivers have been identified and are monitored against references (eg. acceptance levels).
- **Transit:** risk management in transit refers to two things: 1) the process of risk management where information is collected locally and translated into standard terms to feed the risk model and provide central bodies with adequate information for decision taking, which will subsequently be

executed on local level. The motion is a contraction to the central and dispersion to the local, and 2) the content, referring to a specific risk-theory or risk statement and its realisation. There is a specific period, also known as the risk horizon, which must be lived through in order to sensibly evaluate the risk theory. In transit, ie. when this period is not yet over, *anything goes* that can be argued. In transit, theories can at most be likely. And one can be as likely as its competitor. After arrival, ie. after the period is over, no uncertainty is left, and it is clear which risk theory should have won. Transit periods may differ from a couple of hours (as in the weather forecast for today) to eternity (hopefully regarding the expectation that natural resources on Earth will run out).

- **Arrival:** when risk has realised, ie. when the risk horizon of a historic risk assessment is passed, probabilities have become useless and it makes no sense to discuss severities of events that did not happen. Either the user of the risk theory is happy or not, we will not know whether the things that did not happen were likely to happen or not at all. That is, for most risk theories, the fact that what they warn for does not happen, does not prove anything because of the rare character of the respective events. Only expectations regarding negative events that indeed materialise really arrive.

In another perspective, we could see arrival of risk management actions as the moment when corrective action has been implemented after monitoring unwanted deviations. In that case, the future has become real, because it succeeds in raising interactions in the present. In the present, managers are interacting with a potential future when risk management arrives. The seed of the risk must be removed as quickly as possible. After a contraction of information (from interpreters to central decision bodies), a dispersion of the central decision to the local executors follows in arrival.

8.8.3 Global capitalism travelling

Type of travelling: Hyper mobility of capital
The global financial markets as universal reference.

With ICT developments and developments in risk management, the capitalist can now widen and deepen his focus. He can continuously scan the whole Earth for the best investment opportunities, taking into account the differences in risk of each opportunity. Global financial markets (GFM) and support technology allow him to change his *capital-allocation* in an instant. GFM do not only offer a mechanism to trade, they also offer a pricing benchmark that can be used to compare against any

other economic activity. GFM always offer alternatives. This makes (connected) capital very mobile and sensitive to information. However, capital is the cornerstone of any business activity. Without a risk-taker (the provider of capital), there is no business activity in any capitalist economy. With the decision to change the allocation of capital, the business activity that formerly used the capital is now deprived of its backbone and bound to collapse, if no other risk-bearing party is found. If there are no investors left, no economic activity can sustain.

The speed of the travelling of capital is much larger than the flexibility to adapt economic activities. An economic activity can not be stopped from one day to the other, as employees are involved that require an exit arrangement; fixed assets, such as property, plant and equipment are not dissolved in an instance. Latter may be impossible to sell on short notice, so that in the end they have to rot away. Many industrial ruins can be found, which show that capital is a lot easier withdrawn than its physical counterpart: the physical resources of the business. Of course, especially employees could be managed much more flexible if management would not have to adhere to social demands, such as proper outplacement, compensation schemes, etc. Social protection is one of the big hindrances for the mobility of the complete economic activity.³⁰⁴

This mobility also enables the emergence of *Runaway Capital*, which is able to flee for its own responsibilities, ie. for the consequences of its own actions. For example, companies leaving rich countries where they have grown up to search for cheaper labour, or leaving environments that are damaged by the business operations. In this way, corporations can flee from developed rules and regulations, which protect other stakeholders to the enterprise, such as neighbours, employees, etc. Examples include sportswear producers who make use of children labour; companies in the field of Genetical Modification who leave the Netherlands because of stricter regulations regarding animals; companies who run away for severe environmental regulations, etc.

If the travelling of capital is assessed from the perspective of the three phases involved in travelling, it may be concluded that:

- **Departure:** capital departs from a comparison with a competitive alternative. The (risk adjusted) returns of other investment opportunities create a willingness to travel in the capital. Of course, in earlier days (before 1990) movement of capital was quite restricted by governments in fear of a country where money would flow out. But after the deregulations, capital has been given ample opportunities to travel. Only some, usually former communist, countries still have restrictions for

³⁰⁴ This makes you wonder whether mobile capital is a socially desirable feature.

investments in local companies, while other countries simply do not have a proper investment climate, meaning that the risk of investing in such countries is too high for the expected returns.

Another major restriction for capital travelling is whether the capital is invested in liquid stock. If an equity-holder can not easily sell his shares, he is bound to hold on to them and can not free up the capital. As a matter of speech, if shares are illiquid, capital is grounded. Standardising credit risks, thus providing liquidity increases the mobility of capital; allows it to accelerate further.

Next to that, if capital invested generates sizeable returns, this return is free to be invested elsewhere. For example, dividends paid out can easily be invested in motor yachts, or whatever.

- **Transit:** capital is in transit only for a very short period. If capital is not at work, it does not generate return. This means that the period in which the capital is liquid (between selling the first shares and buying the next) is a cost, in fact a transaction cost, and must be kept as small as possible. The vehicle for capital obviously are the GFM, or more precise, the technological and organisational infrastructure supporting the GFM. Because the technology requires assessments and allows travelling of representations only, capital may become subject to misrepresentation. The strength of the technology (allowing representations to travel) is also its weakness (not being able to distinct mis-representations and keep them out of the flow)³⁰⁵.
- **Arrival:** capital is invested in the new opportunity. It has no loyalty to the old investment anymore, and, in fact, already its owner is comparing it to other alternative investment opportunities. Ie. capital may be treated as a nomad, or a traditional gypsy, showing no loyalty to the local community which happens to offer domicile for a short period, until the capital finds a better spot. Trust is lacking on both sides: the investor and the investment, the nomad and the village.

The timing of the cycle of departure and arrival is crucial for the economic activity. It is common knowledge that first one has to invest in order to generate a return later. Investments need time to grow mature, and when capital is too mobile, it will not allow the time. A similar argument is valid for trust. That may generate problems for longer term developments.

³⁰⁵ Thanks to Johan Cruijff for his general knowledge.

8.8.4 EC movement specific travelling

Type of travelling: Double virtual turn
ICT supported Quantitative Portfolio
Management

Specific of the EC movement is its reliance on quantitative portfolio risk models. In this type of travelling, direct representations, or even second hand experience, are input into a model that is supposed to resemble the actual risk structure in reality.

Already standard communication requires a representation (like a word, or a picture) to convey the message. But in quantitative management, these direct representations are not interpreted. Only what comes out of the model is used to focus management actions. That means that there is another layer of interpretation, on top of the first one of direct representations. For quantitative management a model is essential to structurally deal with the large amount of information that flows through a company. This model can have connections with society in two phases:

- 1) development of the model (building the tool to assess risks),
- 2) operation of the model (using the model in day-to-day risk management).

In phase 1, connection with the society that is at stake in the model is not necessarily. In fact, in the EC movement, many banks start EC based risk management by using 3rd party benchmarks for all missing parameters. That means that averages from other banks are used as rough indications of what the parameters of a particular bank can be. Connection in that case is not with the society at stake, but hopefully with another very similar environment.

In phase 2, the analyst has to translate his specific local risk situation into the standard concepts in the model. This phase is truly an appropriation of the local environment under analysis and as such is an act of violence. This is an act of force in terms of specific focus and negligence of local characteristics of a risk situation. It is also an act of force in terms of crossing borders and invading the local area and subliming it into the investible universe of the global financial markets (GFM). By this act, the locality is opened up to the forces of GFM; local closure is dissolved.

In chapter seven, it became clear that the risk models have serious epistemological flaws, ie. they are far less solid than it may seem, and for wholesale credit risk, models do not what they claim to do. Therefore, we may conclude that in many cases informal models will be applied. Models that do not strictly adhere to the theory but are practical enough to work with. The point is that these models will not be fully described as the theory to do so is still missing. It is a case where the bank says one thing but does another, only this case is vital for the stability of the

global financial markets, the nerve centre of new society. It is as if the banking industry uses an unknown vehicle; a vehicle that is not properly described.

Furthermore, because it is hard to develop accurate models, given the lack of basic material (adequate amounts of default data), large parties will prevail in the EC movement in the long term. Scarcity of information will stimulate consolidation and concentration of the finance industry. This will result in a limited number of models dominating the valuation of fixed income instruments on capital markets as well as bank-finance. The codes become standardised. In fact, the EC movement can be considered as a vehicle to *commoditise* credit risks. Commodities are completely specified by one central standard and can be traded, for example on financial exchanges. As we saw above, the global financial markets may be considered to be the cornerstone of current society. The EC movement is contributing to that development significantly by widening and deepening the GFM.

Model risk, the risk of representation, then becomes one of the largest risks, given that so much will depend on these models. The standardised assessment, in which every unique situation is appropriated with necessary force and translated into the respective model language, becomes the key to the world for the model. Risk assessment is the connection of the model to reality. The local credit analyst is the gate-keeper to the link with reality.

A positive EC assessment³⁰⁶ is an inclusion into the investible universe of the bank. Force is required to capture the richness of the world into a single risk measure, while the underlying law of large numbers pushes continuously to widen the scope of the investible universe. If enough assessments have been done according to one average standard, volatility around that average will level out, will become negligible. This law of large numbers, underlying the statistical models, drives concentrations in financial market parties.

However, if models become standardised, ie. if one model is going to dominate in the market, this may cause cyclicity and herding behaviour. If all market participants start to use the same model, all of them will act the same which may cause large systemic risks. The financial system may lose all its diversification benefits of the current situation in which all parties in the financial system make their own subjective decision.

The application of EC models increases the transparency of risk costs of every specific position. This allows to identify current cross-subsidies between deals in one portfolio, or between sub-portfolios, ie. allows to identify winners and losers

³⁰⁶ Ie. investment with positive EVA.

and treat them accordingly. A central decision body will make differences in local contexts because of deviations of central standards. These standards may be measuring completely opposite to the local view on circumstances. Central standards have no eye for historical arrangements, for past promises, for loyalty or solidarity because the same place and times are shared. Central standards use the logic of timeless time and space of flows, which may conflict severely with conventional issues like solidarity.

Representation becomes a major issue, not just with respect to the EC movement, but in a wider context, referring to any financial reporting. Already we see problems in the correct annual reporting of some large corporations. Fraud and system manipulation is already a real problem, evidenced by numerous high profile cases (Enron, Worldcom, Ahold, etc.). The translation from real world situations to standardised registration thereof becomes a key weakness. Connection with reality is the basic problem of anyone who uses models.

It is precisely because major decisions will be based on these models that they become so vulnerable for mis-representation. To represent something better than it is can be very profitable and tempting, when there is a large distance between decision maker and the one who makes the representation, the one who translates real worlds into model language. In models, there is no body to back up reality claims of representations; only the representation itself, as well as the source is known.

If the travelling of quantitative management is assessed from the perspective of the three phases involved in travelling, it may be concluded that:

- **Departure:** the first step in departure is to develop a standard, a model of the risk. That means creating reference classes for the various risk positions and identifying risk components (such as PDs, LGDs and EADs). Then probabilities and severities are assigned to the various differentiations in risk. Finally the interrelationships between the various individually assessed risk components must be determined. In fact, this means building the model, as in building from the constituent components. It is a first travel from reality into the virtual.
The next step is to apply the standard, the model on the actual portfolio of risk positions. That is, translate local risk situations into the standard language of the model. This is the double virtual turn and the essential appropriation of reality by the model, where actual local situations are opened up and included in the virtual model. And this must from then on be maintained, or the appropriation grows stale.
- **Transit:** quantitative management is in transit at two instances: 1) when the analyst is struggling to put his deal in the standards of the model, 2) when the manager has to interpret the outcomes of the calculation and has

to make up for the missing context. Violence is required for the reduction of a *human activity system*³⁰⁷ into the quantitative reductionist approach (putting a round living thing into a square conceptual box). But violence is also required for the induction required for the interpretation of these specific quantifications. For example, assuming that one can compare the manageable future with the information from the registered past.

- **Arrival:** whether the actual risk situations are ever properly appropriated will never be known with certainty. Especially wholesale finance EC models can never be proven because of all the possibly important changes in the context; there is too much variation to ever prove statistically. Whether the reality has effectively been appropriated can only be assessed when one has oversight over drivers and consequences of the particular risk, ie. with expertise in the respective specific field of risk.

Recommendation: Democratisation of technology and media.

Currently, the EC movement is supported by ICT technology that is centralised. EC models run on servers with interfaces to production systems in numerous countries and databases. Subsequently, they have to be developed centrally, bearing in mind the IT architecture of the bank.

IT system development on this level involves functional specifications, technical specifications, programming and testing phases. All in all, a new release of a system takes six months at least from initiative to implementation. Then users must become accustomed to the new features and only then the new release adds value. However, the content of these systems, ie. theories and applications concerning wholesale credit risk and EC, is developing continuously, or according to whatever level of feedback and evaluation is provided for. The point is that the development of the content behaves different than the development scheme of such centralised IT systems. The two patterns of development both have their own timing.

As we know from BIS I, any regulatory scheme for the financial world will be arbitrated in due time. In that case, it loses its meaning and should be revised in order to comply with the goals of having such regulations. It is clear that IT development according to the current approach is not capable of dealing with continuously evolving risk models. Half the organisation would be busy with specifications and testing of applications.

Furthermore, the subjective component of risk, ie risk perception, may change over time. In fact, implementing a version of a risk model will definitely change risk perception. This can already require a new version.

³⁰⁷ Phrase is borrowed from Peter Checkland's Soft Systems Theory.

A possible solution may be to democratise IT systems, quite similar to the democratisation of computers when the personal computer was introduced in the 1980's. Only if all resources are set at work, we may be able to keep up with evolving reality. Only when system development is democratised, there will be enough *hands on deck* to accurately keep track of risks. Given the increasing amount of information available to us, all available capacity seems required.

8.9 Conclusions

8.9.1 Introduction

EC is neutral, as neutral as any econometric model: given the assumptions, it is just plain logic, nothing good or bad about it. However, EC theory is put to work, is used in the context of wholesale finance, and as such will have implications for a part of society. Furthermore, we may conclude that risk is essentially a human artefact, and, hence, there necessarily is subjectivity in EC theory. Society also has its impact on the EC movement.

The EC movement is an important innovation in the banking industry. As with many other innovations, the EC movement depends on a number of other developments from outside the EC movement. Therefore, we can not describe the social impact of the EC movement in isolation, without an analysis of the essential exogenous developments, such as: 1) Information, the ICT revolution and the rise of network society, 2) sophistication of risk management (tools and theories) to make use of the latest technologies, 3) global financial markets and the increased capitalist ordering of most economies in the trend towards further globalisation. The EC movement really is a child of its time, fitting perfectly well into the network society in the Information Age or in the risk society or in global capitalism. EC theory is borrowing and contributing to these developments: it requires Information and Communication Technology, Risk concepts and Global Financial Markets, but it also adds to the further development of both risk and network society, as well as global capitalism.

8.9.2 Information

ICT is fundamental to the emergence of the EC movement, but ICT has a much wider impact than through EC only. ICT developments have enabled the emergence of a network society, and as such are changing society significantly. Castells sees three areas of major impact:

- production; ICT enables the differentiated approach of workers, with a major distinction in self-programmable workers and generic workers. Furthermore, the differentiation puts an end to classic workers solidarity, as it breaks down classic workers segmentation. Hence, the basis for solidarity is rapidly eroding. Competition and productivity, respectively flexibility and innovation become the key factors for success in the informational / global economy for which the global financial markets are the nerve centre.
- power; the legitimacy and authority of the nation state becomes problematic, as networks do not consider country borders to be relevant.

Informational politics focus on the symbol manipulation in the media, with no respect for representative democracy.

- experience; the actual experience becomes the main driver of a relationship, instead of tradition or culture. This leads to a continuous reconstruction of relationships. Cultures are no longer constructed by people who share place and time, but by people or machines who interact over the net. The neighbour is not the next door, but the next one connected. It remains to be seen whether the net can provide a basis for giving meaning, or whether meaning is always based on local (closed) experiences.

As major features of the network society, Castells furthermore points to:

1. the technological dependence, especially relating to IT.
2. the new form of capitalism, with increased competition, flexibility of work and weakening of organised labour.
3. the capacity of networks to connect specific localities, but also to exclude large parts of the world, leading to the so-called Fourth World.

Castells does not particularly focus on the EC movement and made his analysis when the EC movement was still in an infancy stage. However, projecting the characteristics of the EC movement on the descriptions of Castells, we can expect several issues:

- The EC movement is focused on credit, on a selected part of the financial flows. Credit assets comprise the majority of most balance sheets of corporations, ie. for most corporations, the majority of sources of finance consist of credit assets, such as bonds or loans. If those corporations perform weak, control over operations is transferred to the banks and bondholders. Hence, our corporations can become controlled by EC.
- The EC movement adheres to the principles of the new economy as described by Castells. It offers a framework to evaluate the performance of fixed income financial instruments based on principles of standardised and quantified differentiation. It requires the existence of networks of information, but also generates the required information that legitimises the existence of the networks. Such models that can generate content for the improvement of the performance of capital investments in credit assets contribute enormously to the advantage of having such networks. For example, the quantitative turn in banking has stimulated many banks to upgrade their IT infrastructure and improve the quality of risk information for portfolio management.

- The EC movement is expected to further increase the mobility of capital. By standardising risk assessments, the EC movement contributes to the widening of the investible universe of a portfolio manager (a bank). Capital and externally funded financial flows can be allocated over a wider area, which forces finance to travel faster.

ICT is what pulls the EC movement in the timeless time and space of flows. In Timeless Time all times are mixed (stored together), all times are continuously accessible in the stored representations of it. In the Space of Flows, places are characterised by their connection to flows, with distances being either zero or indefinite.

8.9.3 Risk

The emergence of risk management has a large impact on society, but society also has a large impact on risk management.

Risk society

Current society may be described as risk society, because the nature of the risks it faces changes from personal or natural risks to systemic risks, caused by the social system itself.

This situation is the result of several developments in science, media and the economy.

Science has made such progress and is now widely available, both as product in terms of scientific knowledge, as well as process to find out more about the world around us. Science is democratised in the sense that it is now also available for politicians and businessmen. Specific groups that have become aware of issues relevant for them are now able to organise and form effective lobbies that can put issues on political agendas.

However, both development of technology as well as application of technology are monopolised by business, while the effect of that has political consequences. This leads to the ineffectiveness of the democratic system.

Furthermore, especially the application of ICT technology has made the management of business independent of location, allowing a global economy to emerge. Production phases can be completely separated from marketing and financial management, allowing to bypass any specific laws in the home country, and even making countries vulnerable for the nomadic capacity of industries.

The ever more concentrated capital will have a strategic need for information and the control over its distribution. But as long as there are many autonomous corporations in a capitalist (competitive) economy, society will be highly dynamic, and uncertainty will become prevalent.

Social and psychological aspects of risk

In current literature regarding social or psychological approaches towards risk one can conclude that risk perception can not be reduced to something simple and objective like a probabilities because risk has an essential subjective component, requiring human judgement, which makes that objective risk can not be separated from subjective risk. Psychology shows that risk assessment is a pluralist discipline that considers many dimensions of risk, such as involuntariness, uncertainty, people involved, equitable distribution, etc. Furthermore, risk appreciation may be socially or culturally determined, or the result of historical developments. Finally, risk perception may be influenced by communication and subsequent management of expectations, which are essentially human, subjective, social processes.

The EC movement

Again we may conclude that the EC movement is a child of its time and answers to the descriptions given by Beck, who was not aware of the EC movement. Beck mentions an interesting issue when he refers to the trend of concentration of capital. The EC movement is a portfolio approach, which accommodates a concentrated management of capital. Furthermore, it is focused on improving the risk adjusted return on capital of the portfolio manager. The larger and more diversified the portfolio is, the better the EC model performs. Therefore, it is expected that the emergence of the EC movement will stimulate further concentration of capital. This development is supported by the required investments in risk information systems. In a competitive environment, the party with the biggest wallet to invest in ICT and risk models can outperform all other parties on its market and hence create monopolies.

The social and psychological aspects of risks indicate that EC modelling is no objective activity. As it is highly dependent on judgements, any EC model will be coloured by the personality of its creators. For example, the level of detail in an EC model is an arbitrary choice, but creates distinct effects in terms of differentiation and averages. Increased levels of risk differentiation contribute to a mechanism where the party who causes the risk must pay for it. Instead of solidarity, the weakest party must pay highest interest. Whether that is always a preferable feature is a political decision.

8.9.4 Capital

Capitalism is the major economic principle that governs countries. As Schweickart suggests, there is no alternative that is as efficient in the allocation of resources. However, capitalism benefits few while leaving large other groups out in the dark. These others suffer from the inequality, poverty, and environmental degradation caused by the capitalist principle.

In my opinion, capitalism in practice does not produce these negative effects more than any other economic ordering. Trade unions have had successes in raising wages and especially improving working conditions. Nearly global agreements have been made to reduce environmental degradation. All sorts of countervailing powers are active to counteract the biases of hardcore capitalism, as criticised by Schweickart. In effect, there is no hardcore capitalism in developed countries.

The EC movement in itself does not seem to make things better. It does not solve the inequality, the lack of democracy, or the unemployment. Its sole aim is to employ capital more efficient, to increase the returns on capital. The EC movement will increase the mobility of capital.

Mainstream EC is based on portfolio theory and laws of large numbers, which causes concentration effects. This in turn increases the problems of inequality. Given that the EC movement will invoke a strategic need for information and the control of its distribution, it is highly likely that the EC movement will increase the lack of democracy further. EC players will try to monopolise by using superior models and superior information, colonising science and information.

8.9.5 Types of travelling

Four types of travelling have been identified which are necessarily involved in the emergence of the EC movement:

1. ICT: infrastructure for virtual travelling
2. Risk management: into the future
3. Global Capitalism: hyper mobility
4. EC movement: double virtual turn

ICT: infrastructure for virtual travelling

The EC movement involves virtual travelling as made possible by the Information and Communication Technology available today. ICT allows travelling with the speed of light and indefinite storage capacity. ICT drives the EC movement into the Timeless Time and Space of Flows, in which respectively all times are mixed (stored together) and places are characterised by their connection to flows, with distances being either zero or indefinite.

Protocols and codes serve as the gates to connection. Anyone is welcome who adheres to the codes. People who can not live up to the codes are at best neglected and develop into a Fourth World, amongst us as well as in lesser developed countries.

As the flows of information cross and break down borders, they have addictive features; offering ever further escapes. And while it concerns virtual travelling, the body is useless and may be neglected, as well as the physical neighbourhood.

When information departs from a place, it is opened up to forces beyond its horizon. The protocols and codes of the particular flows serve as gates to departure. The actual transit of information can be very short, depending on the technology used to convey the message. The switchers, those that connect networks and people, become important players in society as they will control the distribution of information. The high-tech infrastructure is usually privately owned and capital intensive and therefore only open to the rich.

The arrival of information is not connected to the place of departure according to conventional logic. As times and places are completely mixed, information can serve anyone anywhere.

Risk management: into the future

Risk management is a tool to colonise the future. On the basis of its assessments, conditions and restrictions are negotiated which restrict future actions. In the new society, risk management is essential for the survival of the entity. Corporate risk management usually focus on events with monetary effects, although focus on other types of events would not be unthinkable.

Risk management focuses attention by identifying (read: highlighting) specific risk drivers, while ignoring other factors. As if a pre-programmed response mode is active. In that respect, risk management can be considered the new political vehicle. If risks have consequences on the level of society, risk management can be seen as a political matter.

Risk management departs from an expectation. This expectation can be build from a causal framework that explains how values may change due to risk drivers in a specific horizon.

Risk management in transit can refer to the process in which local information is fed to the centre for decision making, after which it is disseminated to the local executioners. The motion is a contraction and dispersion. It can also refer to the content of a specific risk theory and a specific risk horizon which must be lived through to evaluate the “truth” of the expectation. In transit, risk theories can at most be likely.

Risk management arrives when, from the content perspective, the negative event that was expected indeed materialised. Most risk theories do not arrive to see their expectation in real, since they are about rare events.

In the perspective of the process, risk management arrives when corrective action has been implemented after monitoring unwanted deviations. Then the future has become real, in the sense that it is able to raise interactions in the present.

Global Capitalism: hyper mobility

In the global economy, the investor can continuously scan the whole Earth (to the extent that it is connected) for the best investment opportunity. With the infrastructure of the Global Financial Markets (GFM), he can change his capital

allocation in an instant. The GFM always offer alternative investment opportunities, always allows comparison, or technically *benchmarking*. However, there are large speed differentials between capital versus the other business resources. Especially in the case of Human Resources, the social protection and respective regulations may be large hindrances to the mobility of capital. Or, in case new regulations may develop, these may be a large stimulus to move capital. The mobility of capital allows the emergence of Runaway capital, which is able to flee for its own responsibilities, ie. for the consequences of its own actions. Capital departs from the comparison with a competitive alternative, offered by the GFM or other sources. However, if shares, businesses or assets can not easily be sold (are illiquid), capital is grounded. As such, it is the commoditisation of assets (as, for example, enabled by the EC movement) that stimulates the mobility of capital.

Capital is in transit only for a short period. If capital is not at work (in transit) it does not earn. The vehicle for transit is obviously the GFM. Being a virtual type of travelling, global capitalism may become subject of misrepresentations. Misrepresentations disconnect the global financial flow with the real world and up to today, that is a serious problem.

When capital arrives, it came from somewhere else and can go anytime. It has no loyalty to any specific place, like a nomad. It is interacting with the local community only until the capital finds a better spot. Problematic is the ever shortening cycle of arrival and departure. Both investments as well as trust need time to grow, need minimum cycles.

EC movement specific travelling: double virtual turn

In EC based risk management, the model is another layer of interpretation, on top of direct representations, common in all our communications. It is further away from reality, a representation of representations. The model can have connection with reality in two phases: 1) development, 2) use. For development, it may happen that there is no information of the society on focus, so often 3rd party benchmarks are used, offering only an indirect connection with intended reality. In the second phase, the connection is made by the analyst who has to translate his local risk situation into the standard concepts in the model. This is truly an appropriation of the local context by the model, and as such, is an act of violence.

Given the epistemological flaws in the theory, it may be concluded that in many cases, informal models will be applied.

Furthermore, given the scarcity of basic material (adequate amounts of default data) large parties will prevail in the EC movement. Next to that, laws of large numbers and portfolio theory is also driving further consolidation and concentration in the finance industry. When some models will finally dominate the market, the EC movement has successfully contributed to commoditising credit risky assets, and by this, contributed to the growth of the GFM.

However, if one model dominates, herding and cyclicalities (when all market participants behave the same) may be the result, especially in cases where relatively³⁰⁸ little information is available. And, if one model is going to dominate, the GFM loses its current diversification effect, while all parties use their own model or pure judgement.

Model risk is one of the largest in the EC movement. The standardised assessment of the credit analyst (who makes the translation into PDs, LGDs and EADs) becomes the key to the world for the model. Such an assessment means an inclusion into the investible universe, an appropriation of the local context by the GFM. The key is effective appropriation. The weakness is misrepresentation, which will become a major issue.

Application of EC models increases transparency of risk costs and identifies any current cross-subsidies, ie. it allows to identify winners and losers and treat them accordingly. EC theory will apply the standards of the GFM and not necessarily have an eye for past promises, efforts, loyalty or solidarity.

EC management departs by developing a standard, a model of the risk. The next step for departure is the application of the model on the actual risk positions, ie. performing the standardised risk assessment on every position. This is the double virtual turn. First the reality has gone virtual –has been translated into concepts- in the construction of the model. Then the reality is pushed into the virtual concepts in the risk assessment.

EC management is in transit when the analyst is struggling to put his reality in the model, or when the manager has to interpret the results of the model and make up for the missing part (induce conclusions on the basis of which he can manage the future).

Whether EC management ever arrives will never be known with certainty. Because there is too much variation, it will remain unproven whether an appropriation was proper or not. Only expertise, that is, oversight of drivers and consequences, can validate a model.

8.9.6 Final conclusion

Given the analyses presented above, four conclusions can be drawn:

1. Indeed, current society is transforming from a monetary economy towards one based on information;
2. The EC movement is one of the vehicles for that social transformation. It is a perfect case of it in the banking industry.
3. The EC movement is contributing to the emergence of network society, of risk society and of global capitalism. Typical for the EC movement is that

³⁰⁸ Ie. relative to the request for information.

it will make capital allocation more efficient, and in doing so, provides a strong impetus to the mobility of capital.

4. The Philosophy of travelling provides a useful framework to analyse social developments.

In this transformation, the core value of society is changing. Money will be depreciated and receive the status of any other resource. Expertise and usable information will be appreciated and receive the status of core asset.

The speed of travelling will force man's orientation inwards, while the accumulation of experience, and consequently, the increased knowledge makes man more aware of his contexts, everything relevant outside him. This dual tendency regarding orientation makes the traveller less committed to any specific place, although always forced to recognise his necessary external orientation³⁰⁹.

The EC movement and the basic developments in ICT, risk management and capitalism are all focused on increasing mobility. In fact, man has tried to improve his mobility in all times. But this time, the mobility makes a virtual turn. Man himself is not physically travelling anymore, but money and information do the travelling. Man is travelling through his connections to flows. In his virtual travelling, everything is always accessible, as long as man sticks to the codes and protocols of the respective technology and can afford to privately own the technology. This increased mobility will turn man inwards further, it will make his orientation internal, on his own best interests, beliefs, desires. There will be less time available to share meanings and values with your physical neighbourhood.

In part three of the thesis, the virtual turn, the transformation of monetary society into informationalist society will be described on a more general level. Up to now we have focused on the wholesale banking industry. In part three, we will analyse whether generalisations of this specific case can be made. First, the concept of virtuality is elaborated in chapter 10. Next, generalisations of the conclusions from the EC case will be presented in chapter 11.

³⁰⁹ Eg. Food, shelter, companions.

9 Part three: implications of the virtual turn.

9.1 Introduction

In part one, a cognitive analysis of EC theory was presented. It showed that EC theory is based on statistical methods and assumes objective risks.

In part two, the social implications of the EC movement (the implementation of EC frameworks in commercial banks) were assessed. The EC movement needed and stimulated deeper developments in ICT, risk concepts and globalisation of the economy. It also showed that the formal EC movement lacked access to social rationality.

In part three, the research will expand its focus to outside the Rabobank case of the EC movement. In part three, the focus is on the virtual turn of society itself. In terms of the PoT, virtuality represents a very distinct type of travelling and is therefore expected to change society significantly. In the EC movement we indeed have seen that traditional credit risk management is quite different than EC based management, but at this stage of development not necessarily better in all cases.

Below, first the problem statements are recalled from §3.1.2. Next, a chapter is devoted to virtuality and virtual travelling, in order to specify the subject of research in this part three.

Next, the conclusions from part one and two are recalled in the most general phrasing to provide a starting point for generalisation of scope of research.

In the following chapter, the issues of speed and horizon are presented as the most significant implications of the virtual turn. Several new authors are introduced to create conceptual space regarding these issues of speed and horizon.

This rather abstract analysis will be exemplified in three concrete cases of the virtual turn.

9.2 Problem and approach of part three

It is recalled that the research question in this part is:

<i>What can we say about the virtual turn in society?</i>

Here, we concentrate on the two most important features, as distilled from the case study, being the increased speed and the broken horizons.

Assuming that these issues are not specific to the Rabobank case, we question ourselves:

- *What is virtuality, what is the virtual turn in society and what are the indications of its existence?(chapter 10)*
- *What are the most general conclusions from the EC case? (chapter 11.1)*
- *What are the implications of the increased speed and broken horizons for society in general? (chapter 11.2 – 11.4).*

10 Virtuality

In this chapter, virtuality will be discussed. First, definitions will be discussed regarding virtuality, virtual travelling, and the virtual turn. As an illustration of the newness of current virtuality, we will analyse the development of the use of the word, and see that changes in speed of transfer (mobility) as well the storage capacity put us into a new era. After defining what we are looking for in this paragraph, we can look at the indications of its existence and scope in the last paragraph.

Virtuality is a new environment, allowing humans to make virtual travels. This new type of travelling affects the possible orientation of humans. After discussing virtuality and virtual travelling in this chapter, in the next chapter we can generalise some conclusions from the analysis of the EC movement. Focus will be on the two most important issues, ie. the increase in speed and the new horizons and their implications on the orientation of the virtual traveller.

10.1 Virtuality

Virtuality is defined as virtuality because it excludes movement of the body. In virtual travelling, the body is not included. In that respect, virtual means *not real*: in virtual travelling, the traveller is not really travelling; he literally stays where he is, while interacting with other, possibly new environments.

In virtual travelling, the interaction between identity and environment is not direct, is intermediated by something else, which in fact executes the real travelling.

From the aspect of the intermediation required to allow virtual travelling, it may be concluded that technological support is essential for virtual travelling. A word, a number, telephone lines, computer networks; some kind of technological device is required for virtual travelling. Without the technology, the actual interaction would not be possible, as the physical reach of the traveller's senses falls short of his virtual journeys.

In the above, virtuality is defined while mixed with the concept of travelling. Virtual travelling is then defined as the interaction with a changing environment, without physical presence in latter environment.

The concept of virtuality also stands on itself. The dictionary explains virtuality as *only existent as appearance*. In virtuality, there is only appearance, no real thing. As if the appearances are not backed by physical entities, providing flesh and bones to the superficial appearance.

The only requirement for the emergence of virtuality is the existence of an appearance-carrier, something to reflect the appearance. There are three options:

1. the mind (inside the identity), such as memories, contemplations or fantasies.
2. a technological carrier (outside the identity), such as internet;
3. non-technical interpersonal carriers, such as language.

In a virtuality based on fantasy, anything is possible, and therefore, it will not be investigated further.

Virtuality of the mind is an interesting faculty of man; it allows us to contemplate about the real world, or about future events, which enables us to make plans and organise activities. However, it is also a risky faculty, because of the lack of interaction. In your mind, there is no interaction with something else; there is no one to tell you that your thoughts are rubbish; there is no one to resist if you go wrong. Again, the link to reality is the weak chain in this spiritual virtuality. Clearly, everyone likes to think that what he thinks is right, reflects reality. On the other hand, it is exactly this deviation of reality that makes this faculty so interesting. Creativity, innovation, and art are based on a deviation; they can not work without deviating.

In virtuality, some form of bodily contact (some form of non-virtuality) between the object, the message and the receiver is required. In fact, this system of exchanges essentially needs two interfaces between virtuality and reality; one on the input side and one on the receiver side. The interface on the input side literally is an interpreter; it takes (appropriates) outside events and puts them into the system. In virtuality, this function of the interpreter has been separated from the traditional binarity between the two ends of a relationship. For example, in the internet business, the function of the interpreters is consolidated and professionalised. The interpreters are called *content-providers*, and represent a major industry, with Hollywood as appealing example. These interpreters replace two functions of the body:

- 1) generation of knowledge, or at a minimum, generation of appearances,
- 2) confirmation/validation of knowledge, or at a minimum, of appearances.

Technological virtuality foremost involves information processing. Virtuality as information has quite revolutionary principles. Time, space, logic, existence are all different from tradition. With the speed of light technologies, such as ICT, time is taken to its limits, geography is made irrelevant, copy-paste and technological malfunctions are introduced, and existence is defined by attention. In short, information is another beast than money. Money is still a physical good, essentially and guaranteed referring to real value. Money usually does not change overnight, while information shocks may be huge: one misinterpretation of a detail (eg. a

minus sign) can change the meaning of a message completely. Of course, there is a grey area where money and information overflow when cash flows are risk adjusted (see e.g. §8.2).

You can put a fence around money; being physical it is bound to place and time. Either you put money on a dedicated bank account, or invest it in physical goods or processes. At all times, it is clear that what is yours is not somebody else's. Information is a virtual good; it can pop up³¹⁰ or disappear in and out of nothing; it can be copied or grow by sharing; it can simultaneously emerge on different places; it may only once and then never again refer to real processes; it may be manipulated, propaganda. Money grows but information must be maintained. Money stands on itself, represents value autonomously, while information needs help of a user to be of any value. Money is universal, while information is perspectival.

Virtuality allows ultra speed, and therefore, it is superior. The maximum speed possible is the speed of light, which is the common speed in ICT functionalities. Speed has been maximised to such extent that it becomes impossible to move the slow weight of the body. As Nietzsche holds (see below), the body is the only contact with the world and the others. If the body is not involved, what or who is performing the function of the body? How are horizons defined? Next to the absence of the body, the speed of virtuality does not allow to make in depth studies of objects when meeting them. When speed raises, the importance of superficial appearances increases, at the cost of intrinsic values, traditional values deeply embedded in social behaviour or other types of depth structures. High speed, or inversely stated, short tenors of interaction, favour appearances because they are the only things that can be observed in a split second. As it takes time to observe depth structures, the speedy traveller only sees surfaces, is only sight-seeing.

When the virtual world grows, at some time (in the past already), it becomes an existence in its own. Anything that we can interact with can be a source of meaning, especially if the interaction is cyclical. In that case references to this virtual world become important and the virtual world becomes something in itself. This virtual world does not claim to represent reality, and hence may not require a connection to reality, in the form of a bodily contact. However, the dominant part of virtuality (for example internet) does claim to refer to reality, and derives its

³¹⁰ For some years already, there are street performances in metropolitan centres by ad hoc groups of people who coordinate themselves for this unique action using internet. They literally pop up, do their thing and disappear into nothing in less than a few hours.

meaning from that claim. For example, when the computer would simulate the other participants in your chat room, you would feel faked and abandon the area.

Also, as people will apply the technology to associate, new communities will be formed that use a specific technology to meet and disseminate common ideas, eg. Internet. Construction of communities follows the rules of the technology. Communities can be formed between all who are connected and share the same interests. They can be dissolved as soon as people lose interest. Imagine a village that disappears, not just into a ruin but into nothing, because its inhabitants are no longer interested in it.

Virtuality accommodated by non-technical means will be discussed by the example of language in the next paragraph.

10.2 Analysis of the use of the word

Virtuality itself is not new. Sloterdijk³¹¹ mentions its 2400 birthday when he points at Plato who put a virtual sun (the Good) above the empirical world and of which all that is real derives its being. In Sloterdijk's terms, the current cybernetic virtuality has been preceded by Plato's philosophical virtuality.

However, as stated above, virtuality is possible as soon as there is an appearance carrier available. The very first appearance carrier we know of, in my opinion, is the word. The word, for example a name, refers to something else, represents something else. In a sense, it is the shortest, most efficient appearance of something. But the word is not the thing, at least, not really. The word can convey characteristics of a thing, or it may convey experiences of humans with the respective thing; in short the word can transfer meaning. This transfer takes the appearance of the thing away from its local situation. The word can travel without the thing, and make the thing appear far away from its existence. Where the word arrives, the one who hears it or reads it can (virtually) interact with the thing.

The word, as probably one of the first virtualities, is as old as human society. In an analysis of the developments of the use of the word in three phases, we can illustrate the newness of current virtuality. The three phases include:

1. the spoken word;
2. the written word;
3. the digital word.

³¹¹ Sloterdijk, 2003, p51.

The spoken word allows the users to discuss and contemplate situations which are different than their current situations. For example, the hunters can gather at night time around the fire to transfer their experiences of the day; to discuss hunting techniques and learn from each other's mistakes; to discuss the right fishing spots and the dangerous animals in the vicinity; or can discuss fears and feed anxieties. Because the spoken word is bound to a physical body (it needs to be spoken), its scope is limited. Every time the spoken word transfers meaning (ie. the word is used), it is limited by the body that speaks. It can only be heard within hearing range, it will be spoken according to the memory of the speaker (which may distort its original meaning), and always requires a face to face situation. It uses the body as storage, and is limited by the voice as carrier.

The written word has an independent carrier in the ink on the paper on which it is written. A book may be transferred to a much wider scope. Its carrier can outlive any human and does not distort the meaning of the word (after writing it down). The written word allows users in different locations or times to contemplate situations. Transfer capacity has improved considerably with the emergence of book printing technology. With the mass production of words, the word can be copied, be present on multiple places at the same time, can be distributed in multiple directions simultaneously and can be stored as long as the storage remains dry and does not catch fire. However, the written word is not only appearance, it is also physical ink and paper. The written word still has a physical presence in itself, a physical body, which slows down its mobility (transfer capacity), compared to the digital word.

The digitalisation of the word is what makes the current virtuality new. The digital word can be transferred with the speed of light, as offered by ICT. Because of that, the digital word can be compared with all other words that are connected to the respective network in an instance. Immense databases are globally available, providing access to an indefinite amount of words from various places and times that can be compared in an instant. The speed is available both at the side of the issuer of words (at the input side), who can distribute words with absolute speed and global reach, as well as on the output side, where someone is querying and wants to receive words. Next to the speed, the storage capacity for the digital word has increased revolutionary in the last decade. Currently, storage capacity and calculation speed are only constraints for the most advanced computer users, such as astronomers or mathematicians, or in our case, econometrists. However, their request for increase of speed and storage capacity is limitless, as higher capacities are considered competitive advantages.

10.3 Virtual travelling

Virtual travelling is defined as the interaction with an environment, without physical presence in latter environment. It is a virtual travelling because the body of the traveller is not moving, in contrast with traditional travelling.

Virtual travelling is about an interaction. It is in the interaction that awareness and knowledge may emerge, due to the resistance from the other party in the interaction. The double interact is required for awareness, which in turn requires resistance from the other. In that respect, virtuality is a much broader concept than virtual travelling. Virtuality also extends to fantasy, to projections of the mind without link to reality. As long as the mind can serve as carrier for appearances, virtuality is possible. Hence, virtual travelling (as type of interaction pattern) is restricted to the technologically based virtual travelling, as it requires some form of the other.

A clear example of virtual travelling is having a telephone conversation. You speak with someone that is not in your vicinity (outside of hearing range) and you hear a reaction real time. Just 20 years ago, you had to wait for reply when phoning intercontinental. Now, it resembles a normal conversation, except you don't see, or smell the person you are talking to. Next to that, with a simple action, open to both of the interactors, the interaction may be stopped, and the other person is out of horizon again.

Another example of virtual travelling is reading a report. Some interpreter has some time ago, somewhere else interpreted a situation, and has registered the knowledge and awareness that resulted from the interaction with an environment needed for a proper interpretation. The interpreter has registered the appearance, ie. created an appearance of an appearance, in the report. Time and place divide the reader of the report and the reported situation. The reader can appropriate the report, but he can not touch the situation just by reading. Reporting becomes interesting when the reader of the report can act to correct the situation and ensure achievement of goals set. The double interact, where environment and identity act on each other's appearances, is broken in this kind of virtual travelling, as opposed to the previous example of telephoning. The double interact is broken in terms of a time lag between reporting, execution and new reporting, as well as in terms of a principle distance between reader and reported.

In this kind of virtual travelling, its importance is given by the capacity of the reader to act on the reported information. That is, reports must be aligned to the requirements of the readers, not the requirement as a reader, but the requirement as the manager who is responsible for the situation.

In order to be able to interact, the interaction must be intermediated. Some thing must carry the interaction from subject to subject as both don't physically meet. Virtual travelling must be technologically supported. In terms of PoT, virtual travelling needs a vehicle.

As described above, three vehicles can be identified that enable distinct types of virtual travelling³¹²:

1. ICT
2. New economy / global financial markets
3. Risk management

Information & Communication technology

ICT provides the possibility to see, listen, speak and write with the speed of light, annihilating the restrictions of time and place. The technology enhances our physical capacities to detect things and express ourselves, providing global reach to our senses. In that respect, ICT makes us bionic.

New economy

The new economy is global and market based, ie. focused on competition. Supported by ICT, goods, money, people, and services are transported over the whole globe. Quite recently, also jobs are transported to the most beneficial places, which are either very cheap, or very knowledgeable. The multinational corporations are more mobile than national sovereigns, which are tied to land.

Risk management

One of the most important vehicles in the new world is risk management in a broad sense, referring to the attention for consequences based on the availability of a framework for interpretation of actual³¹³ indicators. Risk management uses knowledge to capitalise the future, risk management is in fact time management. That is the new essence of our society. You have to act pro-actively towards the future and have to address human needs.

Risk appeals to people, risks are the imaginable consequences for humans, whereas information is just statement of facts, objective as possible. Risk is the affective interpretation of (a selection of) facts.

Risk management techniques may be privately owned and focused on the best interests of specific individuals, or may be (at least partially) owned by the public and serve the public.

³¹² See also Chapter 9.8 for an elaborate description of the three vehicles.

³¹³ Actual as the period before the consequences have materialised.

In my view the public should have a larger stake of all of these than is the case in most current societies, not just from an ethical perspective, but from an economic perspective as well³¹⁴.

However, as many thinkers have shown, risks tend not to be bound to specific geographies or ethnic borders. Organisation of the public is then an inherent problem. Politics –decision making about developments that affect society at large– can no longer be confined to national / geographic borders. Horizon setting becomes problematic.

10.4 Philosophy of travelling analysis of virtual travelling

In this paragraph an analysis of virtual travelling is presented according to the framework of the philosophy of travelling. An analysis in terms of philosophy of travelling may reveal the typical relationships and their dynamics in a society that has turned virtual; it provides hints at the appropriate orientation.

It is recalled that the philosophy of travelling focuses on the features of the interaction of an identity with an environment; as such it is focused on the dynamics of the relationship between identity and its environment. Philosophy of travelling looks at changes rather than status quo, it looks at flows and forces rather than objects and facts.

In looking at virtuality, we'll see that virtual travelling causes broken horizons, especially geographic horizons, with its implications for cultures and power structures.

i. Interactions, the exchange

Virtual travelling encompasses mental travelling. Location is a mental issue: you are where your mind is. The mind is no longer focused on the presence of the traveller, but on impulses originated in other environments. Anything that can raise human interest is eligible as reference. For the physical dimension, this has several consequences.

Dependency on stability and technology

First, some stability of the environment is required in order to be able to withdraw

³¹⁴ The success of the personal computer proves that technological emancipation of the people can be rewarding.

attention from the current environment. For those locations that are unstable, technologies that fully absorb attention are not available. Next to that, as virtual travelling must be technologically supported, the hardware and software must be available and able to operate in the physical environment. The technology requires several stringent environmental conditions before it works. Eg. there must be electricity, it must be dry, not too warm, no dust, free of insects and animals, etc. Most people on earth live in other conditions.

Mixing of environments

Second, ideas from elsewhere may be applied here. I.e. the physical environment may be exposed to influences from elsewhere by intermediation of the traveller. The local environment is opened up by the entrance of the stranger, and since then exposed to the outside world. The traveller can bring new meanings, relationships or people to his environment that are strange to the specific environment and will change the environment. For example, introduce market capitalism in under-developed countries. The traveller can connect environments that not necessarily themselves should want to become connected. Or he can connect the environment to networks that operate outside the (former) horizon of the environment. Every environment will be subject to increasing disclosure, as connections increase.

Domination of virtuality

Next, with the increase of virtual travelling, the mental environment gains importance over the physical environment. Relatively, the physical environment will be neglected. The world of information and knowledge is dominating over the physical environment, as the continued growth of knowledge and technology enables to manage any environment increasingly. Virtuality is superior because it is faster.

Furthermore, in the virtual world people and things exist as far as they are represented. Media representation is more important than actual existence. To create a representation is not something natural, but must be explicitly done by people. People will only represent what is interesting for them, excluding all people and things in which we have no interest. To protect the weak and poor creatures becomes a more explicit task, as the weak and poor have no presence in the virtual world on their own sake, since they can not afford the technology. In the real world, we still see the beggars and the children, on internet they are only there if represented by someone else.

Emancipation of the people

Finally, since virtual travelling is widely available, the ability to create a (virtual) reality has been democratised in terms of being available to the people (at least, most people in rich countries). People can create their own virtual reality and even liaise with others who have the same interest and are also connected. Virtual reality

is (also) created bottom up, by the working crowd. The people have the ability to virtually create the appearances they want, unleashing their desires. The wide scale availability of personal computers and internet access has allowed many individuals to pursue their own journey, which further fosters their individuality. Emancipation from people to temporary sets of individuals.

ii. Senses and horizon; openness and closure. The body was the instrument to connect to others and to the outside world. The body creates the horizon and the exchange. The horizon was determined by the scope of our senses and physical capacities. What is important to us is the Known environment, the environment we are aware of because we interact with it. The interaction makes us aware of both the environment and our own existence in it. The body allows the reversible interplay between subject and object that facilitates awareness and knowledge. The interaction is supported by the senses, and what we experience are sensory impulses that are interpreted by the subject. The collection of counterparties with whom we can have an interaction is determined by the physical capacities of the sensory organs, ie. the horizon. The speed of transportation used to seriously limit the horizon, in terms of the distance one could reach in one day. The point is that the scope of the senses determines the horizon, determines where is the border between this environment and another one.

Technological and professional support

In virtual travelling, the senses, as well as our physical capacities are technologically supported, and professionally specialised which has increased the scope of most important senses incredibly. We can see what happens on the other side of the world, we can listen to music made in another continent, we can taste the most exotic fruits, smell perfumes that belong to stars, etc.

But we can only see what is designed by the content providers, by the first interpreters. In fact, the virtual traveller has only second-hand interpretations. All he can see is pre-selected by someone else with the intention to represent something. The first interpreter has a strategic role, determining which real things or aspects are excluded in virtual reality. He knows that others will look at his product and have to take for granted whatever is the message³¹⁵.

Not all of these examples are the result of virtual travelling itself. However, virtual travelling (in the economy) only makes sense if there is a network that arranges the physical logistics. Without the global economy, there was much less need for virtual travelling. Next to ICT support, virtual travelling also requires support from

³¹⁵ Unless obviously wrong. The virtual traveller has no other means to validate any virtual statement than his general knowledge and judgement based on experience.

logistic technologies.

De-linking time and place

The extension of the scope of senses, and the increase in our physical capacities, which are the result of the Information & Communication technology, break the traditional horizons and create a new horizon. This breaking of horizons also has an effect on the traditional power structures in providing escape, alternatives, or arguments and knowledge. With the breaking of horizons, power structures may break as well, as they turn out not to be able to withstand the attempts to refuge, to change or to debate. Since most virtual travels are made alone, social attention is shifting from traditional groups to individual interests, which is a threat to all structures based on solidarity.

This new horizon has a different pattern in time-place dimensions. The new horizon is not determined by a specific geography, or determined by a specific distance to a physical centre. Nor does real life logic necessarily hold. Neither does everything within the horizon have to live in the same timeframe. Everything within the horizon is only connected by the technological connection to the network itself and the specific virtual interaction. Any interaction is ended as easy as putting the phone down or pushing a button.

Furthermore, the new horizon is not bounded by any physical measure, except by the technology that enables the virtual platform. Not restricted by the dimensions of the body, the new horizon of the traveller will be bound by mental restrictions only, such as interest or attention of the traveller, within the constraints of the technology. Communities will be scattered geographically. Proximity becomes a matter of human interest and technology, instead of place.

iii. Storage, experience and memory. Experience in virtual travelling is determined by images, words, sounds, a mix between motion pictures and word documents. It is whatever can arise from information, from a two dimensional (re)presentation. Experience in virtual travelling no longer stems from the multi-dimensional interaction in real (non-virtual) life. You don't hear the shiver in his voice in an email, don't see the sweat on his head or see his body language. As remarked before, this over-reliance on two dimensional (re)presentations in virtual travelling bears the risk caused by the absence of possibilities for validation in other dimensions. For example, if someone writes that he respects me, but has a middle finger in the air while doing so, the message from one dimension is incomplete.

The storage of experience is one of the capacities that have increased rapidly during the emergence and growth of ICT. Memory capacity and speed of computing are further increasing every year. This allows the storage of more and

more information, as well as the retrieval, analysis and distribution of it. Availability of information is not a technical problem anymore.

Currently, the virtual world is Wild West, without a sheriff to maintain order and control which appearances are stored. Anyone can throw anything on the Net anonymously, or unpunished. The Net is a perfect tool to search people with the same opinion and it is easy to isolate from criticism, allowing lost individuals to find each other and unite, but also to pursue any narrow mindedness without much resistance. Although governments increasingly see a role for themselves (eg. in decisions to ban spam), they are too old, in terms of geographically bounded in sovereignty.

iv. Motion and comparison. It is motion that allows interaction and comparison. The speed and reach of motion determine the kind of comparisons possible. With high speed, only surfaces can be observed and compared, as the environments are transited too fast to build deeper relationships. The increase in importance of appearances is a supporting argument for the acceleration in society. The reach of the motion determines the geographical spread of the two items that are compared. Whether I go on holiday to another town in my own country, or go to some exotic resort, quite different comparisons result. In virtual travelling the reach of motion is no longer geographically bound, but is restricted by another type of issues. For example, the degree of connection to networks or the selection of characteristics that is included in the representation of the thing in the virtual world. Furthermore, the motion is technologically supported, which means that motion is bounded by technological restrictions.

As speed encapsulates, with high speed, the relationship with the environment (of transit) is intermediated by the vehicle. The vehicle provides the relationship on a display, such that in the end, the traveller only has interaction with the vehicle, or actually only with the capsule and the display panels. In fact, the motion changes, from moving landscapes to moving through a vehicle.

With other (non-virtual) types of travelling, the subject interacts with a world that is also accessible to other people and that may be considered objective. In the virtual world, there is no objectivity, as all things in it are artificial, are created and manipulated by humans. Furthermore, the success of internet sites is measured by the number of people that access it. Success is measured as the size of the herd that visits a site. It is build to catch attention, it is ostentatious. A virtual journey is almost never unique (or subjective) as the paths to and through environments are pre-specified and very narrow.

Finally, the destination, the result of the journey is the only motivation for a journey. The journey itself, the process, the motion, is not interesting at all, and left to the vehicle.

v. ***Appropriation and alienation.*** Ownership of entities in the virtual world is technologically organised. No matter how often you visit a site, it will not become your home if the site is not registered in your name. As a traveller you have no influence on the site, except as one of a herd. The most influence is that you are being counted. If the owner decides to no longer maintain the site, or change its content, it does not matter how much a specific traveller has appropriated the site. More than a physical environment, the virtual world is immune for the interaction. On the other hand, virtual entities can be copied relatively easy. If you want to own the site, you can copy its virtuality, but not its connection to the real world.

Finally, appropriation of a new piece of the virtual world is as easy as creating a website, ie. is available for a large number of people in rich countries. Everyone can claim a new piece of virtual land and subsequently rule on it. The yet-unknown and unclaimed piece of virtuality is an endless reservoir, there is enough for everyone. As in the famous “Go West, young man!”, this urges the able to explore the unknown, it challenges to expand.

The above analysis is a general assessment of virtual travelling. This framework can be applied on specific types of virtual travelling, such as ICT, Risk Management or Global Financial Markets. For illustration purposes, a quick scan of the EC movement type of virtual travelling will be presented.

The EC movement type of travelling is virtual twice in its use of a quantitative portfolio model, and its focus on future events (credit risk).

- Interactions, the exchanges, involve resistance of the model foremost. This resistance appears on the input side, where the credit analyst struggles to push his locally defined risk position in the central model, and on the output side where the credit manager tries to understand the reports from the model. Next to that, in the development phase, interactions between modellers and credit risk officers may have taken place focused on design and implementation of the model.
Due to the architecture of the model, and the rarity of the risk it is trying to capture (wholesale credit risk), the double interact, ie. proper feedback, is subject to a significant time lag. Back testing procedures will take at least four years to build a reliable data sample, while given the uniqueness of the risks and the rapid dynamics of business contexts, it may be doubted whether there will ever be significant and reliable data pools for testing.
- Sensory organs have been changed from intuition and multi sourced information to the application of a central standard based on objective data. Since the body has been replaced by a model and empirical data, it is

no longer possible to understand the data without intermediation of the model. Again, we notice that to be able to reach ultra-speed, the body must be placed further away from reality. The model creates a distance between analyst, credit manager and their respective reality, in which the credit risk is real.

As we have seen in §7.2.4.1. (introduction in epistemology), the three links to reality include:

1. empirical data and statistics,
2. finance theories and econometrics,
3. Global Financial Credit Markets.

Of these, only nr. 3 can be considered a sensory organ that detects in real time. Before a unexpected change in society has been digested by nrs. 1 and 2 above, some years will have elapsed.

- With increasing ICT capacities, storage and processing of data becomes easier every year. In the EC movement, the traditional storage of credit risk experiences in what can only be called credit culture is replaced by an objective model, fuelled by objective data, supported and benefiting from ICT developments. Given the statistical nature of the models, the quest for data is infinite, a competitive advantage.
- With respect to motion, we may observe a shift from common-sense comparisons towards movement in a space of flows, in ultra-speed, comparing machine-generated appearances. Comparisons are constrained by the model: What you model is what you get.
- Appropriations are dependent on data availability and modelling skills, as well as on the credit risk assessments, performed by credit analysts. While during the development of the model, the environment has to be appropriated to identify the model parameters, the actual appropriation takes place when the model has been implemented and is used by the credit analyst in his day to day assessments. In this latter phase, the credit risk analyst has to use violence to either the local environment or to the model in order to push reality in the model.

10.5 The virtual turn

The virtual turn is a change in society, in fact, maybe the better term is transformation. In the change, virtuality is taking an ever larger space in society. Virtuality more and more determines decisions, affects politics, influences the economy; virtuality shows an ever larger penetration in society.

Basically, the virtual turn provides opportunities to travel for those who are connected, with nearly every human capacity made bionic. Ie. we can see what is happening on the moon, or live on TV how a war is faring; we can speak

intercontinental, travel with the speed of sound (physically) or the speed of light (virtually). In virtuality, the (connected) globe is the horizon for an individual. It appears that every (connected) individual becomes a Superman in some dimensions, eg. the possibility to scan the Earth in a split second.

On the other hand, every human capacity required for interpretation is professionalised, is taken away, is performed by others, by specialists. Any interpretation made by the virtual traveller is second-hand, is only a pre-selection of impressions, never enough to validate the information. Anything available for interpretation is only intended to generate cash, not to harm the *cash cow* in any way. Next to the dependence on the interpreters, the importance of the distributors (media) is ever growing.

Referring to the distinctions made earlier, virtuality may increase:

1. In the mind; as people travel more, learn more, have more information available than ever, they have grown their inner world, their thoughts, their awareness. Virtuality in the mind has expanded in line with the average level of education of the people. It refers to the power of education and communication for individual minds. However, as comprehensive generations have benefited from the economic success and corresponding rise in living standards and education, effects of this may be expected on the level of society itself. See § 8.5.2 for Castells who also refers to post WW II critical groups that aim for emancipation of various breeds.
2. In technology; Internet still offers vast space for expansion of activities, it is a giant industry, together with all ancillary industries such as computer, chips and software, but also standards.

The virtual turn refers to increased use of the three vehicles mentioned above, and to the spiritual dimension:

- in which traditional techniques for mastering the world are being replaced by ICT.
- in the new economy with global competition
- risk management, interacting with the future
- the broadening of the mind of the people.

Examples of the first type of turn are the widespread automation of activities, computerising of activities, establishing automated response devices, IT based monitoring, etc.

Example of the second type of turn is the power to buy or sell something that is from far away. An example of the third turn is the attention for global warming or terrorism. An example of the last turn is the increase in TV watching, reading, studying, debating, etc., and the subsequent rise of political issue groups.

Main consequence of the virtual turn is a devaluation of proximity, a scattering of society, a fragmentation of social structure³¹⁶, and an idealisation of the far away horizon. The speed of travelling encapsulates me in the vehicle that is put between me and the direct environment. Devices to manage the transport process become as important as the transport technology itself. Managing the speed is as important as causing the speed.

10.6 Indications of the virtual turn

In this paragraph, various developments will be identified that provide an indication for the presence and magnitude of the virtual turn. As has been shown in part two of this thesis, virtuality is emerging in (the first) four domains, but is even more widespread:

- b. Production; widespread use of ICT enables companies to differentiate activities within the organisation and to localise activities in those places where most economic value is added. ICT can enable timely and accurate information regarding all processes affecting the business of the company, allowing to separate and differentiate activities. Competition is ever increasing, as more markets globalise further. Companies must join the race or be satisfied with a niche. In fact, the information generating power of a company may be more important than its physical production capacities. For example, in sport shoes and leisure wear, branding by playing the media is considered to be the core business for many brands. Well known shoe producers, such as Nike, do not even produce anymore, they only organise and brand.
- c. Power; the network society is not bound to borders of sovereign states, and is available to the public. The global economy, the perfect market economy, is still increasing in span and scope. These developments question the legitimacy and efficacy of national politics. Nations are in competition to win the favours of multinationals; at best they may serve as safe transit place, not expecting more than economic loyalty. If they act on the global markets, they lose the connection to the inhabitants. If they isolate from the global economy, their existence will be marginalised by the same markets.

³¹⁶ Fragmentation as measured with time and place dependent (contingent) standard concepts.

- d. Experience; telecom and media have changed interpersonal relationships. Contact between far away people occurs more often, but is also more limited than a full meeting. It seems that the more connection we have to other people, the less we want to or can meet them. Places far beyond the physical horizon have our attention, at the cost of familiar proximity. Virtual reality is as flexible as the human mind that can create it, offering more and more opportunities to deviate from the mainstream normal. Internet offers an escape and connection to the whole world. This opening up to the whole world has made us more aware of our situation and any alternatives, which in turn increases our negotiating power, leading to continuous renegotiations that replace traditional patterns of behaviour.
- e. EC movement; in banking, network society, risk society and the new economy are combined in a powerful tool that will make the credit markets considerably more perfect. Virtuality is double, in relying on ICT, but also on risk models, which make us focus on the future. Credit markets are a strong driver of economic developments, and the approach to credit will act as a selector of viability of businesses.
- f. Every day life; in the morning I wake up by music made by someone far away, I read a newspaper about what happened in the world, the whole day I carry a mobile phone to be connected to home, family, friends, and anyone else who can retrieve my number, since three years even to internet, if I wanted. On my work, I receive email from all over the world, I design risk management tools that will be applied all over the world, accessible via internet. In the evening I watch television, surf on internet, or have authentic meetings with other people, to exchange news and repeat stories. Three times a year I go on holiday somewhere in the world, attracted by glossy brochures or websites arriving to my attention daily.
- g. Social networks are dominantly maintained by information or communication technology. Specific issue groups can use the force of internet's search engines to find people with the same attitude, belief, problem or fantasy. Physical distance is not the problem for relating, for forming communities and socialisation. The societies that result from using these support technologies (ICT) have no structure in terms of physical space; they are scattered over the globe. However, given the communicative power of these technologies, ad hoc coordination may lead to large concentrations of such societies in a particular place and time. It is as if they can pop up in reality, straight out of virtuality.

Since they have no ties to that particular place, except for the targeted event, they can leave as they came, popping out of the scene again. It is a mobile society, in which concentrations can suddenly emerge to act as a force in real life society.

- h. Transport industry of people, services and goods; to make virtuality commercial, there has to be delivery; physical goods or people need to be transported from production or storage to consumer against any form of payment. The virtual economy is basically dependent on the real economy and its transportation capacities and efficiency. Transportation allows the division of labour in terms of separate locations, which in turn allows to maximally economise the various activities that together comprise a business individually. Without transportation, the global economy is dead. And vice versa, the degree of globalisation is indicated by the amount of cross border transportation.

As a first conclusion it may be noted that this list is far from exhaustive. Next, it may be concluded that the virtual turn indeed is a widespread phenomenon affecting nearly every one in society, and especially affecting mainstream society.

11 Implications of virtual travelling

In this chapter, conclusions will be discussed regarding the analysis provided in the previous chapters. Next, we try to extrapolate the specific EC case conclusions to a wider context, being the virtual turn in society in general. We focus on the implications of two aspects, being the speed in virtual travelling and, related to its speed, the broken horizons.

First, the general conclusions from the EC case will be recalled to see that the EC movement is a child of its time and dependent on wider social developments, such as ICT, risk management sophistication and the global economy. However, the EC movement is also a strong stimulus for mentioned fundamental developments. EC and the wider developments are mutual stimulants.

Issues concerning risk, diversification and valuation/quantification provide arguments to conclude that the formal EC theory is inconsistent and ignores human aspects. Although inaccurate and less efficient, the theory is very powerful because of the ultra speed it offers.

Next, the implications of the ultra speed in virtual travelling are elaborated, including a further focus on the consequential bodiless aspect of virtual travelling. Subsequently, the implications of the breaking of conventional (read local) horizons are discussed, emphasising the stress on processes of production or construction.

Thirdly, these rather abstractly described implications will be illustrated by referring back to the history of the Rabobank and the EC movement.

This chapter 11 concludes with a summary.

11.1 Conclusions regarding the EC movement

As we have seen above, the EC movement is a case of informationalisation of society. The EC movement constitutes a specific vehicle that transforms society from monetary into informational.

The EC movement involves three general types of virtual travelling, ICT, Risk management and global capitalism, and blends these into a fourth (sub-)type: Credit Portfolio Management.

ICT makes us bionic, both in terms of our passive presence, when we can detect flows with technological support, for example a telephone, and in terms of our

active presence, where we can distribute messages or orders to far out of sight in an instant.

Risk management manages the future by a blend of affection and cognition. Risk concerns a possible future situation about which we feel bad. Management of risk is essentially time management, trying to mitigate the causes of harm. Risk links capital and information in the risk adjusted valuation mechanisms applied on the financial markets.

Credit Portfolio Management connects local corporates to the global financial markets by standardisation of assessments and application of a quantitative portfolio risk model.

Analysis showed that:

1. EC is a powerful tool, based on ultra speed technologies, and is focused on value creation for the owner of the technology;
2. The epistemological quality of the theory is weak from a modernist perspective, and does not match with its ontological features. Furthermore, from a valuation perspective, EC is a blurred concept. EC ignores soft factors in risk identification, risk assessment and the role of the bank in the risk process. EC misses the social rationality. It assumes no credit expertise is required for the management of a portfolio of loans, as required information to assess risk will be provided by the financial markets.
3. Being based on capitalism, the EC movement may change capitalism by acceleration of the speed of capital, transforming it in hyper capital, which resembles information more than money.

In the EC movement, the perspective of humans is ignored in various aspects:

- in the essential subjectivity of risk assessment;
- as identifiers of risks, risk drivers and related risk concepts;
- as caring about more than probabilities and severities;
- as active and experienced managers of relationships and loans;
- in the notion that risk is affective and perceptive;
- in the role of risk communication.

EC ignores these human factors, whereas one of the largest benefits may be the increased awareness and attention for risk, risk systems, risk reporting and validation, etc. caused by the EC movement (and particularly BIS II).

The mainstream EC movement has room for improvement with respect to:

- I. It currently misses the capacity of the masses, as it does not benefit from the expertise of each of the employees, but is a centrally defined, ie. pre-programmed prescription, not open to the unexpected, which it

is trying to capture.

Especially with respect to framework development and risk assessment the increased involvement of users will improve the quality of models significantly. They can provide the missing link to reality and add the efficiency of human judgement.

- II. It concentrates power because of the underlying Law of Large numbers, assumed diversification benefits and fixed investment costs. According to the theory, concentrations are bad, hence will decrease the stability of the financial system. This is an unwanted property and should be repaired, although it touches the fundamentals of the theory.
- III. It ignores a social and cultural approach to risk, and misses the relationship aspects between bank and client, expertise of employees involved in key information positions (eg. analysts who do the risk assessment), differences in risk perception of different people, issues of risk communication and trust, etc.

The analysis of the EC movement shows that informationalisation is a technological driven development, in which human aspects are easily ignored. It tends to not only oversimplify reality, but also to miss the efficiency of human judgement.

11.2 Implications of virtual travelling

In this paragraph, we will analyse the implications of virtual travelling in general by focusing on two most relevant aspects which are common in virtual travelling being the speed and changing horizon. I believe the strength of virtual travelling is definitely in its superior mobility, in its ultra speed.

The most pregnant conclusions from our analysis of virtuality concern the impact of virtuality on the experience of time and place, or in terms of the philosophy of travelling, on the impact on the speed of the traveller, as well as on his horizon. These two issues more or less go together; a traveller with great speed will be oriented on a horizon that is far away, at the expense of the proximal. With changes in speed, horizons change. This causes broken horizons and new horizons; traditional boundaries are dissolved, and with it the power structures that depend on these boundaries.

Furthermore, as Sloterdijk argued, mechanisms of giving meaning to the world typically depend on a specific horizon, or sphere in his terms. When these spheres are broken, meaning is lost and must be replaced by other (mechanisms of giving) meaning.

Weick points at similar effects of horizons when discussing the productive effects of openness and closure.

Below, first attention will be given to the issue of speed. Based on Virillo's dromology, the knowledge of speed and acceleration, we will elaborate on the speed in virtual travelling. Next, given that the speed in virtuality is ultra speed, which has consequences for the movement of the body, we will pay attention to the bodiless traveller and the implications of leaving the body at home.

Next, attention will concentrate on the need for a horizon, using concepts of Sloterdijk and Weick, who show when closure is required. Combined with the previous analysis of virtuality, we can conclude that processes of giving meaning are under pressure. Nomadic based power structures may provide examples of successful adaptations to the increased mobility.

In the next paragraph (§ 11.3), these rather abstract generalisations will be illustrated, by applying them to the Rabobank, the well known case study for this research, and see how the issues of speed and horizon affect the identity of the bank. On a more general level -EC for credit risk- we see how speed dominates over accuracy and how speed differentials between EC and its target will put the EC movement in a difficult position.

11.2.1 Speed and acceleration.

As we have seen in § 6.1.6., the paragraph about Virillo's dromology, speed directly determines the time available to meet the local environment. It also determines the amount of time in which contracts must be delivered on both sides. In that respect, with mobility reciprocity becomes an issue. Next to that, in an economy where time has an explicit value, speed is the competitive factor. The one who can outpace his opponent wins. High speed is currently available in expensive technology, which for the most part is privately owned.

In this paragraph we will analyse what the effect is of the speed aspect in virtual travelling.

In virtual travelling supported by ICT, ultra speed is achieved. This means that it is the fastest speed humans know of, and that nobody or nothing can go quicker. The implications of this will be investigated below.

The value of space diminishes.

According to Virillo, in acceleration, the price of space continuously devaluates. Space becomes ever more irrelevant as a factor for human behaviour when speed is increasing. Space is most relevant if we stand still and have no exit. Caught in a specific space, space becomes absolute.

For ultra speed, space of transit should even be empty, and is assumed to be empty, receives no attention. Transit space is annihilated literally. All local specifics have been erased on highways to allow the high speed traffic.

Castells had mentioned the timeless time and space of flows which characterise the speed of ICT technologies. Indeed, space in ultra speed is measured according to different standards than in conventional velocities. Conventionally, space is distance, which refers to capacities to cross that distance. When those capacities are taken to their extreme, as in ultra speed, this reference becomes useless. The well known meter is near to nothing in ultra speed, taking such a small fraction of time to cross that is too small to discuss. Conventional distance is dissolved and becomes binary: either there is distance or there is not. In Castells terms, either something is connected to the network (with distance zero) or it is not (distance infinite). Connection to the network then becomes the new standard in ultra speed. Connection determines where you are. Connection can be created when having available the proper technologies, and when adhering to the proper codes and protocols.

Speed ignores proximity and idealises far away.

Speed provides a far away horizon that comes into scope. Speed allows to change environments by transiting them. With higher speed, more far away places come into reach, and for that reason may become attractive. But simultaneously it takes away attention for the direct surroundings, it distracts from vicinity.

Furthermore, high speed encapsulates, requires some sort of a capsule to take you through transit in such short time and high speed. The vehicle will take the role of providing sight on the environment of transit. Both the physical speed factor (the motor of the vehicle) and the environment of transit in high speed are things that humans should not touch. Interaction with these things is intermediated by dashboards and displays of the vehicle. The vehicle will embrace you to protect you from the environment that passes by very fast (do not lean out of the window!), and will show you how it is working by interfaces (speed meters, positioning systems displays, etc.).

Speed thus causes a double reduction of proximity: 1) in the far away horizon that comes into reach, 2) in the perspective on the environment of transit.

Local environments can become appreciated as transit places only, in the worst case as a transit environment (which should be empty). In such high speed environments, the partial citizen emerges as a temporary inhabitant of a multitude of societies *simultaneously*.

Having the option to buy that ticket to paradise, our attention is continuously aware of exit options and paradise far away, while the speed achieved in the past has

created a large number of past journeys, past experiences which in their unique combination shape the identity of the traveller.

Speed in virtual travelling

Distance in terms of space between things and speed as spatio-temporal vector have lost their meaning in ICT because speed has been taken to its limits in the ultra speed of ICT. When we refer to this ultra speed, attention is paid to glass fibre cables that carry pieces of information worldwide in a split second.

However, speed in ICT does refer to processing speed, as in the time it takes to digest a unit of information. With transit speed taken to its maximum, the bottleneck in the process is at the two ends of transit: departure and arrival. Or in computer terms: at the input and output side, where information has to be processed. Again, the computer is not the slowest in processing information. The slowest are the human users who have to digest the information to formulate and issue their response in return.

In very high speed technology, such as rocket technology, very powerful engines are applied which require very precise control. As a rule of thumb: the higher the speed, the tighter the controls. Rockets are always launched by automated procedures, never by manual steering. The slightest deviation of correct behaviour can be disastrous in high speed. Therefore, no human is allowed to touch the controls during launch. This makes Virillo suggest that high speed encapsulates, puts a capsule around you to protect you against the fast moving environment around you, and to protect you from the powerful engine.

In early ICT, a user would be held far away from the computer, and his assignments would be translated by people understanding more basic computer language. Since the personal computer was introduced, significant progress was booked in the improvement of the interface between user and computing engine. In my counting, Windows in the early 1990s provided a fifth generation language which enabled the people to control computers. With that introduction, the pc was democratised, as in available for the people. In ICT travelling, the interface between traveller and vehicle is intermediated by the computer. The display shows a window on what the computer is doing, amongst others. Now I can use Word, Excel, Powerpoint, play media, etc., all according to the framework offered by Microsoft. Microsoft determines the protocols for what can be captured to be processed, and as such, functions as a gate, a limitation. As a capsule which provides your view on the virtual world.

The computing engine itself can only achieve ultra speed in zero tolerance for unexpected deviations. Programming must be exactly right, otherwise the computer does not work at all. Therefore, in the early days only specialists could talk directly to computers. Humans can make mistakes, which requires the computer to put a buffer against those mistakes around it. Increasingly, this buffer consists of

software in the various generations that tell the computer what to do. What the specialist used to do in the early days is now done by the computer itself, the job is automated.

In ultra speed, the vehicle produces both the view on the engine as the view on the environment which is visited. One window shows the control panel, another window shows the nice website. Your travelling mind is fully encapsulated.

In part one and two, we have seen what kind of limitations can result from the requirements for ultra speed. These include a lack of social rationality and informal deviations of the formal model. In fact, when the informal but real environment is not according to the formal descriptions of it, the computer will get fooled. The computer only follows formal rules and will assume that the world behaves according to these formal rules. It will provide us with false information and in due time lose its credibility.

However, we have also seen that people can get feelings for numbers, can adapt to the requirements of quantification and build a system that can provide meaning and still adhere to the conditions for ultra speed. As we have seen in § 7.3.4.2., it is especially the statistical attitude towards numbers that creates a drive to accept algorithmic and empirical rationality only. Without such attitude, it definitely seems possible to transfer affective feelings and judgemental rationality with ultra speed. For example, in September 2005, I googled the word “help” and found a small 5,000 million hits, almost one hit per inhabitant on Earth. The ultra speed of Internet is also applied for the affective and judgemental side of humans. People can search people with similar interests and share virtual space. People revisit those places and thus create a culture by concentrated repetition.

A last remark concerning ultra speed is that it requires the traveller to leave his body home; it is a travelling without the body. In the following paragraph, this aspect of virtual travelling is elaborated further.

11.2.2 The body

As we saw above, ultra speed is superior and provides competitive advantage compared to anything slower. The quest for speed, to increase mobility is not just for fun; speed is one of the most strategic issues. However, great speed is not achieved without consequences, speed constrains.

In order to achieve such speed, concessions had to be done to the travelling unit. The speed of light can only be attained by light, not by human bodies or anything else which can be recognised as matter by the eye. In order to attain this speed, the body had to be left behind; was too slow to travel.

As we saw earlier (see §6.3.1), Nietzsche criticised the *eurocentrism* for focusing on rationality and objective reality. This mainstream western thinking concentrated on the Logos, our reasoning capacities, which (after Descartes made his iron distinction between the mind and the physical world) lacks any access to physical reality.

According to Nietzsche the body serves as presence, as well as detection of others. Its presence provides a perspective on the world and allows others to detect it, while the detection capacity helps us to take notice of the others vice versa. The body is thus both a passive and an active, yielding perspectival knowledge instead of universal knowledge. Nietzsche holds that universal knowledge does not exist. The understanding of the other takes place at the level of the body, even before any intellectual conception of it. With the body a continuous interplay between subject and object becomes possible, in which the traveller is the observer and the observed reversibly.

The intellect needs the body as the gate to reality. The body serves as the first framework to perceive the world; it selects the impressions that are important for us, and attaches the bodily affections and passions to our perceptions. At the gate we can meet the others; behind the gate, the intellect is lonely.

Nietzsche clearly declines the option of virtual travelling to raise awareness of reality. If one has not lived through the experience, one has no full appreciation of it. The experience can not be conveyed in full by communication, not only because each experience is so much more than words could describe, but foremost because any experience also involves affective aspects. Without experiencing something in presence, it is very hard to imagine the affections that one would experience if present. Without the body, only cognitive aspects can be conveyed, like only half the message (maybe not the most important half) can be transferred: only the words, not the corresponding feelings. This position is similar to Michel de Montaigne's³¹⁷ position, one of the very first western philosophers who wrote about travelling since classic times. Also for him, knowledge must be lived through, actually experienced, instead of read from books. Indeed there is a difference between reading a book about New York and actually being there, smelling the scents, hearing the noise, seeing the people, overwhelmed by the sky scrapers, etc. Reading provides a very perspectival view, while being there provides all sensory impulses simultaneously, provides a holistic view. But even further, being there provides the possibility to interact, to see how people react on one's own presence and acts.

With Nietzsche and Montaigne, I can agree with the idea that only presence can provide full knowledge of a situation, including the affections. We can safely

³¹⁷ Michel de Montaigne, *Essays*, Boom, Amsterdam, 2001

conclude that the development of knowledge has progressed without this dimension of affections. Our knowledge is based on the ratio, despite Nietzsche's attempts to warn us for that. Regularly, our knowledge is being criticised for being devitalised; for having no soul; for only recognising the objective facts that can be measured; for assuming a mechanical world, assuming humans are machines.

However, I would like to provide some nuance to this position by the statement that bodily contact is necessary, but this doesn't mean it must be my body that contacts before I can know anything. If I talk to a wise and experienced man, I may learn something from his history, provided he is telling me honestly. If I listen to other people's experience before I engage in an activity they have already been through, I will be better prepared than without this knowledge. I recognise that first hand knowledge provides the additional affective aspect, but second-hand knowledge can help me as well, can serve my life as well, can help me to appropriate much faster. Not making the mistakes others have made increases the speed of appropriation and is therefore valuable.

Of course, with second-hand knowledge I am fully dependent on the first interpreter, but then again, many of these first interpreters derive their value from being read. In other words, there can be mechanisms that counteract biases in this first interpretation. Without being in the situation, it remains difficult to verify (or falsify) statements about the situation, which is why the quality of the source of the statement is very important. Regular issuers of first statements will guard that quality, or become exposed and lose their business.

Another remark is that the loss of the body in the virtual interactions also means a loss of natural reference. As Nietzsche put it, the body provides a first framework for interpretation, before any intellectual comprehension. The body tells us immediately if an experience feels good or bad, tells us if the experience serves life or not³¹⁸. If we are only dealing with virtual entities, including our own presence being virtual (excluding the body), what will tell us where are our limits, where to construct constraints and where to establish borders?

Given that virtual travelling involves our attention only, we can assume that the limits of our attention will be imposed on our virtual environment. An example of this is the zapping of TV channels with the remote control. Our attention appreciates the new motion pictures, and the technology allows us to accommodate this. Zapping is not just confined to actions with the remote control, but as soon as we have experienced the easy possibility of transiting to other environments, our attention wants to see that feature in other aspects of life as well. Our time span of attention decreases in general, or reversely stated, speed is increasing in various

³¹⁸ Provided we listen carefully to our body.

aspects of life in sync. This requires relationships to deliver value continuously, or risk being ended. Again, it is not only the attention that causes such behaviour. In virtuality, technology must accommodate this behaviour or it will not happen. People must be willing, and technology must enable. So next to the character of our attention, limits will be set by the technology applied. The fragmented mind and high-technology as only reference bases will produce quite a different society than traditionally.

11.2.3 Horizon

Sloterdijk has shown us the importance of a horizon for giving meaning to life. Horizon translates into his term of the sphere, the bubble or the globe around people or societies. This sphere provides the space to meet each other, understand each other, work together and live together. Spheres provide meaning to life and are structures of power in society. See §5.2.

Weick (see §6.3.4) has shown us that closure is required in order to produce, to achieve goals and to create progress according to some plan. Openness to thirds, interacting with the unknown, changes the social cognitive configurations in which we think and act. Setting of an horizon and determining the degree of its openness are the most meaningful activities for human activity systems.

The emergence of virtual travelling has profound effects on the ability to create horizons, and thus on the processes of giving meaning to life and even on production.

Effects include:

- as mentioned above, virtuality provides powerful search engines which allows people to find each other, to link up. The structure of communities generated by such technologies, show the character of such technologies. Internet communities are scattered over the globe. However spiritually intimate, they are no physical neighbours. Conventional time and space proximity does not apply to this community; only virtual space is shared. And since internet communities can be protected by just a code or protocol, any resistance or feedback from the outside world regarding the ideas of the community can be easily kept out; can be excluded with a password and ignored safely.
- In as much as traditional social structures are local, ie. bounded to specific territory, this can lead to fragmentation of social structures. Power structures based on the closure of horizons may be weakened.
- Furthermore, the ease of travelling allows to do many travels, which leads to a fragmentation of personality, a fragmentation of the individual, who is socially inclined in many situations simultaneously. As if a multiple of

personalities compete for the attention of the individual. The prosecutor who reads child pornography at night.

- The speed of travelling causes a devaluation of proximity and an idealisation of the far away horizon. High speed requires emptiness to transit.
- The yet unknown and unclaimed piece of virtuality is an endless reservoir, enough for anyone. However, the infinity of virtuality provides no comfort as there is no horizon.
- The loss of natural reference (because the body was left behind), combined with the private ownership of the technology creates a Wild West in which everyone has to set his own limits.

Sloterdijk refers to foam to describe the current conditions for giving meaning. In virtual travelling, horizons are broken as closure is under pressure, time and place become fragmented, proximity becomes devaluated, as well as the body, while the horizon seems endless, open ended. The continuous supply of information pulls us out of our centre as it always brings something new. The abundant availability of possibilities stresses us to use them.

We may conclude that processes of giving meaning are under pressure in virtuality. They need attention and might need innovation. With Sloterdijk, we need to resolve the political crisis of the unmanageability of foam, the cognitive crisis of the lack of overview, and the psychological crisis of people living in infinity with decreasing solidarity.

Technology has solved many natural constraints. Traditional or natural horizons are broken and must be replaced to give meaning to our life.

Having lost natural opponents, man must define his own limits, set his own horizons.

11.2.4 The nomad

The nomad is an extreme case of a traveller: being continuously on the road, without permanent arrival, without home. An extreme may be illustrative and provide support when trying to appreciate a small deviation in the direction of the respective extreme. We may conclude that our increased mobility has raised the attention for travelling and for nomads.

Deleuze and Guattari³¹⁹, as mentioned before (see §6.1.5 and §6.3.2), provide insight into the characteristics of identities that are afloat; continuously in transit,

³¹⁹ Deleuze e.a., 1986

mobile, on the road. They also see that conventional (local) political systems are under pressure by mobile identities. They refer to two scales of this pressure on the law of the State.

According to them, the law of the State is not the law of All, but that of interior and exterior, claiming sovereignty over the interior. However, the State can not ignore its outside, and will be confronted with it in two directions: ³²⁰“huge worldwide machines branched out over the entire *ecumenon* at any given moment, which enjoy a large measure of autonomy in relation to States (for example commercial organisations of the multinational type)...but also the local mechanisms of bands, margins, minorities, which continue to affirm the rights of segmentary societies in opposition to the organs of State power.”

Since 1986, when their text was written, we have seen the emergence of another very powerful and very mobile entity, ie. the global financial markets (GFM). In terms of Deleuze e.a., the Global Economy can be considered as a war machine, as a multinational organ of exchange, of processes and flows. Although it is global and therefore somehow reflects the form of a circle, the GFM can not be considered as a sphere; it does not provide the comfort of Sloterdijk's globe. Definitely, the global economy is opposite to the State. The GFM are a threat to local power structures, because of the nomadic character of the GFM. Subsequently, it is interesting that most Western societies are privatising so many former state companies and utilities, inviting the global market, paralysing themselves.

Also Castells³²¹ pointed at the controversy of states having to join in the global economy, or more general, the exchanges between states and the network society. For example, when he describes the switches that connect networks as the privileged instruments of power and illustrates this by pointing at the financial flows taking control over media empires that influence political processes. Or³²², when he provides the example of the nation state, which is a locally bounded democratic representation that has to get involved in the global (non-local) market place. The globalisation of capital, multilateralisation of power institutions, and decentralisation of authority to regional and local governments³²³ induce a new geometry of power, perhaps inducing a new form of state, the network state.

³²⁰ Deleuze, 1986, p. 16

³²¹ Castells, 2003, p.502.

³²² Castells, 2003, part 2, ch. 5.

³²³ In the Netherlands it is currently trend to give responsibility back to the individual citizens.

A principle imbalance seems to favour the mobile multinationals at the cost of the nation state. Technology (research as well as applications) is owned privately, ie. by the multinationals, while the care for full employment of the population resides with the locally bounded governments. Lack of bread for the people overthrows governments.

Although multinationals are superior by their mobility already, they get the extra advantage of owning the technology that can increase mobility further. The governments get the impossible task of job-creation on a fixed piece of land in an open economy, without any tools or effective power, except the mechanism to reduce taxes, and subsequently weaken the financial strength of the government. Whether a government in such a context succeeds depends more on the market and circumstances elsewhere than on themselves, ie. is to be considered coincidence, or luck.

11.3 Illustration of speed and horizon in the EC case

In this paragraph, we will try to make the above generalisations less abstract by providing concrete examples of mentioned aspects, derived from earlier descriptions of the EC movement. We start with a very concrete example of the Rabobank history and see how the identity changes, as the bank involves more on international financial markets. Next, we see how the standardisation required for EC adds to the mobility of information and capital. Finally, we will discuss the most fundamental inconsistency in the EC movement, which is based on sedentary notions but aims at highly mobile targets.

Rabobank's history of externalisation.

Originally, the bank started as a local finance cooperative, where farmers would be members and borrowers, jointly responsible for the money they individually borrowed from the bank. People with savings (*the local rich*) could deposit their saving against a decent interest rate as a funding for the loans to the farmers. The cooperative locally organised solidarity around a common need - ie. the provision of finance when needed- and, with hindsight, proved to be very successful.

In the late 80's, early 90's Rabobank decided to orient internationally and started opening foreign offices. Mid 90's the bank decided to actively participate in the global financial markets and (internally) developed an investment banking division. Now we find the bank actively seeking the interests of investors in Japan, US or Europe to provide funding for the bank; we find the bank introducing portfolio management, which is the tool to manage all credits centrally, marked to the global financial markets.

Also now, if you open an account, you can become a member, but apart from your own account, you are responsible for nothing and own nothing, you are just invited for information-sessions about financial subjects.

The expansion of the bank in the various phases all have in common that it drives the orientation outwards. From the perspective of the original members, the commitment between bank and local person -the strength of the local relationship- has diminished.

For the bank as a whole, on the long term, this creates an ownership crisis: whose is it? Originally, the members were the owners of the bank. However, the bank itself (at least on local level) has reduced the title to ownership significantly in the last decades. Can the bank at the end of the day own itself, be a free person? Why would it exist?

Note, however, that in the mean time, farmers themselves have exited the sedentary relationship with the land and joined the merchants and even the informationalists. Farmers have connected themselves to international trade flows. A calf sees in its lifetime more of Europe than the average kid; while chicken are torn to pieces that go to different regions all over the globe. Of course, the bank was not isolated in its externalisation, in its acceleration; it was formed by the interactions in its context.

EC increases speed.

EC is a complex calculation, in terms of difficult formulas as well as in terms of quantity of items to be calculated. Calculation of EC must be performed by a quantitative model that is too complex to be transparent³²⁴. Design of the model is such that it can connect to the financial markets, for example with respect to format for specification of risk or price discovery and comparison. This connection increases distance between user of EC information and model. The user of the model can not directly relate output to his own input data, but needs to rely on the model to tell him how the portfolio is doing.

Local analysts need to adhere to centrally determined standards in order to produce consistent risk assessments. However, local analysts report many inconsistencies between standards and their local specific situation. In that case, the model must be tweaked or reality must be ignored to input the assessment. *Appropriation requires violence, also to the model.*

This quantification and standardisation is required to allow the ultra speed of processing the vast amounts of data. Without such speed, calculations would take too long to be of any value. Increasing the speed of calculations still improves a model significantly.

Furthermore, the standardisation allows the connection to the financial markets, which further adds to the increase in mobility of capital of the bank. A standardised loan can be sold on the market, join in the speed.

³²⁴ Except maybe for those whiz kids that made the model.

Given the current progress and popularity of the EC movement, the advantage of ultra speed seems to outweigh the inconsistencies in the theory. However, some reservations must be made as the theory is quite young and can still be regarded as unproven technology, next to the principle inability to test credit risk assessments in wholesale finance.

EC uses an inappropriate vehicle.

In order to connect to one of the most volatile and mobile networks, EC uses principles that assume stability and ignore change. The mainstream EC movement is based on data concerning historical facts, not concerning flows or forces. It measures positions, not changes, being based on empirical statistics. It's not just that the Law of Large numbers does not work in wholesale finance, the point is that reality is dynamic and complex, and that people are affective, care about some things more than maybe strictly rational. EC ignores changes by extrapolating from history, ignores the subjectivity in risk assessment, as well as the role of the bank itself.

EC is based on sedentary notions that do not take into account any of the postmodernist issues and tries to join the fastest on Earth in the vehicle of the farmer.

Note that recent developments in Credit Portfolio Management are aimed at providing future oriented probabilities of default. Of course, these can not be based on statistics about historical facts, but only on expert judgement. This example shows that the EC movement needs to step into another vehicle.

11.4 Conclusions of part three: implications of virtual travelling

In the analysis above we have seen that the ultra speed of virtual travelling changes basic references such as time and space. Space in general is depreciated, and the vicinity, proximate space is devalued most.

The necessary loss of the body in our virtual travelling loosens our link with reality considerable. In virtuality we miss our basic instrument to attach affective values to our experiences. Next to that, without the body, natural reference in general is missing.

Virtual space seems to be constrained only by availability and accessibility of technological means of generating, processing and distribution of appearances, and

whatever drives human attention. It seems that the majority of internet activity is related to sex.

Such endless space destroys horizons, which enable people to join and create meaningful relationships. Production or construction are hindered by the continuous inflow and outflow of information, ie. new people, new concepts, new roles. The individualisation that is accommodated by the technology increases the pressure on conventional local power structures, from families to governments.

The EC case -but also numerous other occasions can be found- shows that the most popular kind of appropriation entails the use of algorithmic rationality; the uses of fixed rules to describe reality, closed space, objective knowledge. Rule based knowledge is favourite in knowledge construction. Although we know better, we insist on objective knowledge.

However, risk, like all other perceptions of reality, has important affective, normative or judgemental components, which are denied in the formal EC approach.

Since the EC movement operates in a (regulated) business context, pragmatism is required in order to make operations continue. In short, banking organisations will say that they apply formal EC theory, but will act by an informal risk model that does answer to their expertise.

I think the danger in virtual travelling is that it will become indeed virtual, as in not referring to any reality. The EC case shows us that the virtual portfolio model risks its status as representation of something real, if an informal model emerges which actually drives behaviour. In this case, the strength of the computer (computing algorithms) is put as a severe constraint on the models of reality that are required to direct the calculation engines. Only algorithmic reality is allowed.

However, if reality doesn't fit in those constraints, it will just not get appropriated. We can say it does, but it just doesn't. If the constraints are too strong, they only describe an ideal world, and as such, are useless, fantasy.

The tragedy is that such longing for formalism, insisting on objective knowledge, denying of subjectivity, of social rationality and of the strength of human judgement, is not only inefficient, but has its impacts on the lives of fellow humans, because it is applied in our most powerful institutions.

12 Final summary

In this thesis we have investigated a (Rabobank) specific case of the EC movement, which is in itself an example of the virtual turn in society. After spending time to develop an approach, the thesis presents three parts of increasing generality, revolving about three research questions:

1. What are the characteristics and weaknesses of EC theory?
2. What are the social implications of the EC movement?
3. What are potential implications of the virtual turn in society at large?

The idea behind this set of questions is that society might be turning virtual; a transformation of society from monetary to informationalist society. The quantitative turn in banking, a.k.a. the EC movement, is a good example of this virtual turn in a specific segment of society. However, the banking sector is a core segment in society, a spin in its web. If we study the EC movement, we find out how this virtual turn takes effect in banking, and we might be able to extrapolate findings to a wider context than just banking.

In order to study the EC movement, a clinical case study was performed, ie. the Rabobank implementation of the BIS II/EC framework was used as a case of the quantitative turn in banking.

Investigation of literature in philosophy of science showed a postmodernist crisis of science and philosophy of science. Recently it has been shown that objective knowledge is not an adequate picture for scientific development, since testing is partial, goals for proper science conflict, context plays a decisive role, human interaction is important, etc. A set of complicating factors has been identified which complicate the formal (modernist) notion of science. Standard recent philosophy of science suggests a classification scheme for analysis of theories, attention for contextual factors as well as a multitude of perspectives. Nozick, who provides a functional response to post modernism, holds that rationality of knowledge is in the counteraction of biasing factors, such as the complications mentioned above. Finally, the philosophy of travelling was presented, based on an alternative conceptual morphology of exchanges, dynamics and flows, instead of objects, stability and facts. The philosophy of travelling provides a framework for historical analysis of society (and its main type of travelling), of epistemological and methodological notions, as well as a framework for current social analysis. In my view, this perspective explicitly deals with dynamics and uncertainties and is therefore most suitable to analyse risk theories.

Part one consists of a classification of EC theory and an investigation into specific issues in the content of the theory. The classification of EC theory showed that the EC movement develops in a regulated business context, and is driven by (ICT) technological developments, risk theory sophistication and financial markets developments (improving liquidity in credit financial instruments). Direct stakeholders are the Regulators, the shareholders, and credit risk management, who all expect significant improvements from EC. Furthermore, an ontological analysis of capital and credit risk showed that EC is a blurred concept about rare events. An epistemological analysis showed that formal or mainstream EC movement was based on empiricism, statistics and econometrics, while the Global Financial Markets provided information about reality for more advanced practitioners. A remarkable inconsistency was noted between the formal epistemology and the ontological nature of the subject of the theory. The subject is blurred and rare, while the formal school assumes the Law of Large Numbers. Next to that, risk is essentially normative and affective, therefore subjective, while the formal school declines any subjectivity and assumes objective risks.

Turning to issues in the content of EC theory, observations were made regarding risk concepts, diversification of risks, valuation principles and quantification. The study of the concept risk showed that risk is an old concept, but calculated risk, with its cornerstone of probability, has emerged as a concept after the middle ages, when man actively started to rule his own life, breaking away from religion or tradition. Risk requires causal structures to generate expectations, and normative statements to identify risks and acceptance levels; is subjective in terms of related to specific expectations, evaluations and performances, but also objective in terms of outside one person, accessible to third parties as well. Conceptually, portfolio credit risk –at the centre of EC theory- is not a well understood concept, borrowing concepts from capital markets, and assuming perfect markets. Next to that, we see that the prerequisites to apply the concept of calculated risk are failing in contexts of wholesale finance. Finally, in the company of regulators, we find that validation of the models is a weak point, with the possibility that there may never be adequate amounts of data.

The concept of diversification essentially says that a portfolio should not be concentrated, should be as diversified as possible. Adding volatility with less than 100% correlation with the portfolio reduces volatility, reduces risk. However, empirical studies suggest that diversification into unknown industries is a bad idea. Next to that, the Rabobank's credit policies require significant expertise concerning viability of the client, its industry, etc. This seriously restricts the available space to diversify. Finally, two examples of industry diversification from the bank's recent history were mentioned as cases where diversification did not yield promised results.

From a valuation perspective, capital is quite a blurred concept. It comes from different sources, is valued as a Net Asset Value, and thus subject to all valuation issues for all assets and liabilities. A significant issue concerns the accounting mismatch between banking and trading books, which makes that loans are valued by their cost price, while the hedges of the loans are valued by current market price.

The quantification issue revolves about the need for and constraints of quantification. EC theory quantifies risks by applying a central standard and numerical language, formatted on the econometric parameters of average, volatility and loss distribution. We find that the quantification is required in order to apply the benefits of mathematics and computers. Numbers can attain the speed of light in ICT systems. The link with strictly empiricist / statistical methodology creates the bottle neck of this approach: the indefinite need for objective data. Any proper level of differentiation in the model will be impossible to validate statistically. Expert based quantification provides an alternative.

As a final conclusion of this part of the thesis, it is noted that the weaknesses in the content of EC theory seem mostly attributable to the inconsistency between ontological nature of the subject and choice of epistemology/methodology. Risk is subjective, not an objective probability, it is not empirically measurable.

In part two, the social implications of the EC movement have been investigated. The EC movement is based on three fundamental developments that change society in a wider context than the EC movement. However, the EC movement also provides a strong impetus to these fundamental developments; it makes respective investments worthwhile. These fundamental developments include:

- ICT developments, creating a network society with speed of light technologies. The network society changes relations of productions, of power and of experiences.
- Risk management sophistication, creating a risk society in which awareness for the side effects of production becomes larger than for the production itself. Risk society is reflexive in terms of producing its own risks, fighting itself, being emancipated from natural hazards.
- Global economy, with its nerve centre: the global financial markets. Capital mobility has increased considerably, and the EC movement stimulates further acceleration. However, the global economy has many negative side effects. Since the EC movement is (also) based on privately owned technology, it will in first principle not improve global capitalism, and likely stimulate it further.

The philosophy of travelling was applied to identify the major types of travelling as ICT, Risk Management, Global Capitalism, and EC movement specific travelling.

ICT pulls us into the space of flows, where distance is determined by connection to flows, and timeless times, where all times are available simultaneously in the network. Risk management focuses us on the future, shows us how to appropriate the future. When risk management concerns issues that affect society, risk management becomes a political vehicle. Global Capitalism provides hyper mobility to equity, creating speed differentials with other business resources. Next to that, it provides an exit for capital, so it might run away for its responsibilities. EC movement travelling favours concentration of the industry, which is somehow contradictory with the adagio to diversify.

In part three, first the concept of virtuality was investigated in order to clarify what is meant with a virtual turn in society. Next, findings from the clinical case and the investigation of social implications were summarised and generalised in terms of its two main issues.

Origins of virtuality date back to Plato, with his theory of Ideas, or even before that, to the first use of the Word. As is shown, new in this virtuality is not the spoken or written word, but the digital word. Only the digital world can reach the ultra speed of our ICT.

Virtual travelling is technologically supported, hence the interactions are mediated by technology, mixing environments and de-linking time and place, with superior processing speed and external storage capacity and putting human judgement on a distance, since the machines need algorithmic rationality.

Indications of the existence of the virtual turn were derived from business, politics, culture, private life, etc.

Summarising parts one and two, it was concluded that the EC movement is based on a powerful tool, based on speed of light technology and geared towards the financial markets, but sacrificing many human aspects. For example, in the recognition that risk assessment is essentially subjective, that the bank has its own role in the developments of risks, etc.

Generalising the conclusions, we find that two issues must have a major impact on the orientation of (people in) society; the ultra speed of virtual travelling, and related to that, the breaking of traditional horizons based on locality. Questions pop up regarding how to give meaning and feel solidarity with other people; how to produce if we all turn into nomadic warriors; should we constrain technological possibilities, or constrain where our attention goes to, and if so, how?

In my opinion, one should apply a proper epistemology, adequate for the nature of the subject. The approach should fit the circumstances. This means that human judgement must be included in the formal approach, or there will be an informal approach that guides our actions, and a formal approach for the regulators or other

formalists. Next to that, I believe that the involvement of people also produces commitment and democratic participation in the design of tomorrow's world. Given the constraints of current technology and concepts, there is a lot to win.

At the end of this thesis, it is clear that the virtual turn –and in particular its design and fundamental principles, will change our lives. When turning virtual, we should ask ourselves: does the technology do all the thinking, or should we keep the essential judgements to ourselves? After all, only humans can give meaning to life.

13 Dutch summary / Nederlandse samenvatting

De Economic Capital beweging, of de kwantitatieve wending in bankieren.
Een case studie over de virtuele wending in de maatschappij.

In deze these is een (Rabobank) specifieke case van de Economic Capital (EC) beweging onderzocht, die zelf weer een voorbeeld is van de virtuele wending in de maatschappij. Nadat een (filosofische) benadering van het probleem is ontwikkeld, worden in drie delen, die oplopen in algemeenheid, drie onderzoeksvragen behandeld:

1. Wat zijn de karakteristieken en zwakheden van de EC theorie?
2. Wat zijn de sociale implicaties van de EC beweging?
3. Wat zijn potentiële implicaties van de virtuele wending in het algemeen?

Het idee achter deze set vragen is dat de maatschappij virtueeler wordt, dat wil zeggen dat de maatschappij transformeert van een monetaire naar een informatie maatschappij. De kwantitatieve wending in bankieren, hier de EC beweging genoemd, is een goed voorbeeld van deze virtuele wending in een bepaald segment van de maatschappij. In de EC beweging wordt risico gekwantificeerd en in verband gebracht met de opbrengst. Risico wordt letterlijk gekapitaliseerd. Echter, banken vormen een kern onderdeel van de maatschappij, als een spin in zijn web. Wanneer we de EC beweging bestuderen, ontdekken we hoe de virtuele wending plaatsvindt binnen het bankieren, en kunnen we wellicht bevindingen extrapoleren naar een bredere context dan het bankieren.

Om de EC beweging te kunnen bestuderen is een zogenaamde klinische case studie uitgevoerd. De implementatie van het BIS II/ EC raamwerk in de Rabobank is gebruikt als een case van de kwantitatieve wending binnen banken.

Literatuuronderzoek in wetenschapsfilosofie toonde aan dat de wetenschap en de wetenschapsfilosofie in een postmoderne crisis verkeren. Recentelijk is aangetoond dat objectieve kennis geen adequaat beeld schetst van wetenschappelijke ontwikkeling, aangezien testen altijd partieel is, doelen van goede wetenschap conflicteren, context een bepalende rol speelt, menselijke interactie belangrijk is, enzovoorts. Een set met complicerende factoren is geïdentificeerd die het moeilijk maken om het formele (modernistische) model van wetenschap vol te houden.

Standaard hedendaagse wetenschapsfilosofie suggereert een klassifikatie schema voor analyse van theorieën, aandacht voor contextuele factoren en een multitude aan perspectieven. Nozick, die een functioneel antwoord op het postmodernisme formuleert, stelt dat rationaliteit van kennis gelegen is in het tegengaan van de

factoren die een afwijking in onze kennis produceren, zoals de complicerende factoren die hierboven werden genoemd.

Tenslotte is de filosofie van het reizen gepresenteerd, gebaseerd op een alternatieve conceptuele morfologie van uitwisselingen, dynamiek en stromen, in plaats van objecten, stabiliteit en feiten. De filosofie van het reizen biedt een alternatief raamwerk voor historische analyse van de maatschappij (en haar belangrijkste typen reizen), van epistemologische en methodologische concepten, en biedt een raamwerk voor sociale analyse. In mijn ogen gaat dit perspectief expliciet uit van dynamiek en onzekerheden en is daarom het meest geschikt om risico theorieën te analyseren.

Deel een bestaat uit een klassifikatie van EC theorie en uit onderzoek naar specifieke kwesties betreffende de inhoud van de theorie.

De klassifikatie van EC theorie toonde aan dat de EC beweging zich ontwikkeld in een bedrijfscontext in een gereguleerde industrie, en wordt gedreven door technologische ontwikkelingen, door verbetering in risico theorie en door ontwikkelingen op de financiële markten (waar de liquiditeit van financiële instrumenten op gebied van krediet risico verbeterd). Directe belanghebbenden in de EC beweging zijn de toezichthouders (De Nederlandse Bank), de aandeelhouders, en krediet risico management, die allemaal significante voordelen verwachten van EC.

Verder toonde een ontologische analyse van kapitaal en krediet risico aan dat EC een verwarrend concept is over zeldzame gebeurtenissen. Een epistemologische analyse toonde aan dat de formele of hoofdstroom in de EC beweging gebaseerd is op empiricisme, statistiek en econometrie, terwijl de globale financiële markten voorzien in informatie voor partijen die meer geavanceerd zijn in toepassing van EC. Een opvallende inconsistentie tussen de formele epistemologie en de ontologische aard van het onderwerp van de theorie werd blootgelegd. Het onderwerp is ambigu en zeldzaam terwijl de formele school uitgaat van de Wet van de Grote Getallen. Daarnaast is risico in essentie normatief en affectief, terwijl de formele school iedere subjectiviteit afwijst en objectieve risico's veronderstelt.

Wanneer we ons tot de kwesties betreffende de inhoud wenden, kunnen observaties worden gemaakt over risico concepten, diversificatie van risico, waarderingsprincipes en kwantificering.

Het onderzoek naar het concept risico toonde dat risico een oud concept is, maar dat berekend risico, met als hoeksteen waarschijnlijkheid, pas op kwam sinds de middeleeuwen, nadat de mens actief zijn eigen leven vorm gaf, en wegbrak van religie of traditie. Risico vereist causale structuren waarop verwachtingen worden gebaseerd, en normatieve stellingnames om risico en acceptatie niveaus te

identificeren. Risico is subjectief omdat het gerelateerd is aan specifieke verwachtingen, evaluaties en resultaten van inspanningen, maar ook objectief in de zin dat het buiten een persoon ligt, en toegankelijk is voor derden. Conceptueel is portefeuille krediet risico –de grondslag van EC theorie- niet een goed begrepen concept, dat geleend is van de kapitaal markt en uitgaat van perfecte markten. Daarnaast zien we dat aan de voorwaarden om het concept van berekend risico toe te passen niet voldaan wordt in de context van wholesale finance (het onderzoeksterrein in deze these). Tenslotte, in goed gezelschap van de toezichthouders, vinden we dat de validatie van de modellen een zwak punt vormt, met de mogelijkheid dat er nooit adequate hoeveelheden data zullen zijn.

Het concept diversificatie binnen EC theorie stelt dat een portefeuille niet geconcentreerd zou moeten zijn, zo gediversifieerd mogelijk zou moeten zijn. Het toevoegen van volatility aan een portefeuille die minder dan 100% gecorreleerd is reduceert volatiliteit, reduceert risico. Echter, empirische studies suggereren dat diversificatie richting onbekende industrieën een slecht idee is. Daarnaast vereist het kredietbeleid van de Rabobank een behoorlijke expertise over de (financiële) levensvatbaarheid van de klant, de industrie waarin de klant werkzaam is, etc. Dat is een serieuze beperking wat betreft de ruimte om te diversificeren. Tenslotte laten twee recente gevallen waarin de Rabobank diversificeerde zien dat dat niet altijd de gewenste resultaten oplevert.

Vanuit het perspectief van waardering kunnen we stellen dat kapitaal een ambigu concept is. Het komt voort uit verschillende bronnen, en is gewaardeerd als de netto waarde van de activa, en daarom beïnvloed door alle waarderingskwesties van activa en passiva. Een belangrijke kwestie is de inconsistentie in boekhoudkundige behandeling tussen bank boeken en handelsboeken, hetgeen veroorzaakt dat leningen worden gewaardeerd tegen historische kostprijs, maar de mitigatie van de leningen (de ‘hedges’) tegen huidige marktprijs.

De kwestie van kwantificering behelst de noodzaak en beperkingen van kwantificering. EC theorie kwantificeert risico door het toepassen van een centrale standaard en numerieke taal, gericht op de econometrische parameters van gemiddelde, volatiliteit en verlies verdeling. We vinden dat de kwantificering is vereist om de voordelen van computers en wiskunde te verzilveren. Getallen kunnen de snelheid van het licht bereiken in ICT toepassingen. Het verband met stricte empiricistische en statistische methodologie creëert het probleem van de huidige benadering: de oneindige behoefte aan objectieve data. Ieder toepasbaar niveau van differentiatie van risico in het model zal onmogelijk te valideren zijn volgens statistische normen. Kwantificering gebaseerd op expertise biedt een alternatief.

Als uiteindelijke conclusie van dit deel wordt opgemerkt dat de zwakheden in de inhoud van EC theorie voor het grootste deel lijken te worden veroorzaakt door de inconsistentie tussen de ontologische aard van het onderwerp en de keuze van epistemologische en methodologische benadering. Risico is subjectief, geen objectieve waarschijnlijkheid.

In **deel twee** worden de sociale implicaties van de EC beweging onderzocht. De EC beweging is gebaseerd op drie fundamentele ontwikkelingen die de maatschappij veranderen in een bredere context dan de EC beweging. Echter, de EC beweging is wederzijds ook een sterke stimulerende factor voor deze fundamentele ontwikkelingen; de EC beweging voegt waarde toe aan investeringen in deze ontwikkelingen. De fundamentele ontwikkelingen zijn:

- ICT ontwikkelingen creëren een netwerk maatschappij met technologieën die werken met de snelheid van het licht. De netwerk maatschappij verandert huidige relaties van productie, van macht en van ervaringen.
- Vooruitgang in Risk Management creëert een risico maatschappij waarin de aandacht voor de neven-effecten van productie groter is dan de aandacht voor productie zelf. De risico maatschappij is reflexief in de zin dat zij haar eigen grootste risico's produceert, vechtend tegen vooral zichzelf, geëmancipeerd van de natuurlijke risico's.
- De globale economie, met haar zenuw centrum: de globale financiële markten. Mobiliteit van kapitaal is toegenomen, en de EC beweging stimuleert een hogere versnelling. De globale economie heeft echter vele negatieve neven-effecten. Aangezien de EC beweging ook is gebaseerd op technologie in prive eigendom, zal het in principe globaal kapitalisme niet beter maken, en het waarschijnlijk nog meer stimuleren.

De filosofie van het reizen is gebruikt om de belangrijkste typen van reizen te identificeren als ICT, Risk Management, Globaal Kapitalisme en een type reizen specifiek voor de EC beweging. ICT trekt ons in de ruimte van stromen, waar afstand wordt bepaald door connectie met stromen en nul of oneindig is, en trekt ons in de tijdloze tijd, waarin alle tijden tegelijkertijd beschikbaar zijn in het netwerk. Risk management concentreert zich op de toekomst en toont hoe we ons de toekomst kunnen toeëigenen. Wanneer risico management zich richt op maatschappelijke kwesties, wordt risico management een politiek vehikel. Globaal kapitalisme voorziet bedrijfskapitaal van hyper mobiliteit, hetgeen leidt tot snelheidsverschillen met andere hulpbronnen van een bedrijf. Daarnaast biedt globaal kapitalisme een exit voor kapitaal, door voortdurend alternatieven te bieden, waardoor kapitaal aan haar verantwoordelijkheden kan ontsnappen. Het specifieke reizen in de EC beweging stimuleert concentratie van de banken industrie, hetgeen enigszins in tegenspraak is met het adagium om altijd te diversificeren.

In **deel drie** wordt eerst het concept virtualiteit onderzocht om te verduidelijken wat bedoeld wordt met een virtuele wending. Vervolgens worden de bevindingen van de klinische case en uit het onderzoek naar de sociale implicaties samengevat en veralgemeniseerd naar de twee belangrijkste kwesties.

De oorsprong van virtualiteit gaat terug naar Plato met zijn theorie van Ideëen, of naar nog eerder, naar het eerste gebruik van het Woord. Zoals wordt aangetoond is het nieuwe in onze virtualiteit niet het gesproken of geschreven woord, maar het digitale woord. Alleen het digitale woord kan de snelheid van het licht bereiken van ICT.

Virtueel reizen is technologisch ondersteund, waardoor de interacties tussen mens en omgeving geïntermedieerd worden door technologie, waarbij omgevingen vermengd worden en tijd en plaats irrelevant worden, met superieure proces snelheden en externe opslag capaciteit, en waarbij menselijk oordeelvermogen aan de kant wordt gezet, omdat computers een algoritmische rationaliteit behoeven. Indikaties van het bestaan van de virtuele wending werden afgeleid uit het bedrijfsleven, de politiek, de cultuur, privé leven, etc.

Wanneer we deel een en twee samenvatten kunnen we concluderen dat de EC beweging is gebaseerd op een krachtig gereedschap, gebaseerd op technologie met de snelheid van het licht en gericht op de financiële markten, maar veel menselijke aspecten opoffert. Bijvoorbeeld, door het niet erkennen dat risico assessment in essentie subjectief is, dat de bank zelf een rol speelt in de ontwikkeling van risico's, etc.

Wanneer we verder generaliseren op basis van de conclusies over de EC beweging vinden we twee kwesties die een grote invloed zouden moeten hebben op de oriëntatie van (mensen in) de maatschappij; de ultra snelheid van virtueel reizen, en daaraan gerelateerd het breken van traditionele horizonten op basis van lokaliteit. Vragen worden opgeroepen hoe we zin kunnen geven en solidariteit kunnen ontwikkelen met anderen; hoe we moeten produceren als iedereen een nomadische krijger wordt; of we beperkingen aan technologie moeten stellen, of beperkingen aan waar onze aandacht naar mag uitgaan, en zo ja, hoe?

In mijn ogen dient de gebruikte epistemologie aan te sluiten bij de aard van het onderwerp. De benadering moet aansluiten op de omstandigheden. Dat betekent dat menselijk oordeelvermogen in de formele benadering moet worden opgenomen. Anders zal er een informele benadering zijn die onze acties stuurt, en een formele benadering voor de toezichthouder en andere formalisten. Daarnaast geloof ik dat het betrekken van mensen in zaken een betrokkenheid kweekt en democratische

participatie in het ontwerp van de wereld van morgen. Gegeven de beperkingen van huidige technologie en concepten is er veel te winnen.

Aan het eind van deze these is het duidelijk dat de virtuele wending – en in het bijzonder haar ontwerp en eerste principes- onze levens zal veranderen. Wanneer we virtueel worden moeten we ons afvragen: doet de technologie alle denken, of zouden we de belangrijke overwegingen zelf moeten maken? Tenslotte kunnen alleen mensen zin geven aan hun leven.

14 Appendix: Analysis of the Rabobank econometric model for (credit) EC.

During 2002, the contours of the Group policies and standards have become clear in the sense that a Group Credit Risk Methodological document has been issued, to which Business Units (BUs) must adhere while building their specific frameworks. This Group model is also used to calculate Economic Capital and Raroc on a BU level.

Since September 2001, the RI/CC BIS II/EC programme has been working on development and implementation of a BIS II compliant EC framework within Rabobank International and Corporate Clients. The main focus to date was on segmenting the portfolio and creating rating tools for the various segments, as well as creating the proper IT infrastructure to process all required data to calculate and report about BIS II regulatory and Economic capital. As of 2003, a new focus on Loss Given Defaults and Exposure at Defaults was added, evidenced by the recent implementation of the standard corporate LGD EAD Assessment (LEA) tool in April 2004.

One of the major milestones of the programme is to start measuring EC and EVA of the entire credit portfolio per January 2005 in a bottom up approach, ie. by assessing each separate facility and aggregating that information to portfolio levels.

In that respect, the credit risk methodology working group within RI considers it essential to analyse the reliability of the outcomes of the current framework, in order to properly appreciate the results of the calculations per January 2005 (assuming unchanged progress of current plans).

This analysis may provide input for a discussion involving a review of the programme priorities regarding model development within the next year horizon, as well as a qualitative assessment of the reliability of the EC framework.

The analysis below identifies issues in a) the basic risk measurement framework (regarding PDs, EADs, and LGDs); b) in the higher layers which convert the basic risk indicators into Unexpected Loss and Economic Capital; as well as c) issues regarding risk management; or d) business applications.

- *Risk measurement (Basic layer)*: PD (rating) tools are well appreciated in the network, and governance procedures have been agreed within the Rabobank Group. However, no objective proof that models are accurate is available and it is expected that this will not become available in the near future as well due to data limitations. EAD and LGD tools are still very new and considerably different from what used to be. In other words, the LEA tool is quite experimental and requires cultural and organisational changes, which have not all completely been achieved yet. In fact, in 2004 the model is in an experimental phase and not yet formally approved and embedded in current credit processes. For example, there is no integration in the credit application yet.
Furthermore, portfolio coverage of LGD models is incomplete, while a longlist of required improvements for LEA has been identified.
In summary, PDs are perceived as reliable, although empirical feedback and validation are problematic and need to be organised for. LGDs are experimental with required improvements already identified by first users. Furthermore, in reality LGDs are assumed to be quite volatile, which is not accounted for in the model.
- *Risk measurement (Higher layers)*: Higher layers of the model are currently fully (external) benchmark based, while it is unclear how the benchmark was constituted. It is clear that RI has a focused portfolio in non-mainstream segments regarding corporates. Up to date, risk management RI has not succeeded in getting proper information about the exact portfolio, so it is dubious whether the consultants have been able to properly assess the specific character of RI's portfolio. Furthermore, theoretical analyses show that reality could deviate significantly (up to 100%) from benchmark values, but as yet there is no empirical backing or rejection of the current framework. What is clear is that the benchmarks will not react to changes in the portfolio, as they are static, not updated. Finally, given that the model is based on the concept of volatility as risk, it may be concluded that essential components of loss volatility as not included in the current (Rabo Group) framework.
- *Risk management* issues refer to model governance, back testing, validation and stress testing, monitoring, risk(/return) reporting and database management, as well as business support concerning model issues. Non of these issues is currently adequately organised to ensure reliability of EC framework results. This is in line with the project phase of most of the tools, ie. only PDs are well implemented, tools for other variables, such as LGDs and correlations are still under development. Before an acceptable level of reliability can be ensured, governance procedures, as well as risk

reporting infrastructure and model support and maintenance units must be established. Currently, there is no department within RI that can perform governance activities. Especially data base maintenance will require attention and needs to be organised in order to anticipate explicit future user requirements.

- *Business applications* involve pricing, performance measurement and portfolio management activities. It is clear that ambiguities in the underlying risk models are reflected in any business application and particularly in the reliability of business applications.

RI is at the start of a potential very beneficial learning cycle. Already large improvements in making risks transparent have been achieved, compared to the “BIS I” context. Current results, based on new PDs, EADs and LGDs for the standard corporate portfolio, are promising but first estimates, with significant uncertainties regarding these estimates identified already. The basic layer is considered acceptable on portfolio level, but not on singular asset level. For the higher layers, involving the calculation of EC, reliability is doubted.

15 Literature

- Acharya, V.V., Hasan, I., and Saunders, A., Should banks be diversified? Evidence from individual bank portfolios, BIS Working Papers, no 118, Monetary and Economic department, sep 2002, www.bis.org.
- Aguais, S., Forest, L., Rosen, D., Building a Credit Risk Valuation Framework for Loan Instruments, Algo Research Quarterly, vol. 3, no. 3 Dec. 2000.
- Basel Committee on Banking Supervision, Supervisory risk assessment and early warning systems, December 2000.
- Basel Committee on Banking Supervision, The new Basel capital accord, BIS, June 2004.
- Basel Committee on Banking Supervision, The new Basel capital accord, second consultative proposals, BIS, January 2001.
- Basel Committee on Banking Supervision, Credit risk modelling and practices, April 1999.
- Beck, U. Risk society: Towards a new modernity. Sage, London, 1992
- Bernstein, P.L., Against the gods: The remarkable story of risk, John Wiley & Sons, New York, 1996.
- Bersselaar van den, Wetenschapsfilosofie in veelvoud, fundament voor professioneel handelen, Coutinho, Bussum, 1997
- Bessis, J., Risk management in banking, 2nd edition, John Wiley and Sons Ltd, New York, 2002
- Bikhchandani, S., Sharma, S., Herd Behavior in Financial Markets, IMF Staff Papers, vol 47, no 3, 2001
- Boon, L., de Vries, G., Wetenschapstheorie, de empirische wending, Wolters Noordhoff, Groningen, 1989.
- Bos, J.J., Prestatiebeoordeling in banken, PhD thesis at University of Twente, November 1999.
- Bots, J.M., et al., Bestuurlijke Informatiekunde, Cap Gemini Publishing/Pandata B.V., Rijswijk, 1990
- Botton, A. de, The art of travel, Penguin, London, 2003
- Braidotti, Rosi, de weg van de nomade, complete text of the socrates lecture, Stichting Socrates, Utrecht, 1993
- Brealey, R.A., Myers, S.C., Principles of corporate finance, Mc Graw-Hill, USA, 1996
- Caouette, J.B., Altman, E.I., Narayanan, P., Managing Credit Risk, the Next Great financial challenge, John Wiley & Sons, NY, USA, 1998.

- Castells, M., The rise of the network society, 2nd edition, volume 1 from The information Age: economy, society and culture, Blackwell Publishing, 2003
- Cavallo, M., Majnoni, G., Do banks provision for Bad loans in Good times?, empirical evidence and policy implications, Feb, 2001, Worldbank.
- Checkland, P., Systems Thinking, Systems Practice, John Wiley and Sons Ltd., West Sussex, 1993,
- Cools, C., Capital structure choice: confronting (meta)theory, empirical tests and executive opinion, Dissertation KUB, Drukkerij Uitgeverij H. Gianotten b.v., 1993
- Cooper, R., Organization/Disorganization, Social Sciences Information (SAGE, London, Beverly Hills and New Delhi), 25, 2, 1986
- Crouhy, M., Galai, D., Mark, R., Risk management, comprehensive chapters on market, credit and operational risk, Mc Graw Hill, New York, 2001
- Dale Adamson, G., Philosophy in the age of science and capital, Continuum, London, 2002
- Davis, G.B., and Olson, M.H., Managementinformatiesystemen, Academic Service, Schoonhoven, 1987
- Deleuze, Gilles & Guattari, Felix, Nomadology: the War machine, Semiotexte, Columbia University, New York, 1986
- Doff, R., Economic Capital en risicobeheer bij banken, NIBE-SVV, Amsterdam, 2004
- Duffhues, P.J.W., Ondernemingsfinanciering en vermogensmarkten, Wolters Noordhoff, Groningen, 1994
- Dunbar, N., Basel's new credit model, risk and origin of Basel's model, Risk magazine, March 2001.
- Federal Reserve System Task Force on Internal Credit Models, Credit Risk Models at major US Banking institutions: Current state of the art and implications for assessments of Capital adequacy, New York, May 1998
- Foucault, Michel, & Deleuze, Gilles, Nietzsche als genealoog en als nomade, Sun, Nijmegen, 1981
- Frey, R., McNeill, A., Nyfeler, M., Copulas and credit models, Risk Magazine, Oct. 2001
- Gergen, Kenneth J., Organization Theory in the Postmodern Era, in Rethinking Organizations, new directions in organization theory and analysis, edited by Michael Reed and Michael Hughes, Sage, London, 1993
- Giddens, A., Runaway world, How globalisation is reshaping our lives, Profile Books Ltd., London, 1999.
- Gordy, M., A taxonomy of credit risk models, Journal of Banking & Finance, January 2000.

- Hassard, J., Pym, D., The theory and philosophy of organizations, Routledge, London, 1993
- Hirtle, B.J., Levonian, M., Saidenberg, M., Walter, S., Wright, D., Using Credit Risk Models for Regulatory Capital: Issues and Options, Economic policy Review, Fed. Res. Bank of NY, March 2001, www.newyorkfed.org/rmaghome
- Iwawaki-Riebel, Toyomi, Nietzsches Philosophie des Wanderers, interkulturelles Verstehen mit der Interpretation des Leibes, Königshausen & Neumann, Würzburg, 2004.
- Kayzer, W., Een schitterend ongeluk, Wim Kayzer ontmoet Oliver Sacks, Stephen J. Gould, Stephen Toulmin, Daniel C. Dennet, Rupert Sheldrake an Freeman Dyson, Uitgeverij contact, Amsterdam, 1995
- Koyluoglu, H.U., Hickman, A., Reconcilable differences, Risk Magazine, October 1998.
- Krishnamurti, J., Freedom from the known, Krishnamurti Foundation India, Madras, 1969
- Kyburg and Smokler, Studies in subjective probability, John Wiley & Sons Inc., New York, 1964
- Laudan, L., Science and Relativism, some key controversies in the Philosophy of Science, University of Chicago Press, London, 1990
- Leed, E.J., The mind of the traveler, from Gilgamesh to global tourism, Basic books, inc., USA, 1991
- Leeuw De, A.C.J., Organisaties: Management, analyse, ontwerp en verandering, Van Gorcum, Assen/Maastricht, 1986,
- Leezenberg, M., de Vries, G., Wetenschapsfilosofie voor geesteswetenschappen, Amsterdam University presss, Amsterdam, 2001.
- Lehrer, K., Beanblossom, R.E., Thomas Reid's Inquiry and Essays, The Bobbs-Merril Company, Indianapolis, 1975
- Lemaire, Ton, Filosofie van het landschap, Ambo, Baarn, 1970
- Levinas, Tijd en de ander, Ambo, Baarn, 1989
- Mönnich, C.W., Banning, W., van der Veen, A., Schulte Nordholt, H., De mens op reis, Het Spectrum, Utrecht, 1959.
- Moody's investor service special comment,, RiskCalc private model: Moody's default model for private firms, May 2000.
- Nietzsche, Friedrich, Genealogie der moraal, Uitgeverij De Arbeiderspers, Amsterdam, 1980
- Nozick, R., Invariances, the structure of the objective world, Harvard University Press, 2001, Cambridge, Massachusetts.
- O'Brien, P. Cash flows versus earnings, in Mastering finance, Financial Times, London, 1998
- Oldenkamp, B., Derivatives in portfolio management, PhD thesis at University of Rotterdam, January 1999.

- Ong, M.K., Internal Credit Risk Models, Capital allocation and performance measurement, Risk Books, London, 1999
- Peperstraten, F. van, Samenleving ter discussie, Coutinho, Bussum, 1999
- Peursen van, C.A., Michel de Montaigne, reizen als wijsgerige houding, H.J.Paris, Amsterdam, 1954
- Peursen van, C.A., Riskante filosofie, een karakteristiek van het hedendaagse existentiële denken, Paris, Amsterdam, 1955
- Polanyi, Michael, The tacit dimension, copyright 1966, reprinted 1983, Doubleday & Company Inc. ISBN 0-8446-5999-1.
- Prigogine, Ilya & Stengers, Isabelle, Orde uit chaos, Uitgeverij Bert Bakker, Amsterdam, 1988.
- Pröpper, I.M.A.M., Inleiding in de organisatietheorie, VUGA, Den Haag, 1993
- Reed, M., Hughes, M., Rethinking organizations, New directions in organization theory and analysis, Sage, London, 1993, p.3
- Report of a Royal Society Study Group, Risk: analysis, perception and management, London, The Royal Society, 1992, fifth impression, 2002.
- Rescher, N.: Pluralism, Against the demand for consensus, Clarendon Press, Oxford, 1993,
- Saunders, A., Credit Risk Measurement, New approaches to value at risk and other paradigms, John Wiley & Sons, NY, 1999
- Schinasi, G.J., Smith, R.T., Portfolio diversification, Leverage, and financial contagion, IMF staff papers, vol 47, no. 2, IMF, 2000
- Schipper, F., Zin in organisatie, Boom Amsterdam, 1993
- Schweickart, D., After capitalism, Rowman & Littlefield Publishers, Inc., Oxford, 2002
- Simon, H.A., The new science of management decision, Harper & Row, New York, 1960
- Singer, P., One world, the ethics of globalisation, Yale University Press, New Haven / London, 2004
- Sloterdijk, P., Sferen, Boom, Amsterdam, 2003
- Sloterdijk, P., Sphären III, Schäume, Suhrkamp, Frankfurt am Main, 2004
- Tierney, J., Misra, R., The driving force of credit, Risk magazine, March 2001.
- Virillo, Paul, Het horizon-negatief, Uitgeverij Duizend & Een, Amsterdam, 1989.
- Voogt, A.A., Managen van meervoudige contexten, Eburon, Delft, 1990
- Weick, K.E., Perspectives on Actions in Organisations, in Lorsch, J.W., Handbook of organisational behaviour, Prentice Hall, Englewood Cliffs, N.J., 1987.
- Willemsen, H., Woordenboek Filosofie, van Gorcum, Assen/Maastricht, 1992

- Wolterstorff, N., "Thomas Reid on Rationality", edited by H.Hart, J. van der Hoeven, N. Wolterstorff, in Rationality in the Calvinian Tradition, University Press of America, London, 1983
- Young, G.L., Environment: term and concept in the social sciences, Social Science Information (SAGE), London, 25, 1 (1986),