KU LEUVEN

FACULTEIT SOCIALE WETENSCHAPPEN

Behaviour-based Personalisation in Health Insurance: a Sociology of a not-yet Market

Gert MEYERS

Proefschrift aangeboden tot het verkrijgen van de graad van Doctor in de Sociale Wetenschappen

Promotor: Prof. Dr. Ine Van Hoyweghen
Onderzoekseenheid: Centrum voor Sociologisch Onderzoek [CeSO]

2018

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Prof. Dr. Bart Kerremans (voorzitter)
Prof. Dr. Ine Van Hoyweghen (promotor)
Prof. Dr. Rudi Laermans [KU Leuven]
Prof. Dr. Turo-Kimmo Lehtonen [University Tampere, Finland]
Prof. Dr. Liz McFall [University of Edinburgh]
Prof. Dr. Gert Verschraegen [Universiteit Antwerpen]

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La Clairvoyance (René Magritte, 1936), reproduction by Pauline Swinnen (picture: Sven Peremans)

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List of Abbreviations

[DC]	Double Click
AI	Artificial Intelligence
ANT	Actor-Network Theory
B&A	Behaviour and Attitudes
B2B	Business-to-business
BIVV	Belgisch Instituut voor Verkeersveiligheid
CBO	Chief Behavioural Officer
CEO	Chief Executive Officer
EMEA	Europe, Middle-East & Africa
FAQ	Frequently Asked Question
GDPR	General Data protection Regulation
GNDA	Genetic Non-Discrimination Act
GDP	Gross Domestic Product
GPS	Global Positioning System
HIV	Human Immunodeficiency Virus
HMO	Health Maintenance Organisation
ICLAM	International Committee for Insurance Medicine
IoB	Internet of Business
IoT	Internet of Things
IQPC	International Quality and Productivity Center
M2M	Machine-to-Machine
ML	Machine Learning
NN	Nationale Nederlanden
OECD	Organisation for Economic Co-operation and Development
OPP	Obligatory Point of Passage
PAYD	Pay as you Drive
PAYL	Pay as you Live
PHYD	Pay how you Drive
ROI	Return on Investment
SDK	Software Development Kit
SIF	Supposedly Irrelevant Factor
STS	Science and Technology Studies
TDI	The Digital Insurer
UBI	Usage-based Insurance
WMD	Weapon of Math Destruction

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> 'Notre rapport avec le vrai passe par les autres. Ou bien nous allons au vrai avec eux, ou ce n'est pas au vrai que nous allons.' (Merleau-Ponty, 1953, p. 37)

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> 'Il n'y a pas de vérité sans eux, mais il ne suffit pas, pour atteindre au vrai, d'être avec eux.' (Merleau-Ponty, 1953, p. 37)

Just to say: if anything went wrong, despite the good care and attention by all of you, it is up to me.

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Leuven, 10 mei 2018

1. Introduction – Behaviour-based Personalisation in Insurance: a Sociology of a 'Not-yet' Market

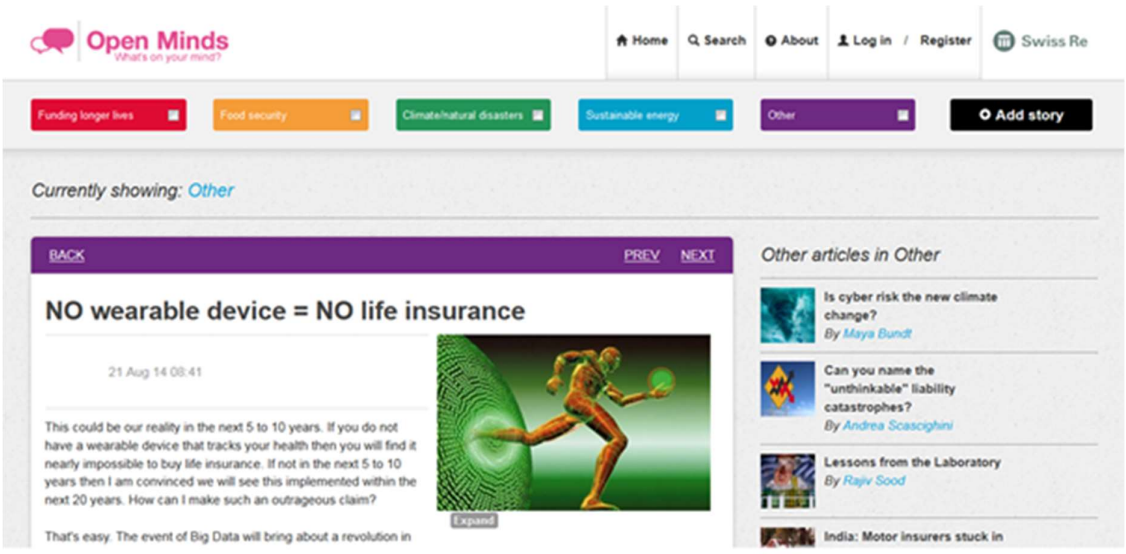


Figure 1.1. Story 'NO Wearable device = NO life insurance' (https://openminds.swissre.com/stories/688/)

'No wearable device = No Life insurance'. This is the title of a blogpost published in 2014 on the *Open Minds*-platform, a blogpost platform set up by the reinsurance company Swiss Re, and dedicated to the future challenges of the insurance industry. To support this bold claim the blog author starts his blog as follows:

> '*This could be our reality in the next 5 to 10 years*. If you do not have a wearable device that tracks your health then you will find it nearly impossible to buy life insurance. If not in the next 5 to 10 years then I am convinced we will see this implemented within the next 20 years. *How can I make such an outrageous claim?*
>
> *That's easy. The event of Big Data will bring about a revolution* in customer experience similar to what we have seen in communications and planning. This customer experience will develop significantly and while it will make the process easier for the customer, it will allow insurers to get even more details than ever before.' (Innovation Manager, Swiss Re, Open Minds blog n° 688, emphasis added)

'The event of Big Data' in private insurance markets is the topic of investigation of this dissertation. Big Data is an umbrella concept, assembling different data generation and analysis technologies,

such as Artificial Intelligence (AI), Internet of Things (IoT), or Machine Learning (ML). And indeed, as the author of the blog, an innovation manager at a major reinsurance company, observes, 'NO wearable device = NO life insurance' is a very outrageous claim. Yet, the innovation manager is not alone in proclaiming Big Data as 'the next big thing' in insurance. Official reports on the impact of Big Data in insurance, published by insurers, reinsurers (Gen Re, 2013; Munich Re, 2015), insurance interest groups (Geneva Association, 2018; Insurance Europe, 2017), societies of actuaries (IA | BE, 2015) and consultancy firms (McKinsey Global Institute, 2011), are proliferating. Also in popular media, the emergence of insurance products making use of Big Data technologies is heavily discussed, taking positions between fierce optimism (Barnes, 2014; Olson, 2014; Schneier, 2016) and strong critiques (Harris, 2018; Jasper, 2015; Naughton, 2013, 2018). These developments in Big Data and their possible applications in insurance give rise to fundamental debates on what insurance is and should be, and need to be followed with utmost care. I will do this by investigating the making of future insurance markets.

This dissertation can be considered a sociology of a 'not-yet'-market', which is not-yet in different ways. Firstly, Big Data in insurance is not-yet in that it is the topic of expectations as to the future of insurance. Expectations as to Big Data do not depict realised possibilities, but rather possibilities considered to be 'coming soon': they are not-yet. This not-yet status of the expectations as to the future of insurance markets and the role of Big Data therein, makes it interesting to study how these expectations contribute to the enactment of future markets, where and how expectations as to the future of insurance are generated, and how a market is made of future, not-yet realised, insurance markets. Therefore, this research studies sites and devices of expectation generation on Big Data in insurance. Secondly, economic insurance practices are not-yet stabilised into 'real' economic products. The promises of Big Data technologies in insurance are not-yet fully realised in personal insurance and *therefore* interesting to study as they are 'in the making'. In order to better understand how experimental practices of Big Data in insurance come to be, how different actors collaborate and enact new types of (experimental) insurance products, this research investigates experimental practices of what will be called behaviour-based personalisation. Behaviour-based personalisation is employed, to give a working definition that will be further developed throughout this dissertation, to point to the broader and growing interest in and practices of the personalisation of products and goods where markets and services are increasingly focused on the behaviour and lifestyle of actors, particularly in insurance markets. Finally, although expectations as to the future are not realised (yet?), and experimental practices with Big Data in insurance are not stabilised (yet?), it is important to investigate what these not-yet-practices of Big Data in insurance learn on the consequences of Big Data in insurance: how do the not-yet-practices of Big Data in insurance shift what insurance is and should be? How are the responsibilities of insurers and insureds reconfigured in future insurance products and markets? How does the enactment of 'behaviour-based personalisation' alter practices of insurance solidarity?

To better understand what is 'at stake', this introduction sets the stage for studying the not-yet market of Big Data in insurance by discussing some key characteristics of, and dynamics in, insurance (section 1.1.), as well as showing a first glance of how 'the event of Big Data' is expected to alter these characteristics and dynamics proper to insurance markets (section 1.2.). Subsequently, the approach taken up in this research will be discussed (section 1.3.). The adopted pragmatist approach allows to pose research questions that go beyond the hypes and fears surrounding the role of Big Data in insurance, and helps to investigate what Big Data *does* with insurance markets (section 1.4.). Finally, an overview of the dissertation will be given (section 1.5.). It is very hard to introduce an object of study without imposing a very one-sided and premature definition of the object of study. There is not one 'logical' way to introduce the world of 'Big Data in insurance' and my pragmatist approach step by step. Therefore, a glossary with the main concepts employed can be found at the end of this dissertation (p.217-220). Also, what is stated in this introduction too short-sightedly will be developed throughout the empirical chapters.

1.1. 'Insurance-as-we-know-it'

Private insurance protects policyholders in case they experience financial costs linked to the insured risk, also called losses. The price that is paid for insurance coverage is called a premium, and reflects roughly the expected average losses for the insured risk. Insurance is permeating society, yet mostly 'invisible' (Kessler, Montchalin, & Thimann, 2016). Almost all people are affected by insurance at least in some stage in their life, and insurance plays an important role in the constitution of macroeconomic stability (Kessler et al., 2016; OECD, 2016). In 2016, the European insurance market wrote € 1,189 billion in premiums and paid out € 963 billion in claims (Insurance Europe, 2018).[1] This means that insurance represents approximately 7% of Europe's Gross Domestic Product (GDP),[2] which makes it a large and important economic sector, with approximately 3,500 insurance companies and 944,000 direct employees (Insurance Europe, 2018).

Insurance has a long history, and has existed in different forms, going back to the code of Hammurabi (1754 BC) which is seen as 'possibly the earliest form of insurance' (Swiss Re, 2013b).[3] The most important 'paradigm of insurance' (Ewald, 2002) that needs to be understood in

[1] These data are compiled based on data provided by the member associations of Insurance Europe (Insurance Europe, 2018). Insurance Europe is the insurance sector's interest group in Europe. Besides the member states of the European Union, other countries such as Turkey are also members.

[2] The value of gross written premiums expressed as percentage of the GDP is called the insurance penetration rate.

[3] Marine insurance goes back at least to the 13th century and arose when merchants stopped travelling with their goods and became more and more sedentary:

> 'Now, from a distance, merchants contemplated the future "perils of the seas" that endangered their commodities in motion. From such anxiety, they commodified their doubts into a new form of private property called "risk". Merchants, in other words,

order to try and understand the contemporary challenges that are linked to the emergence of Big Data in insurance, is what Ewald called 'the paradigm of solidarity' (Ewald, 2002, p. 273) and its 'abstract technology of risk' (Ewald, 1991). The paradigm of 'insurance-as-we-know-it' emerged alongside the 'statistics of the mean' (Hacking, 1990) and contributes to the production of solidarity through *private* insurance (Ewald, 2002; Lehtonen & Liukko, 2011).

The 'statistics of the mean' is a crucial technology for the management of uncertainty, and emerged in the first half of the 19th century (Esposito, 2007; Hacking, 1990; Horstman, 2001; Porter, 1986). The 'avalanche of printed numbers',[4] i.e. the collection and publication of numbers on society in the first half of the 19th century, enabled a new way of thinking on causality and social regularities (Hacking, 1990).[5] The printed numbers are typically structured datasets that consist of a limited set of variables that are collected in a regular interval (yearly, every five years, every ten years). Probabilistic causality emerged and 'tamed chance':[6] chance was not suspect anymore (Hacking, 1990).[7] The statistics of the mean enabled the emergence of several institutions in the

> isolated "risk" from physical goods in ways that allowed them to buy and sell that same "risk" independent of those same goods. Insuring their cargoes, they exchanged risks, offloading financial responsibility for their losses. In northern Italy, its apparent birthplace, marine insurance was firmly established by the fifteenth century.' (Levy, 2012, p. 29)

By 1650, marine insurance was a well-established commercial activity in England and Continental Europe (Turnbull, 2017).

[4] In the aftermath of the French revolution an 'avalanche of printed numbers' (Hacking, 1990) took place in order to deal with the problem of social order (Simmons, 2015). The social sciences and its methods are developed within the modern bureaucratic state. Census data were used at the time more than ever before to design (social) policy and they had a great influence (Berthelot, 1991; Porter, 1986).

[5] The statistics of the mean further enabled insurance markets and products to develop into 'insurance-as-we-know-it'. In order for this technology of statistics to gain influence, knowledge of society had to become possible. To think of social regularities was not possible before the 19th century. At the end of the 18th century, causality was considered to be mechanistic. Mechanical causal laws were assumed and there was no room for 'chance' in a scientific discourse because thinking of chance belonged to the sphere of superstition (Hacking, 1990).

It was assumed that social regularities were caused (mechanically) by underlying individual events. The social was nothing more than the sum of its parts (Behrent, 2010). In this period, a liberal conception of responsibility prevailed (Ewald, 1986, 2002).

[6] Or, to reframe it in a systems theoretical way, the construction of probability reduces the complexity of the absolute openness of the future. Yet, this does not enable, to (fully) predict the future: ‚In der Auseinandersetzung mit den zukünftigen Gegenwarten, und damit mit dem unbestimmten Bereich des Möglichen, enthüllt die Wahrscheinlichkeitskonstruktion die Grenzen ihres fiktionale Charakters: Sie hilft uns nicht, die Realität vorauszusehen.' (Esposito, 2007, p. 53).

[7] The probabilistic causality that came into being has some epistemological features. Some features of the probabilistic causality are presented here shortly by dropping three names: Poisson, Quetelet and Gauss. They should ring a bell (curve). First of all, Poisson's Law of large numbers – or at least a vulgarized conception of it – became accepted (Hacking, 1990). Because data collection was very expensive not all of the population was questioned. The more data are used the smaller the (marginal) value of an additional observation is. A (representative) sample is selected very carefully to ensure validity and reliability of measurement while controlling costs. The statistical thinking that emerged throughout the 19th century can be called the statistics of the mean and the normal distribution (Hacking, 1990; Porter, 1986; Porter & Ross, 2003; Yeo, 2003). The Belgian astronomer Quetelet made clear that the point of departure of knowledge on societal regularities should be 'l'homme moyen' and that societal characteristics concerning a variable are distributed normally alongside this average man. What makes a distribution normal is that the more a variable's characteristics aligns with the mean, the more common it will be. This is of course quite obvious but the average becomes a norm of normality (Canguilhem, 1991, 2008). In her history of survey research in 20th century America, Sarah

19th and 20th century (Foucault, 2004b). One of these is the insurance system as we know it, which also contributes to the further development of knowledge of 'the social' (Ewald, 1986; Hacking, 1990; Horstman, 2001; Porter, 2000).[8] More accurate knowledge on peoples' lives in a population context, for instance based on mortality tables, made it possible to offer insurance products like life and health insurance during the 19th century (Hacking, 1990).

For more than a century peoples' lives have been economized by developing calculative devices to accurately predict if individuals re-present high risk or low risk (Çaliskan & Callon, 2009, 2010; Callon, 1998a, 1998b; McFall, 2009, 2010, 2011; Zelizer, 1978, 2011). The technology of attributing persons to risk groups and offering insurance premiums, is called underwriting (Horstman, 2001; Van Hoyweghen & Horstman, 2009). Traditionally, a limited number of variables is used to classify customers in a price category. Being categorized as a customer depends on the place in the normal distribution you are predicted to be situated on, given the characteristics you have for the selected variables. Statistics play a necessary role in insurance, yet insurance practice does not solely rely on the power of numbers. Insurers are looking for a 'good, average, man' (McFall, 2011) and employ different, mundane, devices such as insurance agents (McFall, 2015a), to attribute people to risk groups and to make insurance markets 'work'.

In the sociology of insurance major attention is paid to the ways in which insurance turns uncertainty into calculable and manageable risk (Ewald, 1986, 1991; Hacking, 1990; Lehtonen & Van Hoyweghen, 2014; McFall, 2007), how these practices categorize people in risk group categories (Abraham, 1985; Peppet, 2011; Porter, 2000; Thiery & Van Schoubroeck, 2006; Van Hoyweghen, 2014), how insurance re-distributes responsibility (Baker, 1996, 2000, 2002, 2011; Ewald, 2002), and how different forms of solidarity are constituted in and through insurance relationships (Ewald, 1999; Lehtonen & Liukko, 2011, 2015; Liukko, 2010; Van Hoyweghen, 2010; Zuiderent-Jerak & van Egmond, 2015).

According to the discipline of economics, insurance markets are an interesting site of economic analysis because they are characterised by asymmetrical information (Arrow, 1963). With regards to insurance, neoclassical economics has obtained a privileged position in providing tools to describe dynamics present in insurance markets:

> 'It is worth paying careful attention to economic analysis because of the enormous influence that it has had within at least the academic sector of the

Igo (2007) speaks of 'the averaged American'. The Bell curve, also called the Gauss curve, displays how the population is distributed around the mean which functions as the norm. Being abnormal is not just having a feature that is rare, it is a feature that is 'significantly' distinct from the mean and it can be estimated/predicted how rare an abnormal property is. Statistical thinking changed the way people think of (ab)normality. Every individual observation can be described as a deviation from the mean and expressed in a number of standard deviations. When the difference between someone's properties and the properties of the average man consists of too many standard deviations, this person becomes abnormal.

[8] It is hard to refer in an introduction accurately to the co-constitutive power-knowledge relation between the way of knowing risk, the performative production of risk, and the institution of insurance which deals with risk (therefore, see Ewald, 1991; Foucault, 1975).

> insurance field. Indeed, I would argue that the economics of insurance represent the epitome of the actuarial approach in insurance. […] Policy debates over the nature and extent of public insurance or the regulation of private insurance are almost always framed in economics terms.' (Baker, 2000, p. 567)

In insurance markets, insurers are assumed to have access to risk information at the population level. Based on this information they are able to provide insurance products, of which the price (also known as the premium) reflects the expected average cost for the insured risk. Individual customers, conceived as rational utility maximisers,[9] also have access to private information (Akerlof, 1970). They are assumed to be capable of estimating whether or not they represent a higher risk *than average*. If they think they have a higher than average risk, they certainly will buy the insurance product, as they expect it is likely they will face more costs for the insured risks than is reflected in the premium. When individuals are fairly sure they represent a low risk for the insured risk, they might be tempted not to obtain the insurance product. This phenomenon is called 'adverse selection' (Akerlof, 2001; Thomas, 2018): insurance will most likely be bought by high risk groups which might lead to an imbalance in the portfolio of the insurer, with more high risk policyholders and less low risk policyholders. When this would take place to a large extent, insurance companies would face problems paying out (much) more claims than the premiums collected. To cope with this problem of adverse selection, insurance companies calculate and differentiate between smaller risk group categories, in order to make sure that the premium offered to customers more closely reflects their personal risk.

A second important dynamic discussed in insurance economics is that of moral hazard (Finkelstein, 2015). Because *homo economicus* is considered a rational, risk-averse utility maximiser, he is expected to act differently once insured. When an individual is insured, s/he is not confronted with the (financial) consequences linked to the insured risk (Drèze & Schokkaert, 2012; Pauly, 1968; Stiglitz, 2015). It is expected, for instance in health care insurance, that, because insured people are not confronted with the costs of a doctor's visit, they will visit doctors more

[9] Neoclassical microeconomics, the sub-discipline of economics which analyses the decision making processes of individual actors and makes use of mathematical processes (Kean Birch, 2015; Mackenzie, 2008), employs the figure of *homo economicus* as the fundament of its discipline (Giocoli, 2013; Watson, 2016). The individual's character is neutralised in neoclassical economics through assumptions about *homo economicus,* with *homo economicus* assumed to be a rational, risk-averse utility maximiser (Arrow, 1963). Rationality entails an assumption that *homo economicus* will make no 'flawed' decisions; risk aversion entails an assumptions that *homo economicus* is an actor who prefers a certain future over an uncertain one; and utility maximisation entails an assumption that there is a proper 'direction' underpinning rational decisions. Moreover, the environment in which *homo economicus* makes decisions is stabilised by excluding/ignoring all factors that are supposed to be irrelevant or not suitable within the model, deploying the analytical device of *'ceteris paribus'* – 'all other things held equal' (Buchanan, 1958, see chapter 8).

frequently.[10] A device to cope with the problem of moral hazard is installing deductibles, which means that insured people are only paid back a percentage of the costs or above a certain threshold (Drèze & Schokkaert, 2012).

To summarize, 'insurance-as-we-know-it' came to be in the 19th century as a result of a new data infrastructure – the 'avalanche of printed numbers' (Hacking, 1990) – and the resulting 'statistics of the mean'. Through the statistics of the mean it became possible to calculate, financialise and collectivise risk (Ewald 1991): what was – and still is – an uncertainty at the individual level, became a certainty at the level of the population. People are insurable because insurers have a very precise knowledge of what will happen on a population level. People are willing to buy insurance products because they don't know what will happen to them on a personal level. This epistemological veil of ignorance means that the insurance mechanism (i.e. the pooling of risks) leads to redistributions through different forms of solidarity. In insurance economics, a strong emphasis can be found on the behaviour of rational actors in a situation of asymmetrical information – insurers *only* have access to average information, while insureds *also* have access to private information. This short presentation of 'insurance-as-we-know-it' should enable the understanding of the 'challenge' of Big Data in insurance.

1.2. Big Data: a Space of Optimism and Criticism

The insurance industry has always been an industry which relied on large amounts of data and involved big data-sets (Hacking, 1990; Turnbull, 2017). The last few years different new technological developments, such as Machine Learning (ML), the Internet of Things (IoT), Blockchain, Artificial Intelligence (AI), and so on, have been grouped under the umbrella concept 'Big Data'. Several actors – social scientists (Cambrosio, Bourret, Rabeharisoa, & Callon, 2014; Hildebrandt, 2013; Kitchin, 2014a, 2014b; Leonelli, 2014), public intellectuals (Mayer-Schönberger & Cukier, 2013; Morozov, 2013; Silver 2012) and (spokespersons of) insurers (Ewald, 2012a, 2012b; Munich Re, 2015; Swiss Re, 2014b) – have started imagining what Big Data is and what Big Data would be capable of (Ruppert, 2014).[11]

[10] To study this growing likelihood of using medical services once people are insured and to estimate the price elasticity of demand for health care, two large randomised control trials have been set up in the United States of America, the RAND Health Insurance Experiment (Aron-Dine, Einav, & Finkelstein, 2013) conducted in the 1970s and the Oregon Health Insurance Experiment (Finkelstein, 2015).

[11] Robert Kitchin (2014b) provided in his book *The Data Revolution. Big Data, Open Data, Data Infrastructures & Their Consequences*, one of the first academic overviews/readers on the topic Big Data. It is deliberately chosen here to not adopt his characterisation of what Big Data is, but rather to show the most influential analysis to be found in popular literature. This is done because, firstly, it is this popular analysis of Big Data as 'large, messy, but good enough' which is to be found in the insurance industry, and, secondly, the presentation of Kitchin (2014b) of the properties of Big Data takes over this popular characterisation and adds extra, more nuanced, dimensions to it.

1.2.1. Big Data-ism

In popular literature, Big Data is considered to be the smart analysis of data that are so big that the conventional methods of analysis are not suitable anymore and even makes these conventional methods obsolete (Mayer-Schönberger & Cukier, 2013). This data-ist approach, characterised as an extreme form of empiricism (Kitchin, 2014b), proclaims 'the end of theory':

> 'This is a world where massive amounts of data and applied mathematics replace every other tool that might be brought to bear. Out with every theory of human behavior, from linguistics to sociology. Forget taxonomy, ontology, and psychology. Who knows why people do what they do? The point is they do it, and we can track and measure it with unprecedented fidelity. With enough data, the numbers speak for themselves.' (Anderson, 2008)

In 2013, Oxford professor of Internet Governance Viktor Mayer-Schönberger and *The Economist*-journalist Kenneth Cukier published the bestselling book *Big Data. A Revolution That Will Transform How We Live, Work and Think*. The rapid development of computing power and techniques lead to the emergence of Big Data. Being large is, however, not a sufficient condition for Big Data to be called as such. Mayer-Schönberger and Cukier (2013) claim that Big Data is large and messy, but good enough.

Firstly, Big Data is large. Because computers are able to store and process more and more data, there is an abundance of data. An estimation of the order of magnitude of Big Data is deliberately not provided throughout this dissertation. The estimations of 'how big' Big Data 'really' is, is outdated by the moment it is written down. Furthermore, it does not really matter 'how big' Big Data is to understand what is at stake in the Big Data revolution.[12] Secondly, according to Mayer-Schönberger and Cukier, Big Data is messy. These data are not, in comparison with the classical printed numbers, collected carefully by means of surveys, censuses, or questionnaires, but are *available* as a collection of several huge datasets that are generated continuously. These data are not always coherent, complete, … but a mix of several sources. Moreover, where classical data had predefined categories and variables, in an era of Big Data variables can continuously be added or removed. Finally, this large mess of unstructured data is considered 'good enough' to make reliable predictions (Mayer-Schönberger & Cukier, 2013). This means that 'all data' available may become valuable:

> 'In short, although data has long been valuable, it was either seen as ancillary to the core operations of running a business, or limited to relatively narrow

[12] Also, by focusing solely on the size of data, one would recognize too much Big Data, ranging from astrology to 19th century urologic surgery data sets (Mazur, 2014).

> categories such as intellectual property or personal information. In contrast, in the age of Big Data, *all* data will be regarded as valuable, in and of itself.
>
> When we say "all data," we mean even the rawest, most seemingly mundane bits of information. Think of readings from a heat sensor on a factory machine. Or the real-time stream of GPS coordinates, accelerometer readings, and fuel levels from a delivery vehicle – or a fleet of 60,000 of them.' (Mayer-Schönberger & Cukier, 2013, p. 100)

Mayer-Schönberger and Cukier (2013, p. 125) characterise the willingness and ability to approach 'all data' as a source of potential value-creation as a necessary 'Big Data mindset' companies need to have in an era of Big Data. This characterisation as large and messy, but good enough, has been very influential in the discussions on Big Data. It portrays Big Data as both inevitable and as a development that should be welcomed to generate economic growth and liberate persons by enabling them to really live the life they want to live:

> 'Let's start with this stat: "6.4 billion devices already connected and 5.5 million added every day." Imagine having a direct link to a member (with their consent of course) that helps identify trends in their behavior that allow the payer to assess risk or gain a clear perspective on what motivates the member to get healthier.' (Schneier, 2016)

For instance, efficiency gains may be achieved by calculating optimal routes in the transport industry, companies like Netflix already offer content to customers fitting their tastes and interests, and people active in the Quantified Self Movement get to know very intimately how they work, live and think, and adjust their behaviour accordingly.

1.2.2. Big Data in Official Insurance Discourse

'Big Data' is an appealing technological development for many industries, but particularly in the insurance industry. In its report *Big Data: The next frontier for innovation, competition and productivity* the consultancy firm McKinsey identifies the sector of 'Finance and Insurance' as the sector with the highest 'Big Data value potential' (McKinsey Global Institute, 2011). This was also recognized by some of the (former) CEO's of main (re-)insurance companies:

> 'Data is the life blood of an insurance company. We sell a product that we do not know the cost of when it is sold. As such, we rely on all sorts of data to price, underwrite and manage the risks that we assume. The global avalanche

> of data creates many challenges for the insurance industry.' (Tad Montross, Gen Re, 2012)

> 'Big Data has the potential to revolutionize the (re)-insurance industry and potentially the economy as a whole. Big Data has the potential to open up new horizons, assessing and pricing risks more accurately. For instance, insurance products can become customized, even individualized.' (Michel Liès, Swiss Re, 2014a)

> 'On m'a demandé de parler sur Big Data, les données, qui quelque part sont le sang, les vitamines, mais aussi le risque auquel notre métier va être confronté les années qui viennent. […] Le monde change. Si vous pensez que les données ne vont pas modifier, de façon très fondamentale la manière dont nous travaillons, c'est que vous êtes déjà morts.' (Henri de Castries, AXA, 2015)

As Henri de Castries, the former CEO of AXA, mentioned, there is a strong feeling that traditional insurance actors – also called 'the incumbents' – have no choice but to invest in Big Data technologies, as they otherwise will be wiped out of business by companies who do have the Big Data mind set, to use the term of Mayer-Schönberger and Cukier (2013). In an age of innovation 'insurers have a choice: be disrupted or be the disruptor with new products, services, and business models' (McKinsey & Company, 2017):

> 'As the hyperconnected condition becomes pervasive, the potential for new risks and opportunities grows. Insurers and reinsurers must anticipate a world where data flows even more freely as a result of technological advancement, as well as through the behavioural patterns of users of technology.' (Swiss Re, 2014c, p. 5)

The revolutionary capacities ascribed to Big Data are manifold. Most of these are relevant to the insurance industry. When Big Data allows, for instance, a better human resources policy (Swiss Re, 2014c), this can be employed in the insurance industry as much as in other industries. This research investigates how Big Data mobilised by insurance professionals is challenging the insurance industry *in particular*. In the official insurance discourse two main reasons can be found as to why Big Data is a challenge particularly for the insurance industry.

First of all, according to official reports and studies, Big Data enables a more granular and real-time understanding of risk, which allows insurers to segment risks more accurately:

> ‘The use of data mining techniques and predictive analytics also offers potential to bring down the cost and time of underwriting. Predictive models, which use consumer information to predict the probability of an outcome or future behaviour, are commonly used in other industries to improve business processes. For example, predictive modelling is widely used in the underwriting and pricing of personal auto insurance. While in life insurance the use of predictive techniques is still in its infancy, well-constructed predictive models may facilitate better customer segmentation and targeting and lead to improvements in pricing, underwriting and marketing.’ (Swiss Re, 2013c, p. 30)

> ‘Insurers can identify new correlations between their losses and peoples with similar behaviours, such as such as [sic, GM] when and what they purchase at a grocery store. Big Data is the term used to highlight this wealth of data that insurance companies have obtained. Re/insurers are trying to slice and dice the data to maximise profitability in all lines of businesses.’ (Swiss Re, 2014c, p. 6)

This increased and real-time segmentation (McKinsey Global Institute, 2011) is expected to enable, in the end, personalised risk assessments and insurance premiums:

> ‘Digital technologies increasingly enable carriers to assess risk on the basis of data about specific consumers, rather than general population data. Telematics collect real-time information about an individual’s driving habits to inform the pricing of auto cover, while data from wearable devices such as fitness bands and apps that monitor adherence to medical treatment can inform life cover.’ (McKinsey & Company, 2017)

Secondly, the ability to use real-time information on policyholders related to their personal location is considered to be crucial in linking the behaviour of policyholders to the risk they pose and the premium that has to be paid:

> ‘The combination of personal location data and vehicle telematics has the potential to offer insurers more accurate and detailed data on individual behaviour — for example, how individual policyholders drive their automobiles. Such information would allow insurers to price risk based on actual behavior rather than on aggregate demographic factors. Some claim that behavior-based insurance could even reduce claims costs because individuals

> behave in a less risky way when they know they are being monitored. This effect needs to be proved, but what seems certain is that rapidly improving technologies based on personal location data have the potential to help insurers develop other services to encourage safer driving. For instance, insurers could begin offering real-time alerts on traffic and weather conditions (as we have seen in the case of smart routing), high-risk parking areas, and changing speed limits.' (McKinsey Global Institute, 2011, p. 91)

The consultancy firm Ernst & Young (EY) goes so far as to announce the new insurance concept 'Pay As You Live' (PAYL),[13] in the light of developments in wearable (health) technologies:

> 'PAYL is a relatively new insurance concept aimed at improving controllable behaviours to reduce premiums and reward customers. It involves the insured person providing ongoing data to the insurer about their lifestyle through existing and new data sources (e.g. wearable technology) and the insurer encouraging customers to live a healthier lifestyle to reduce the risk of chronic illness. […] PAYL is about more than just using wearables to inform underwriting. It offers the potential to create an ecosystem of health and wellbeing related goods and services that add value to the customer, the insurer, and the broader community as a whole.' (Ernst & Young, 2016, p. 6)

To summarize, one can say that the discourse of insurance professionals and official reports on the impact of Big Data on insurance consider Big Data as an important technological development which generates the opportunity to understand risk more granularly, accurately and continuously. This urges the insurance industry to invest in these technologies, and build new business models adopting Big Data. Another possibility of Big Data is to visualise the behaviour of individuals and personalise insurance products and services around the behaviour of policyholders.

1.2.3. Critique-with-a-Capital-C

The emergence of Big Data is not applauded by everyone as a source of technological progress, or economic growth. Big Data and its use in insurance is critiqued. Roughly two main streams of critique can be distinguished. A first stream of critique is an 'epistemological' critique, which does

[13] 'With 1.8 billion internet-ready smartphones already in existence, the wearables fitness tracker market is set to become a $30 billion industry by 2018. These devices are already helping billions of people combat lifestyle diseases through the likes of Nike+ (more than 18 million users) and the 7 Minute Workout Apps (more than 10 million installs). Health and fitness apps are the fastest growing category on iTunes and Android. This, combined with the adoption of online social networking in healthcare, gives insurers access to an unprecedented amount of data and insight into customer behaviors. Leveraged correctly, this will inform premium pricing and unlock new value for insurers, customers and the broader community.' (Ernst & Young, 2016, p. 4)

accept that Big Data is large and messy, but denies that it is 'good enough'. Big Data technologies, and the automatisation that comes with it, is considered by some to be a threat to good quality knowledge as Big Data technologies generally do not make a distinction between correlation and causation (Couper, 2013; Vigen, 2015):

> 'Provided enough data, it is possible to find things that correlate even when they shouldn't. The method is often called "data dredging". Data dredging is a technique used to find something that correlates with one variable by comparing it to hundreds of other variables. Normally scientists first hypothesize about a connection between two variables before they analyse data to determine the extent to which connection exists. […] Instead of testing individual hypotheses, a computer program can data dredge by simply comparing every dataset to every other dataset.' (Vigen, 2015, p. xii)

According to this stream of critique, it is crucial that the underlying causal mechanisms behind the correlation between particular variables are highlighted. The epistemological critique of Big Data is thus first and foremost a critique against the 'end of theory' hypothesis (Symons & Alvarado, 2016).

> 'The numbers have no way of speaking for themselves. We speak for them. We imbue them with meaning […] Data-driven predictions can succeed — and they can fail. It is when we deny our role in the process that the odds of failure rise. Before we demand more of our data, we need to demand more of ourselves.' (Silver 2012, p. 9)

A second stream of critique is more 'political' and focuses on the ways in which power relations are changed, and often distorted, by new data technologies. Evgeny Morozov (2013), for instance, criticizes the Big Data promise for being 'solutionist'. Morozov posits that the presentation of the Big Data revolution as a technological progress that will make a lot of newly framed problems disappear, masks the political consequences and power relations that are at work in these technologies and are a danger for our privacy and personal freedom.

More specifically related to insurance, Big Data and other new types of data could enforce mechanisms of discrimination (Lupton, 2012). Because Big Data promises to enable more accurate distinctions it is claimed that Big Data could (potentially) be used to exclude more people from affordable insurance premiums (Lemke, 2013):

> 'The use and ownership of personal data by actors and agencies other than the individual who generates these data are beginning to have major

> implications for social discrimination and justice issues.' (Lupton, 2014, p. 13)

The adoption of Big Data to enforce new forms of personalisation in insurance could have unintended or unwanted consequences like more extensive surveillance, limited freedom of employees, or being excluded from insurance plans (Burdon & Harpur, 2014; Lyon, 2014; Peppet, 2011; Satariano, 2014; Tierney, 2014). David Lyon (2018) speaks of user-generated surveillance:

> '[S]urveillance culture is characterized by user-generated surveillance. Riffing on Web 2.0's notion of user-generated content, we can observe the same technological capacities – or 'affordances' as they are called, technically – allow users to contribute content and, at the same time, to generate forms of surveillance. On one hand, user involvement with devices and platforms such as smartphones and Twitter creates data used in organizational surveillance. And on the other, users themselves act surveillantly as they check up on, follow and score others with 'likes', 'recommendations' and other evaluative criteria. As they do so, they not only interact with their online connections, but also with the subtle ways in which the platforms are created to foster particular kinds of interchange.' (Lyon, 2018, pp. 7-8)

In the same vein, Lupton (2012) proposed the concept of the 'inverted panopticon'. Where in the 19th century panopticon prison architecture the few were watching the many (Foucault, 1975), the inverted panopticon of social media generates a surveillance of individuals by the many, i.e. the network of 'friends'.

The increase of risk classification and forms of surveillance may result in insurance premiums becoming unaffordable for certain high risk groups (Lemke, 2013). These dynamics also contain a risk of a decrease in insurance solidarity as the risk pools within which costs are shared become smaller (Abraham, 1985; Lehtonen & Liukko, 2015). It is further believed that Big Data is able to enforce these mechanisms and create a 'Big Data divide' between the winners and losers of Big Data (Andrejevic, 2014).

The analysis of law scholar Scott Peppet (2011) in the 'unraveling of privacy' very clearly shows how forms of personalisation in insurance, which are enabled by Big Data technologies now more than ever, are linked to an increase of discrimination and surveillance, and a decrease of solidarity. This analysis also shows the importance of neoclassical economics in the investigation of insurance dynamics. Peppet (2011) claims that the voluntary disclosure of personal information leads to more extensive segmentation and starts a dynamic which in the end 'forces' individuals to give up their privacy. He calls this dynamic the 'unravelling of privacy'. Consider an insurance market where people are free to disclose personal data, for instance through a wearable device that

tracks a person's behaviour, to obtain a personal risk assessment and adjusted insurance premium. When they would not disclose the personal information, individuals are offered the group-based insurance premium. At first sight this would not harm anyone, as individuals are free to choose between two insurance plans. However, Peppet (2011) states that this would initiate a dynamic of adverse selection where in the end everyone is forced to give up privacy and all individuals will be discriminated on the basis of their personal premium. At first a group of individuals with a very good lifestyle and advantageous risk profile will be willing to disclose their lifestyle as the group-based premium far exceeds their personal risk. When this group of very healthy individuals opts out of the larger risk pool, this makes the average risk of the residual risk group rise and the group-based premiums will be adjusted. This adjusted, higher, premium will convince the individuals with a not-very-good-but-still-healthy-lifestyle to allow to be tracked. This dynamic will go on until the moment that the last subgroup of healthier-than-the-residual-average decides to opt out of the 'average risk pool', only the worst risks are left, and everyone has 'freely' decided to disclose their personal information in order to obtain a better premium.

I want to remark here that this political critique of personalisation in insurance has a very narrow conception of what an insurance product is. This critique reduces insurance products to the premium that has to be paid and the data that have to be provided to calculate this price. The governmentality approach in the sociology of insurance (see section 1.3.3) emphasizes the ways in which insurance products also come with ideals of solidarity (Ewald, 1991; Lehtonen & Liukko, 2011; Stone, 1993) and with a redistribution of responsibilities (Baker, 2002).

Cathy O'Neil (2016), a data scientist and author, takes an interesting stance on Big Data, combining elements of the epistemological and political lines of critique. In her book, *Weapons of Math Destruction*, she claims that the way in which data models are employed might be harmful but that data models are not necessarily bad. Good data models are transparent which ensures fairness and accountability, and have feedback loops built in to learn from its mistakes. In contemporary societies, models employing Big Data are ubiquitous and at the same time invisible. Therefore there is a risk, O'Neil (2016) continues, that models turn into weapons of math destruction (WMD). WMD's are models which are scaled with a lack of feedback ('they do not listen. Nor do they bend'), are opaque ('the secret sauce of intellectual property'), and have consequences and the potential to do damage. O'Neil (2016) shows how WMD's increase forms of inequality and discrimination in different domains and at different stages in peoples' lives. For instance in insurance, she provides the example of how models used to classify risk groups are 'blinded by race':

> 'The move toward the individual, as we'll see, is embryonic. But already insurers are using data to divide us into smaller tribes, to offer us different products and services at varying prices. Some might call this customized

> services. The trouble is, it's not individual. The models place us into groups we cannot see, whose behavior appears to resemble ours. Regardless of the quality of the analysis, its opacity can lead to gouging.' (O'Neil, 2016, p. 164)

O'Neil provides some snapshots of what could go wrong with Big Data and uses these findings to conclude that Big Data, which results in WMD's, should be criticized as a whole: 'You don't need to understand all the details of a system, to know it has failed' (O'Neil, 2016, p. 11).

As the concerns mentioned above show, Big Data is not characterised as a form of progress by everyone. Several critiques on the Big Data promise are formulated. Although these critiques make clear what is 'at stake', they are in my opinion not suitable for a thorough investigation of what Big Data and behaviour-based personalisation do in insurance, because they attribute too much power to the 'technology' of Big Data which would inevitably lead to extensive personalisation in insurance. Furthermore, these critiques assume too easily that the malign consequences of Big Data are already fully realised. Big Data is criticised too 'big' and monolithically here. Therefore I call these critiques, 'Critiques-with-a-Capital-C'.

1.3. 'That's Easy': Is It, Really? Towards a Pragmatist Approach

The author of the blogpost this introduction opened with, seems to assume that 'the event of Big Data' is so powerful that it is 'easy' to make his claims on its consequences in insurance because the Big Data technology will bring, almost in and of itself, a revolution in different domains relevant in insurance:

> 'How can I make such an outrageous claim? *That's easy*. The event of Big Data will bring about a revolution in customer experience similar to what we have seen in communications and planning. This customer experience will develop significantly and while it will make the process easier for the customer, it will allow insurers to get even more details than ever before.' (Innovation Manager, Swiss Re, Open Minds blog n° 688, emphasis added)

The Innovation Manager thinks, in line with the hypes and fears discussed in the previous section, it is *easy* to make predictions on Big Data in insurance. All these analyses assume that Big Data will change, indeed, how we 'live, work, and think', because some intrinsic qualities or capabilities are attributed to a technology which allows them to evaluate on the basis of these capabilities whether or not this technology is either good or bad. This view is actually *too easy* itself. Throughout this dissertation, it is avoided being either a fierce optimist or a big Critic of Big Data in insurance for several reasons. First, these analyses seem to imply that (the consequences of) Big

Data technologies are already realised in the domain of insurance. Secondly, and related to the first point, it assumes that is already clear what the capabilities of Big Data and related technologies are, that it is possible to just apply these capabilities to insurance and, consequently, what the consequences of Big Data in insurance would – no: will! – be. These analyses 'jump to conclusions' without investigating closely what developments are taking place in the field.

In this PhD research, it is avoided being part of the 'Critiques-with-capital-C' of Big Data without tumbling into an (overly) optimistic view of Big Data in insurance. This does not mean that the main concerns of the political critique, such as privacy, surveillance, the decrease of insurance solidarity, and increased price discrimination, are discarded as irrelevant. In order to avoid the black/white re-presentation of Big Data, one has to investigate if and how Big Data makes a difference *in practice*. To avoid being too Critical or too positive on the powers of technology, while keeping the raised concerns in mind, a pragmatist approach is therefore taken up.

Some elements of the pragmatist philosophy of William James provide an interesting approach to investigating technologies that are heralded as 'the next big thing'. The risk of 'jumping to conclusions' and taking a technology for granted when investigating the capabilities of it, can be avoided by not providing an 'absolute' discussion of the technology. 'Jumping to conclusions' reduces the particularities of a technology into general statements. James discusses certain approaches in ethical philosophy as (impossible) attempts to give impartial views in ethical discussions:

> 'So far as the world resists reduction to the form of unity, so far as ethical propositions seem unstable, so far does the philosopher fail of his ideal. The subject-matter of his study is the ideals he finds existing in the world; the purpose which guides him is this ideal of his own, of getting them into a certain form. […]. Where he interested peculiarly in the triumph of any one kind of good, he would *pro tanto* cease to be a judicial investigator, and become an advocate for some limited element of the case.' (James, 1919, p. 185, emphasis in original)

Similarly, the technological developments falling under the umbrella of Big Data are not (yet?) stabilised, and Big Data is not simply to be 'applied to' insurance. Rather, Big Data technologies have to be *realised.*[14] This process of 'realisation', of which the outcome is not clear from the start, shows that it is not possible to make claims on the goodness or badness of a technology 'in itself':

[14] This take on realisation is also taken up on truth and verification: 'This thesis is what I have to defend. The truth of an idea is not a stagnant property inherent in it. Truth HAPPENS to an idea. It BECOMES true, is MADE true by events. Its verity is in fact an event, a process: the process namely of its verifying itself, its very-FICATION. Its validity is the proposed valid-ATION.' (James, 1910, p. 94, capital letters in original)

> 'Goodness, badness, and obligation must be *realized* somewhere in order really to exist; and the first step in ethical philosophy is to see that no merely inorganic 'nature of things' can realize them. Neither moral relations nor the moral law can swing *in vacuo*.' (James, 1919, p. 190, emphasis in original)

To challenge systematic and essentialist philosophies, James proposes the 'pragmatist method', which in no way has to be seen as a proposal to replace any philosophy. It is, rather, an approach and 'attitude':

> 'The pragmatic method is primarily a method of settling metaphysical disputes that otherwise might be interminable. Is the world one or many? – fated or free? – material or spiritual? – here are notions either of which may or may not hold good of the world; and disputes over such notions are unending. The pragmatic method in such cases is to try to interpret each notion by tracing its respective practical consequences. What difference would it practically make to anyone if this notion rather than that notion were true? If no practical difference whatever can be traced, then the alternatives mean practically the same thing, and all dispute is idle. Whenever a dispute is serious, we ought to be able to show some practical difference that must follow from one side or the other's being right.' (James, 1910, p. 27)

In order to be able to observe the 'practical difference' that is made by Big Data in the field of insurance, this research looks for sites where a market is made of Big Data in insurance, how expectations on Big Data in insurance are generated and how experiments with Big Data in insurance are enacted. This enables the observation of what is at stake with Big Data in insurance, and in what way it makes a difference for 'insurance-as-we-know-it'. How Big Data makes a difference in insurance, will not be found in the official reports of insurers, reinsurers and consultancy firms on the powers of new technologies, nor in university laboratories where state of the art technologies are developed. Rather, economic practices 'in the wild' (Callon, 2007b) have to be looked for:

> 'La science actuarielle n'a pas précédé la pratique de l'assurance, elle l'a bien plutôt suivie. L'histoire de l'assurance est aussi politique que technique et scientifique.' (Ewald, 1986, p. 181)

Ewald suggests, with his Foucauldian history of insurance in mind, to look for insurance practices as they are crucial in understanding insurance. The decision to go beyond naive optimism and large Critiques with regards to the importance of Big Data in insurance, is an important 'pragmatist flank

movement' (Muniesa, 2011). Likewise, O'Neil (2017) remarks that, in spite of its ever growing salience, the topic of Big Data in insurance is only scarcely studied in insurance and Kitchin (2014b) calls for further studies of Big Data practices. I will look for places where insurance professionals are expressing expectations as to, and performing experiments with Big Data in insurance practices.

The pragmatist approach, and more particularly an anti-essentialist and 'constructivist' stance towards insurance, is also present as an important starting point in the research literatures that are employed in this research. In the following sections, I first present the pragmatist sociology of markets and its roots in Actor-Network Theory (ANT). Secondly, I sketch the importance of the sociology of expectations. Thirdly, I explain how the Foucauldian governmentality studies enable an investigation of the context-specificity of contemporary practices of behaviour-based personalisation in insurance.

1.3.1. How to Do Markets with Practices: Heterogeneity, Performativity, and Enactment

Actor-Network Theory (ANT) is an important approach in Science and Technology Studies (STS) (Latour, 2005; Michael, 2017). During the second half of the 1980s ANT mainly investigated the production of knowledge (Callon, 1986a, 1986b; Latour, 1987, 1988; Law, 1992). This 'constructivist realism' (Latour, 1999) concentrates on heterogeneous actors that co-produce knowledge and keep things 'in place'. ANT investigates the production of knowledge 'in action' and is not stuck with 'already-made science' (Camic, Gross, & Lamont, 2011; Latour, 1987). ANT is cautiously reluctant in attributing explanatory power to science, technology and society:

> 'Since the settlement of a controversy is the *cause* of Society's stability, we cannot use Society to explain how and why a controversy has been settled. We should consider symmetrically the efforts to enrol human and non-human resources.' (Latour, 1987, p. 258, emphasis in original)

> 'We are never confronted with science, technology and society, but with a gamut of weaker and stronger associations; thus understanding *what* facts and machines are is the same tasks as understanding *who* people are.' (Latour, 1987, p. 259, emphasis in original)

Although 'the social' is the result of hybrid associations between human and non-human actors, Latour (2005) claims that 'conventional' sociology, which he calls the sociology of the social, employs 'the social' as an explanatory variable. To counter this problem, Latour (2005) proposes the study of the sociology of associations, called associology. In the same vein, studying what Big Data *does* in insurance markets cannot rely on 'the event of Big Data that will bring a revolution to insurance', as the innovation manager claimed.

The study of networks of associations/associology (Latour, 2005), is very fruitful in studying the adoption of Big Data and behaviour-based personalisation for several reasons. First, in the accounts by insurance actors on the role of technology and the possibilities of behaviour-based personalisation, 'technology' is presented as a driving force in the innovation or even 'disruption' of the insurance market. When looking beyond the accounts of the force of technology, one can see, equipped with my pragmatist methodological stance, that the force of technology is faced with many constitutive hurdles (Latour, 2012). Secondly, new types of players like technology providers, start-up insurers, and expectation generators, emerge in the insurance industry. When assuming the roles of actors beforehand, no new actor can pop up. If one takes processes of translation (Callon, 1986b) as an analytical starting point, it is possible to see how (new types of) actors are getting 'interested' in the future insurance markets. Thirdly, associations can fail. The associations that lead to certain developments, products, or services are always precarious (Ariztia, 2018; Law, 1992). Paying attention to the possibility of failure is important to study not-yet markets. Behaviour-based personalisation is 'in the making', but it is not stabilized (yet?).

A fourth major strength of ANT is its conception of (knowledge) practices as performative. Knowledge practices contribute to the enactment of the reality that is studied (Esposito, 2013; Mackenzie, 2006; Mackenzie, Muniesa, & Siu, 2007b; Muniesa, 2014; Osborne & Rose, 1999). This observation has also been studied for practices of economists and economic practices as a whole (Callon, 2007b; Guala, 2007; Mackenzie et al., 2007b; Muniesa, 2014; Muniesa & Callon, 2007): economics is 'an engine, not a camera' (Mackenzie, 2008). The performativity concept was coined by the philosopher of language John Langshaw Austin (1962) during his William James Lecture series 'How to do things with words'. The performativity concept as employed by Austin (1962) in his first 'how to do things with words' lecture, could give the impression that saying a performative utterance is in and of itself sufficient to obtain the performative effects, i.e. to 'do things with words'. Throughout the following lectures, Austin reformulates this position in a more nuanced way: there are (in)felicity conditions under which performative utterances can work (or not), and all statements have locutionary, illocutionary, and perlocutionary elements (Austin, 1962). In the same way, the performativity concept is employed in the sociology of markets literature to point at the diverse practices that contribute to the enactment of markets. The performativity of economics and economic practices are not a one-directional prescription of what the market will look like (Callon, 2007b). It is for this reason that the concept of 'enactment' is employed here as a way to refer to the continuous and multiple work that has to be invested in making and keeping a concept, object or subject 'into being' (Law, 2004). For example, Mol (2002, pp. 32-33) claims that:

> 'It is possible to say that in practice objects are *enacted*. This suggests that activities take place – but leave the actors vague. It also suggests that in the act, and only then and there, something *is* – being enacted.' (Emphasis in original)

The concept of 'enactment' in ANT proposed by Mol (2002) contrasts with terms like 'construction' or 'performance', two concepts which seem to presuppose a pre-existing plan that is 'executed' or a script that is 'played' (Callon, 2007b; Law, 2004). Rather, concepts, objects and subjects are the result of the continuous enactment in and through practice: 'If an object is real this is because it is part of a practice. It is a reality *enacted'* (Mol, 2002, p. 44, emphasis in original).

In line with the concept of enactment, which focuses on how realities are constituted in and through practices, the performativity thesis has been introduced in STS (Callon, 2007b, 1998c; Mackenzie, 2008; Mackenzie et al., 2007b) to study the enactment of markets. As Callon (2007b) and other scholars argue, economics is not merely a form of knowledge that represents an already existing state of affairs; it is, rather, a set of instruments and practices that contribute to the enactment of economic markets and their actors. From this, Callon (2007a) makes the argument, often provocative for economists, that 'the market' and '*homo economicus'* are no longer ideas that exist simply in economic text books but that they are continuously enacted as economic markets.

The performativity approach allows us to analyse how the situated enactment of markets comes with a set of assumptions about, and the enactment of, its actors (Callon, 1998c). This enactment of actors and their agency is constituted through socio-technical 'agencements' (Callon, 2007b), the heterogeneous material arrangements that produce agency:

> 'Emphasizing the role of materialities – or of what I call sociotechnical *agencements* – leads to the notion of performation. Statements and their world are caught in a process of coevolution. […] We can agree to call *performation* the process whereby sociotechnical arrangements are enacted.' (Callon, 2007b, pp. 329-330, emphasis in original)

These sociotechnical agencements come with particular assumptions about realities (e.g., concepts, objects, subjects), and demand for a 'political ontology' (Law, 2004) that pays attention to the consequences of particular enactments of realities ('performation'). If markets are the result of socio-technical agencements, then multiple market configurations are possible (depending on the specific devices and principles set in motion). Fabian Muniesa (2014) describes his sociology of markets as 'studies in the constitution of economic things' (Muniesa, 2014). By pointing out all the work that is involved in 'constituting economic things', it becomes also clear that other economic things could have been constituted, and that other worlds/markets are possible (Merton, 1968). This opens up a space to reflect on the politics of the construction of (not-yet) markets (Van Hoyweghen, 2014).

During the last two decades, an ANT-based pragmatist sociology of markets has been emerging, also called the 'new, new Economic Sociology' (McFall, 2009). Two major elements of this sociology of markets – the importance of market devices and the role of experiments – are outlined here shortly as they will turn out to be very useful in analysing the collected empirical material. Within the sociology of markets, 'market devices' are defined as 'a simple way of referring to the material and discursive assemblages that intervene in the construction of markets' (Muniesa, Millo, & Callon, 2007, p. 2). They contribute to the construction of markets and their actors, (the circulation of) goods, valuation outcomes as well as estimations as to properties of markets. This approach has previously been used to study insurance markets, which are populated by calculative market devices (McFall, 2015a; Van Hoyweghen, 2014). Market devices that generate properties of markets, such as, for instance, focus groups and opinion polls, play an important role in the construction of economic markets (Lezaun, 2007). Market opinions and expectations are not waiting 'out there' to be discovered but have to be *provoked/sollicited* (Igo, 2011; Law, 2009; Lezaun, Muniesa, & Vikkelsø, 2013) through the deployment of market devices.

In her book on the devising of consumption in insurance, credit and spending, McFall (2015a) prefers to speak of the 'devising of consumption' rather than 'consumption devices' to point at the continuous work that has to be invested to keep markets 'going', and relates to Mol's focus on the importance of continued enactment (Mol, 2002). The idea of a consumption device suggests that the work is done by 'finished' devices. During this research this idea of 'devising' is taken up in chapter 3 where the concept of expectation generation devices is developed. Nevertheless, it is preferred to use the concept of market devices rather than market devising because this concept is more established.

Within the sociology of markets, considerable attention has been paid to market research which informs economic actors on a state of affairs while at the same time generating opportunities to intervene in markets (Muniesa, 2014). The best known forms of market research devices are focus groups (Lezaun, 2007) and consumer tests (Teil & Muniesa, 2005). Another type of market research device that is developed are experiments, which are portrayed in market sociology as important elements in the construction of markets, in that they are forms of market research to test and perform characteristics of new economic objects (Muniesa, 2014; Tironi & Laurent, 2014). Muniesa & Callon (2007) formulate this as follows:

> '[E]xperimental activities are research activities in the sense that they aim at observing and representing economic objects, but also – and quite explicitly – in the sense that they seek to intervene on these economic objects: to seize them, to modify and then stabilize them, to produce them in some specific manner. To experiment is to attempt to solve a problem by organizing trials that lead to outcomes that are assessed and taken as starting points for further

> actions. *Experimentation is action and reflection*.' (Muniesa & Callon, 2007, p. 163, emphasis added)

The importance of experiments is to observe the reaction of potential clients to newly developed products in situations quasi-representative of 'real' market-situations. These experimental situations, also called areas of provocative containment (Lezaun et al., 2013), enable insurers to test product features without having to meet all the requirements of fully-fledged insurance products. This approach of seeing experiments as market devices used in the constitution of markets is interesting to go beyond what an experiment measures towards what the experiment does for the insurance company conducting the experiment. Furthermore, this experimental logic is also interesting because behavioural economics, which gains importance in the adoption of behaviour-based personalisation, is also known as experimental economics (Berndt, 2015; Guala, 2007).

1.3.2. Sociology of Expectations

Expectations as to the future of insurance and the role of Big Data therein are proliferating. Furthermore, strong expectations and predictions on the future, like the 'NO wearable device = NO life insurance'-claim at the beginning of this dissertation, trigger discussions on what insurance is and should be, both in the insurance industry and in academia. As I explained before, it has to be avoided taking these expectations for granted and 'jump to conclusions' based on these expectations. It is paramount to take a step back and investigate what the role of expectations is and how they come to be. In this respect, the sociology of expectations is highly relevant in investigating how Big Data is done in insurance because it has attention for what expectations *do* in science, technology and the making of markets.

Within STS, the sociology of expectations has made important contributions to analysing the crucial role of expectations and imaginaries for the shaping of new science and technology (Borup, Brown, Konrad, & Van Lente, 2006; Brown & Michael, 2003; Jasanoff & Kim, 2009, 2013; Verschraegen, Vandermoere, Braeckmans, & Segaert, 2017):

> 'An array of scholars has emphasized the importance of imagination as a vital component of these future-oriented representations and projects. Whereas much of modern science and modern thinking has been preoccupied with constructing the world as a body of observable facts, which should be neatly distinguished from fantasy and imagination, contemporary literature has emphasized how our ideas about reality, and particularly about the future, are always bound up with the force of imagination. An ability to imagine the future is crucial in overcoming the uncertainty stemming from the openness of the future.' (Verschraegen & Vandermoere, 2017, pp. 2-3)

Different instances of future-making such as technologies of future scenario-building (Soneryd & Amelung, 2016; Urry, 2016), forecasting (Beckert, 2016), and the business of producing technological expectations (Pollock & Williams, 2010) have been empirically studied.

The German economic sociologist Jens Beckert (2016, p. 62) acknowledges, in his book *Imagined Futures*, the constitutive role of 'fictional expectations' of the future in realising economic markets:

> 'The future is unknown at the moment expectations about it are created. Ontologically, in other words, the openness of the future rules out the possibility of restricting expectations to empirical reality.'

Because the future is an area of uncertainty, Beckert (2016) suggests that expectations should be theorised as 'fictional' rather than as rational. Fictional expectations as to the uncertain future inform investment decisions and motivate the development of innovations. This account of the importance of fictional expectations is thoroughly inspired by American pragmatism:

> 'Some sociological and philosophical approaches have offered a more open assessment of the impact of uncertainty on expectations. They understand expectations as contingent, variable, productive, and open to manipulation. These approaches […] provide the building blocks for the understanding of expectations and their role in the dynamics of capitalist economies. The most important of these is American pragmatism. […] Both Mead and Dewey take the position that imagining future states of the world is a part of the decision process in the present.' (Beckert, 2016, p. 54)

Beckert discusses different 'instruments of imagination, which are employed to imagine 'not-yet markets' and contribute to contemporary decisions on the future. There is a risk, however, that the expectations as to future markets are taken for granted as being 'out there'. Expectations do not only have a 'role', they also have to be generated. To focus on the importance of the generation of expectations, I draw upon the ANT-inspired sociology of markets literature on market devices (see section 1.3.1.).

Both the ANT-inspired sociology of markets as well as the sociology of expectations is not developed explicitly to deal with insurance markets. The concepts employed are applicable more broadly. Moreover, ANT sometimes seems to assume that, with respect to the constitution of associations between actors, 'anything goes' (Callon, 1998b; Michael, 2017). To better understand what is 'at stake' in insurance, and in order to provide insight into the context specificity of future/contemporary insurance markets, a Foucauldian governmentality approach is employed. To reflect on how Big Data reconfigures what insurance is considered to be, I employ the Foucauldian

governmentality studies literature. The focus on the conditions of possibility in which certain knowledge practices are enabled to emerge, differs slightly from the ANT-inspired investigation of particular inscription devices that delimit the relation between scientific knowledge and reality (Law, 2004). Yet, most importantly, both ANT and Foucauldian governmentality studies share the pragmatist attitude of looking at practices and their consequences, taking into account the constructedness of reality/realities, and taking a non-essentialist stance towards established practices.

1.3.3. Governmentality Studies: Shifting Paradigms and Responsibilities in Insurance

The governmentality approach is useful for studying the consequences of the enactment of behaviour-based personalisation in insurance, the shifts of responsibilities of insurers and insureds that come with it, and to study how behaviour-based personalisation in insurance introduces a new insurance imaginary.

The Foucauldian governmentality studies have been a very influential and interesting approach to study insurance practices (Baker & Simon, 2002b; Burchell, Gordon, & Miller, 1991; O'Malley, 2008). This approach distinguishes four aspects of insurance: institutions, abstract technologies, forms and insurantial imaginaries (Baker & Simon, 2002a; Ewald, 1991). The institutions of insurance are the heterogeneous set of actors, policies, or laws that are all recognisable as 'of insurance', yet different 'in its purpose, its clientele, its legal basis' (Ewald, 1991, p. 197). This is held together by the abstract technology at work in insurance, the technology of risk:

> '[Insurance] is something which, on the basis of a technology of risk, makes possible a range of insurance combinations shaped to suit their assigned function and intended utility-effect. Considered as a technology, insurance is an art of combining various elements of economic and social reality according to a set of specific rules.' (Ewald, 1991, p. 197)

These combinations of insurance technology and insurance institutions take different forms:

> 'Where the elaboration of the abstract technology is the work of the actuary, and the creation of the institution that of the entrepreneur, one might say that the aim of the sociologist, historian or political analyst should be to ascertain why at a given moment insurance institutions take one particular shape rather than another, and utilize the technique of risk in one way rather than in another. This variability of form, which cannot be deduced from the principles of either technology or institutions, relates to the economic, moral, political,

> juridical, in short to the social conditions which provide insurance with its market, the market for security. These conditions are not just constraints; they can offer an opportunity, a footing for new enterprises and policies. The particular form insurance technology takes in a given institution at a given moment depends on an *insurantial imaginary*.' (Ewald, 1991, p. 198)

These four aspects of insurance should be studied together, in order to write a 'history of the present', as Michel Foucault (1969) proposes.

Ewald (1986) claims, in line with Hacking (1990), that the 'paradigm of solidarity' came into being when the technology of risk socialised perils and the responsibility for accidents. Before, in a liberal era, the responsibility for accidents always had to be attributed to an individual (Ewald, 2002, p. 273). These shifts in insurance paradigms coincide with shifts in the technologies that are employed to 'know risk'. Another important aspect of the governmentality approach on insurance practices is the focus on ways in which insurance products and relations enact responsibilities:

> 'Insurance, we all know, transfers risk. Yet, what we usually think of as a transfer of risk is also a transfer of responsibility. Without health insurance, I am responsible for my medical bills, my choice of doctor, and, in consultation with my doctor, my course of treatment. With health insurance, the insurer assumes some of that responsibility. Insurance, then, not only distributes risk (Abraham 1986), it also distributes responsibility.' (Baker, 2002, p. 33)

These responsibilities enacted in insurance markets and products are not stabilised once and for all; the role of insurance and the distribution of responsibilities is renegotiated over time (Ewald, 1986, 2002), as is demonstrated by the instructive genealogy of 'moral hazard' in insurance by Baker. Baker (1996, 2000) made an extensive genealogical analysis of the phenomenon of moral hazard in insurance to show how historical changes in the definitions of, and economic assumptions about, moral hazard change what this moral hazard is and the dynamics at work in insurance. Moral hazard was used in 19th century fire insurance guidelines to refer to a temptation present in the character of an individual to submit fraudulent claims or impose higher loss. This idea of moral hazard was explicitly moral and drew a distinction between different kinds of people, viz. honest and dishonest. Baker (1996, 2000) observed a shift in the definition of moral hazard from the original insurers' practices to later neoclassical economic theory (Arrow, 1963), where the concept of moral hazard is still used but in a different, more 'technical' way.

Since the characteristics of economic actors in neoclassical economics are stabilized in the economic assumptions about these actors (e.g., as *homo economicus*), differences in character cannot be invoked to define nor describe the phenomenon of moral hazard (Arrow, 1963, Baker, 2000). Instead, properties of the insurance contract and the incentives these contracts generate are

used to explain moral hazard. When *homo economicus* is, for instance, insured for medical expenses, it is predicted that s/he will use more medical services.

1.4. Research Questions

The pragmatist approach and the main research literatures guided me to investigate 'the event of Big Data' by focusing on expectations as to, experiments with, and consequences of behaviour-based personalisation in insurance. In order to approach the formulation/provocation of expectations as to Big Data and behaviour-based personalisation in insurance, the experimental practices of behaviour-based insurance and the consequences and implications of behaviour-based personalisation in insurance, three research questions (RQ) are formulated.

RQ1: Expectations

RQ1: Which expectation generation devices are employed and how do they generate expectations as to the future of the insurance industry? How are expectations as to Big Data and behaviour-based personalisation formulated and generated in grey sites of expectation generation? How do practices of expectation generation contribute to the enactment of future, not-yet, insurance markets? How is this done on blogpost platforms? How are these platforms moderated? How is this done at business conferences? How do these conferences bring different actors together?

RQ2: Experiments

RQ2: How are experiments with behaviour-based personalisation in insurance products conducted and presented? How does this enact behaviour-based personalisation?

RQ3: Consequences

RQ3: What are the consequences of behaviour-based personalisation in health insurance with respect to (Genetic) discrimination in insurance, practices of insurance solidarity, and the actors, roles and responsibilities in insurance?

These three research questions will be employed as a tool to approach the different 'not-yet markets' that are studied in this dissertation. Although all three research questions are taken into account during all the empirical work and analysis, each research question is most prominently discussed in the respective parts of this dissertation. Part 1 focuses on RQ1: expectations, part 2 on RQ2: experiments, and part 3 on RQ3: consequences.

1.5. Overview of the Chapters: a Sociology of the Not-yet Markets of Insurance and *La Clairvoyance*

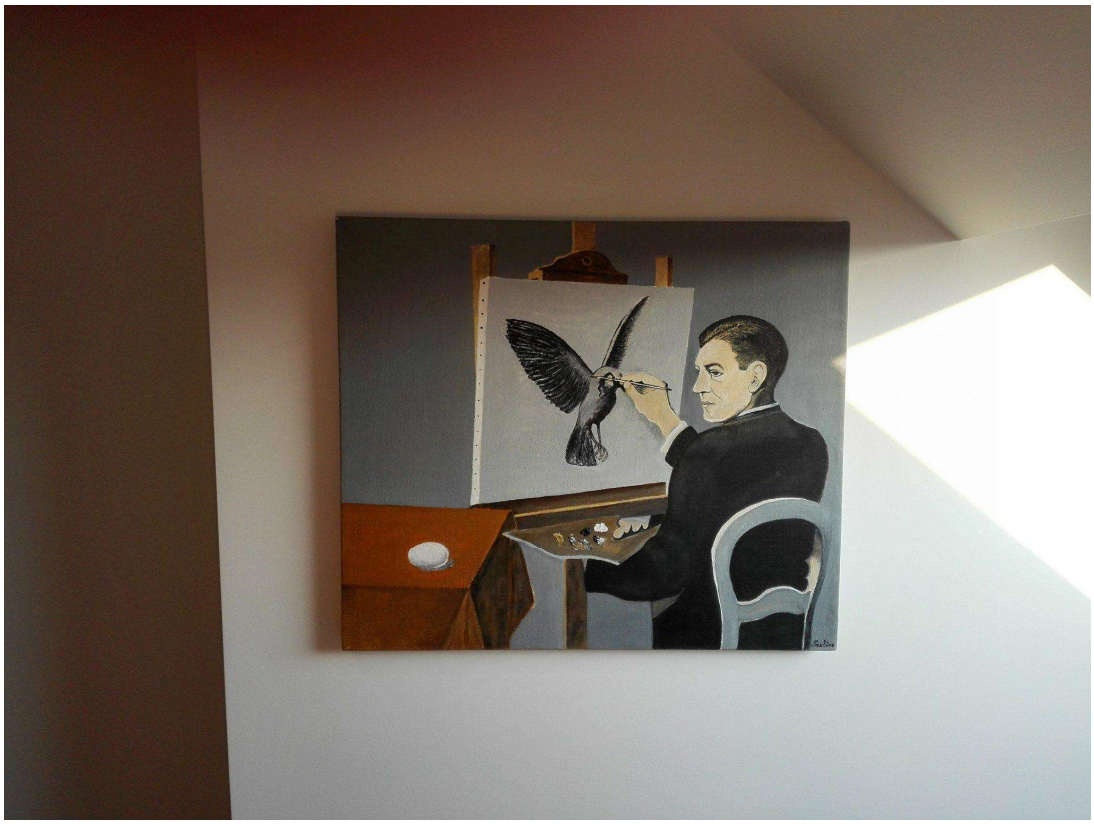


Figure 1.2. La Clairvoyance (René Magritte, 1936), reproduction by Pauline Swinnen (my grandmother), hanging at my home office (picture: Gert Meyers)

A painting by Magritte which I am very familiar with, *La Clairvoyance* (see figure 1.2.), invites a reflection on potentiality (of technology), not-yet futures (of insurance markets), and the role of social scientists.[15] *La Clairvoyance* is a self-portrait by Magritte from 1936, depicting Magritte while painting a flying grey bird. The painter is not using a 'real' bird as his model, but an egg: Magritte is able to paint the bird-to-be (a first not-yet bird) by looking at an egg (a second not-yet bird). Is Magritte really clairvoyant on what the egg is capable of becoming, or is he jumping to conclusions? It may well be that the egg is turning into an omelette very soon. Furthermore, how can Magritte know/imagine what the bird will exactly look like?

In this dissertation, I do not want to claim a clairvoyance enabling me to predict what Big Data is doing in insurance markets. I want to avoid 'jumping to conclusion' on what Big Data *does* in

[15] The surrealist oeuvre of the Belgian artist René Magritte invites a reflection on issues like (mis)representation, referentiality, and the reality of potential worlds. Michel Foucault (1973) has famously analysed Magritte's best known series of paintings *La trahison des images*.

insurance. Analysing what 'the event of Big Data' would do in insurance, is not as easy as suggested by the Innovation Manager that was quoted in the beginning of this introduction. The Innovation Manager assumes too easily that, one, what Big Data is capable of is already fixed and known, and, two, that these potentialities will unfold as designed. Throughout this dissertation, I show how what Big Data does in insurance is not fixed beforehand, and it is certainly not unfolding as designed. This dissertation depicts the different not-yet markets of Big Data in insurance.

Magritte painted the first not-yet bird, a bird-to-be, by looking at an egg. Expectations as to the future of insurance and the role of Big Data therein, are comparable to the status of the bird-to-be in Magritte's painting. These expectations make up a not-yet reality. Expectations as to the future of insurance markets are not-yet in that they are not yet realised, but it is believed that the chances of becoming 'real' are high. The future of insurance is not-yet there, but definitely arriving. This high belief in expectations makes them an important element in the making of future insurance markets. I investigate how these expectations come to be, because the expectations as to the future of insurance markets are not self-evidently 'out there'. Just like the painter in Magritte's painting has to mix the paint to get the right colours, and needs an easel to work on, expectations as to the future of insurance markets come to be in what I call expectation generation devices and requires a lot of devising work.

In this light, chapter 3 (published as Meyers and Van Hoyweghen (2018)) discusses the blogpost platform *Open Minds*, launched in 2013 by the reinsurance company Swiss Re. In this chapter, I show how expectations as to the future of insurance markets are generated by constituting a space of openness, where 'open minds' are invited to speak up and say what is 'on their mind'. The openness that is generated is a very particular form of openness, designed to provoke 'conservative insurance professionals' to formulate their expectations as to the future of insurance. *Open Minds* functions as an expectation generation device and contributes to making the not-yet market of Big Data in insurance 'live', a concept used by William James to denote hypotheses 'that are taken into account as a real possibility' (James, 1919, p. 2).

Chapter 4 discusses another site of expectation generation. I investigated business conferences on the future of insurance markets and the role of Big Data therein to analyse how a business is made out of the expectations as to the future of insurance markets. Different actors – insurance companies, reinsurance companies, technology providers, futurist, consultants, … – are brought together at a conference venue where they all try to market themselves and generate some 'take home ideas'. This chapter takes the perspective of 'business conference organisations', companies that mediate the expertise on the future of insurance markets held by the previously mentioned actors. Throughout the chapter, I analyse how business conference organisations 'translate' (Callon, 1986b) the interests and roles of the different actors and mobilises them to attend these conferences.

The second not-yet bird on Magritte's painting, is the model-egg, full of potential. What an egg is capable of becoming, is well known. An egg can evolve into a bird, when it is nurtured in

the right environment. What Big Data is capable of in insurance markets, is not yet clear. Technologies heralded as 'the next big thing' are expected to be capable of many very concrete things. Yet, this potential has to be realised, and it is not clear from the start how this will be done. Therefore, experimentation has to take place with Big Data. The second part of this dissertation investigates practices of experimentation with behaviour-based personalisation in car insurance.

Although the main interest of this research was to investigate what Big Data does in health insurance, a detour made by the insurance industry to experiment (first) with behaviour-based personalisation in car insurance was followed. Car insurance functions, like the egg in Magritte's painting, as a model for behaviour-based personalisation in other types of insurance. Chapter 5 shows why this experimental detour was made. Car insurance is a much less 'sensitive' domain than other forms of insurance, and drive style happens to be easier to measure and visualise than people's health behaviour. Furthermore, an overview of the experimental practices of behaviour-based personalisation in the Belgian car insurance market is provided. Chapter 6 investigates the 'drive style study' conducted by a Belgian direct insurance provider. This study aimed at convincing 5,000 participants to download and use a smartphone application, which tracked their drive style, gave drive style advice, and offered a 20% discount on the premium. The case study explores how the experiment was set up, what the functionalities and eligibility requirements were of the experiment, and how the study ended up not being very successful in terms of the number of participant.

Magritte showed his clairvoyance in a somehow 'obvious' way: he was able to see a bird-to-be (the first not-yet bird) by taking an egg (the second not-yet bird) as a model. As previously mentioned, I do not want to claim a clairvoyance for myself and 'jump to conclusions' on what Big Data is capable of in insurance and what the consequences are of behaviour-based personalisation in future insurance markets. Nevertheless, the final two chapters present some of the consequences of Big Data and behaviour-based personalisation in insurance that I observed throughout my research.

Chapter 7 (published as (Meyers & Van Hoyweghen, 2017)) presents a reflection on how behaviour-based personalisation in insurance reconfigures what insurance is and should be. By employing the case study of *Fairzekering*, a showcase car insurance product making use of dongle technology to personalise based on driving behaviour, I analyse how a different form of fairness is enacted in behaviour-based personalisation. It is considered fair to take into account the behaviour of policyholders because responsible drivers should not be punished for the reckless behaviour of irresponsible ones. Driving behaviour is enacted as something under the control of the individual, while being susceptible for coaching, tips, and nudges. This idea of fairness and what insurance is and should be, contrasts with two other enactments of fairness to be found in insurance practices, namely the fairness present in anti-discrimination legislation, and the concept of actuarial fairness

in neoclassical micro-economics. This reconfiguration of fairness has major consequences for the importance of solidarity in future insurance markets.

The concluding chapter 8 reflects more broadly on the research project at hand. First, it looks back at why it is important to keep on investigating not-yet markets in insurance and beyond. Secondly, I reflect on my contribution to the research literatures I employed. Furthermore, I analyse how behaviour-based personalisation differs from insurance-as-we-know-it, and how it starts and departs from the control/no-control logic which is strongly present in discussions on what different should make a difference in insurance. Finally, I reflect on the consequences of Big Data on the end of solidarity and to what end insurance is considered to be important in an era of behaviour-based personalisation.

Before going into the different not-yet markets of Big Data in insurance, I outline how I accessed the field, which methods I employed to collect data on the different sites of investigation, and how I analysed my data, in the next chapter.

2. Methodology

> *'Of whatever temperament a professional philosopher is, he tries when philosophizing to sink the fact of his temperament. Temperament is no conventionally recognized reason, so he urges impersonal reasons only for his conclusions.' (James, 1910, p. 11)*



Figure 2.1. Detail from La Clairvoyance (René Magritte, 1936), reproduction by Pauline Swinnen (picture: Sven Peremans)

My research into the ways in which private insurance markets deal with the importance of Big Data in insurance and the possibilities of behaviour-based personalisation, has led me to different exciting places (Leuven, Brussels, Paris, Zürich, London, Antwerp, Maastricht, the internet, national and global (re)insurance headquarters, an English Country House, office space shared by different start-ups, …), different 'surprising' encounters (informal meetings 'for your eyes only', formal interview appointments, coffee breaks, breakfast meetings, skype calls, secured video-conferencing, business conferences, a 'networking run', …), and consisted of different methodological research methods (document analysis, case studies, conducting interviews, ethnographic observation, …). These encounters and situations I found myself in while conducting this research project, were 'exciting' and 'surprising', yet they were part of a methodological strategy. William James (1910, p. 11) remarks that in philosophical analysis the temperament of the philosopher is most of the times 'hidden'. In the same way, actual research practices are 'cleaned up' and 'hidden away' in the methodology sections of academic texts. This methodology-chapter is not meant to be a means to conceal the excitement that was present while performing this research. It is, rather, providing an account of how I came to my findings.

During this methodology chapter, I first present the principles of abductive analysis I have employed throughout this research (section 2.1.). Secondly, I outline how I accessed the field of Big Data in insurance (section 2.2.). Thirdly, the selection of the different sites of investigation and the adopted methods to approach these sites are explained (sections 2.3. and 2.4.). Finally, I show some instances where the adopted principles of 'abductive analysis' became apparent (section 2.5.).

2.1. Abductive Analysis

In order to approach my research questions, qualitative research methods were adopted. These methods better allow to describe 'how' expectations are formulated/generated, 'how' experiments in behaviour-based personalisation are conducted, 'how' this has implicit consequences for the enactment of insurance relationships, rather than counting 'how much' this or that is taking place (King, Keohane, & Verba, 1994). A second main reason to adopt qualitative research is to be found in the information available on the field of investigation. Insurance professionals, like other financial elites, are considered to be hard to reach populations (Abolafia, 1998). Therefore, it is important to target insurance professionals on the particular projects they are involved in. Thirdly, behaviour-based personalisation in health insurance has a not-yet status and is not stabilised (yet?). This lack of stabilisation requires a methodological approach that is not too rigid itself (Ariztia, 2018; Law, 2004). In order to deal with a field of investigation that is not stabilised and still 'in action', qualitative research methods were employed and the principles of abductive analysis were adopted.

A pragmatist approach requires a pragmatist analysis. During this research, the principles of abductive analysis were adopted. Abductive analysis, a concept coined by Timmermans and Tavory (2012), is a method of analysis based on the logical form of abduction:

> 'Abduction has a logical form distinct from induction and deduction. Deductive reasoning begins with a rule and proceeds through a case to arrive at an observed result, which either demonstrates the rule or falsifies it. […] Induction, in contrast, starts with a collection of given cases and proceeds by examining their implied results to develop an inference that some universal rule is operative. […] abduction is the form of reasoning through which we perceive the phenomenon as related to other observations either in the sense that there is a cause and effect hidden from view, in the sense that the phenomenon is seen as similar to other phenomena already experienced and explained in other situations, or in the sense of creating new general descriptions. Abduction is the most conjectural of the three logics because it

> seeks a situational fit between observed facts and rules.' (Timmermans & Tavory, 2012, pp. 170-171)

This logic cannot be considered inductive nor deductive, but is rather closer to abductive reasoning (Tavory & Timmermans, 2014). The logic of abduction was described by Peirce because this is the way in which reasoning 'actually'/'pragmatically' takes place. In the same way, qualitative research practices are neither inductive nor deductive.

Abductive analysis is proposed as an alternative closer to actual qualitative research practices than the heavily inductive grounded theory (Tavory & Timmermans, 2014; Timmermans & Tavory, 2012). Based on research literature, expectations as to the field of investigation are built that are confronted with observations during the empirical research practices. This confrontation between the theoretical expectations and the empirical observations lead to 'surprises', or I would like to say 'educated surprises', that offer an opportunity for theory building:

> 'Practically, this strategy prepares researchers to recognize surprises in their empirical work; surprises do not simply emerge, but are dependent on a deep familiarity with theories.' (Tavory & Timmermans, 2014, p. 125)

The principles of abductive analysis and the search for 'surprises' guided me in accessing the field, selecting the sites of investigation, and conducting the analysis of the empirical material.

2.2. Access to the Field and Pseudonymisation of Contacts

Before getting access to the field, I developed a general understanding of what is considered to be 'at stake' in the insurance industry. I did this by getting acquainted with the sociology of insurance and sociology of Big Data literature, by reading more popularised bestselling books on Big Data, consulting reports on 'Big Data and Insurance', by consulting news media coverage of Big Data and insurance, attending webinars and by visiting corporate blog websites. Moreover, I subscribed to several newsletters of insurance and reinsurance companies and of specialised news media, focusing on technology, Big Data and innovation in the insurance industry, such as 'The Intelligent Insurer', 'Insurance Networking News' and 'The Internet of Business'.

It is hard to delineate geographically the scope of my field. The insurance business is part of the financial sector and hence very globalised. Reinsurance companies are global multinationals which enables them to spread systematic national or even continental risks as much as possible (Lehtonen, 2017c). Furthermore, Insurtech start-up companies and technology providers are often trying to realise 'universalist' ideas and are targeting clients in many different markets. Fitsense, for instance, is a Singapore-based start-up founded by, among others, a Dutch entrepreneur, and

works closely together with the German-based and globally active reinsurance company Munich Re (Munich Re, 2016). The expectation-work investigated in part 1 of this dissertation, is not too much limited by geographical boarders. The blogpost platform *Open Minds* I selected and investigate in chapter 3 has contributions from all over the world, yet more densely around the places where Swiss Re has offices. Other digital sources, such as official reports in pdf format, or news media articles, easily travel the world. The business conference organisations organise events in the U.S. and the EMEA.[16] The experimental practices of behaviour-based personalisation takes place within national markets, and in the case of the EU in a national-EU context. When the Italian-based insurance provider Generali announced, for instance, that it was planning to launch the South-African Vitality-concept to Europe, these plans were limited to the German and French markets (Generali, 2014). My case studies are situated in the national-EU markets of Belgium and the Netherlands.

At first, the goal was to investigate how the insurance industry would deal with new developments in genomics and post-genomics. Recent developments in (post)genomics question the strict distinction between genetically inherited conditions and lifestyle risk (Fox Keller, 2010, 2016; Kenney & Müller, 2016; Meloni, 2013, 2015a, 2015b, 2016), between risk carriers and risk takers (Van Hoyweghen, Horstman, & Schepers, 2007). It became clear however, that it was relatively 'silent' on developments in genetics, while 'Big Data' was generating a buzz in the insurance industry. Therefore, the focus was redirected towards the role of Big Data for insurance purposes, and later specified to the adoption of behaviour-based personalisation in insurance. Behaviour-based personalisation still enables, as is the issue with new developments in (post)genomics, a focus on what is considered to be under someone's control and whether this is considered to be something that should be taken into account by insurance products, prices and services.

After getting acquainted with the promises and expectations around Big Data and behaviour-based personalisation in insurance, I reached out to insurance professionals with requests for interviews. These requests were sent out based on news coverage on Big Data and behaviour-based personalisation in insurance, both in the specialised newsletters that I received, as well as in the general news media. I also was attentive for advertisements for initiatives or projects set up by insurance companies. This approach led to considerable problems in knowing who to contact within an insurance company and how. When visiting an insurance company's website, one is either considered to be a client (who is guided to renew a contract, file a claim,…) or a press agent (to which the press releases are available and the email address of the spokesperson is given). The websites of start-up companies also offer the possibility of being an 'investor', as many start-up

[16] EMEA stands for Europe, Middle-East, Africa.

firms are looking for Venture Capitalist investments or to be sold to a major technology company or insurance company (Birch, 2017).

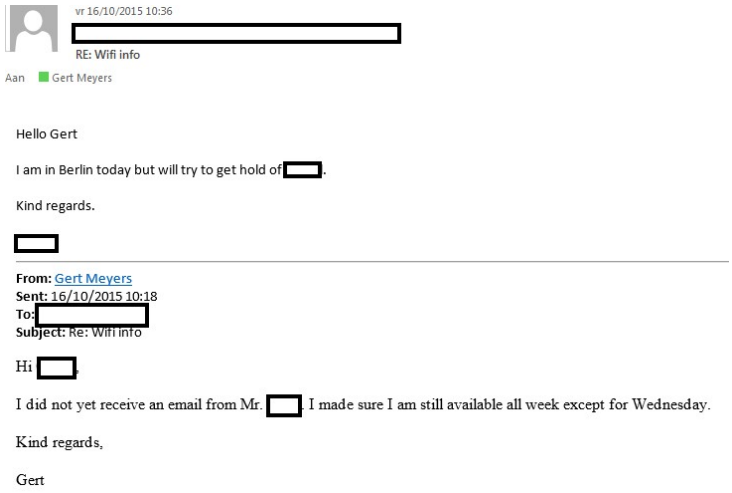
The difficulty of finding the right contact person within an insurance company forced me to contact at first the company's press contact form or email address. These encounters with spokespersons, which often functioned as gatekeepers, resulted in for instance receiving emails with rectifications on a series of misunderstandings that were previously published in the press. I replied to this email to express that I would like to have some more 'correct' information and offer the spokespersons, or their in-house expert, the opportunity to tell me what they 'really' wanted to do with the fit-bit action in order to avoid misinterpretations. This email was gently ignored, a reminder was blocked off quite resolutely:

> 'Hi Gert,
> I'm sorry but I will not add much to my statement in the email below [The initial rectification email, GM]. For now, it seems most appropriate to leave things as they are.
> Thank you for your comprehension.
> Best regards,
> [Name communication manager]'
> (Email received 2015-12-07, translated from Dutch)

Another time, my request for an interview on a telematics test project, was positively answered, and I was invited by a spokesperson at the company's national headquarter for a lunch meeting. Lunch was served on the top floor of the building, offering a magnificent view over Brussels as a form of window dressing. These confrontations with gate-keepers did not seem to be very insightful as first, but contributed to the enlargement of my connections and a growing 'network'. This enlargement of my network was mainly established through the exchange of business cards – a ritual in business environments – and through making connections on LinkedIn, the professional social networking site intensively used in the insurance industry. When I established a closer relation to an employee of a certain insurance company, I employed them as a liaison to get contact information of other employees within the company, and a recommendation from my liaison contact (see figure 2.2.).

In parallel, an entry into the field was made through the network of contacts of my promotor, who has conducted research on the ways in which the insurance industry has reacted to the possible use of genetic information for insurance purposes. One of the initial meetings with contacts of a major reinsurance company at the company's headquarters in Zürich on the expected consequences of Big Data for the insurance industry was not considered to be insightful in terms of interesting material or insights. We saw however, that the attention of these reinsurance professionals was not

predominantly in the application of Big Data in the field of genomics or post-genomics, but rather that their interest was in developments of health technologies taking behaviour into account. These reinsurance contacts, moreover, contributed to accessing other actors. These meetings also contributed to a closer understanding of the front stage positions on the adoption of Big Data and behaviour-based personalisation in insurance.



vr 16/10/2015 10:36 [redacted]
RE: Wifi info
Aan Gert Meyers

Hello Gert

I am in Berlin today but will try to get hold of [redacted].

Kind regards.

[redacted]

From: Gert Meyers
Sent: 16/10/2015 10:18
To: [redacted]
Subject: Re: Wifi info

Hi [redacted],

I did not yet receive an email from Mr. [redacted]. I made sure I am still available all week except for Wednesday.

Kind regards,

Gert

Figure 2.2. Email contact with liaison contact in reinsurance company, anonymized

The insurance industry is portrayed as a 'closed' and 'conservative' industry (Schueffel & Vadana, 2015; Swiss Re, 2011b). This was also experienced in the search for access to inside information and case studies, where it was often mentioned that I could not get extra information on the development of a product because it was still in a 'very seminal stage' or not in line with the privacy policy, that what they said only reflected their personal opinion and was in no way the position of the company they worked for. These difficulties of obtaining access to the field are in line with the study of (financial) elites:

> 'Like other elites, they are insulated from observation and protective of their time. The researcher must often pass through several levels of gate-keepers to gain access and may be rebuffed at any level. Market-makers can let you in or keep you out and once you're in, you can still be asked to leave at any time.' (Abolafia, 1998, pp. 78-79)

Despite these difficulties of obtaining access, I managed to establish contacts with more than 90 identifiable actors, which are all active in the insurance field. As new types of players emerge in the field during the time of my research, the insurance field broadened. I have had contact with insurers, reinsurers, start-ups, regulators, professional associations, conference organizers, insurance brokers,… holding titles such as actuary, innovation manager, Chief Medical Officer,

CEO, spokesperson, Head of R&D, Head of Marketing Development, Foresight Officer, Futurist, …. Attachment 1 provides a pseudonymised list of my contacts. This list mentions the job function of my contacts (as they present themselves on their business cards or on LinkedIn), and the company they work for. Throughout the dissertation, I will not use real names of the actors I mobilise. Rather, I will use the title they attribute to themselves, either on business cards that were exchanged when we met or as depicted on their LinkedIn profiles.[17]

On top of these identifiable actors, I have had contact with a number actors which I cannot identify. These were, on the one hand, people who were invited by my contact to meetings and interviews. These 'added' people were sometimes announced, while at other times they were not expected by me. At one occasion, I was introduced to two experts during an interview at the headquarters of a Belgian insurance company in Brussels. I met one of the 'added' experts at a business conference in London the week before. Having encountered this person at a different site of investigation was interpreted as a sign that I was meeting the 'right' insurance professionals. On the other hand, I met people during my fieldwork at business conferences without exchanging business cards. The exchange of business cards is a (ritual) practice in the field of business to which academics have to adapt. I sometimes missed the opportunity to exchange business cards because I was not acquainted enough to the practice of exchanging business cards or people that declared not to have business cards with them.[18] These people are not included in the count of contacts.

Apart from the interviews I performed on specific sites and for selected cases of interest, which are listed below separately in the respective sections, 13 semi structured interviews were conducted (see table 2.1.). Together with the analysis of the data collected for the specific sites of expectation generation and case studies of experiments in behaviour-based personalisation in car insurance, these interviews contributed to the continuous refinement of the research questions, and to getting a better understanding of what is considered to be at stake in the insurance industry around Big Data and behaviour-based personalisation.

During all my encounters with insurance professionals during my research, I tried to dress and behave myself 'appropriately' to the situation I was confronted with. This meant that instead of 'going native', I had to 'go corporate' and dress up in suit and tie (see figure 2.3.). When conducting interviews via video conferencing or skype call I presented myself nicely suited (or at least for what was visible for my collocutor). When being in contact with start-up companies who presented themselves 'younger', 'progressive', et al., I did not dress as formal as when I had meetings with reinsurance professionals. When in doubt, I preferred the risk of presenting myself 'over-dressed'.

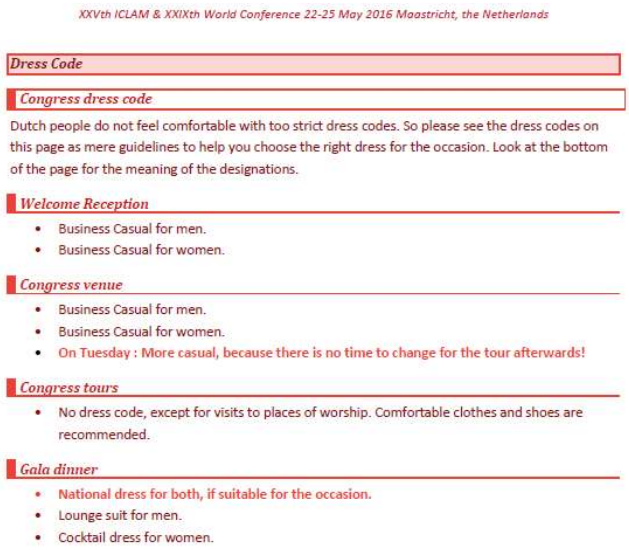
[17] Since some professionals are somehow volatile in their self-described job title (which could be explained by the rapidly changing 'opportunities' that are offered to them or imposed by them), I tend to use the job description used by them at the time of contact.

[18] I am well aware that the claim of some people that they 'have no business cards with them', could also be a strategy not to be contacted by me in the future.

These dress codes were mainly implicitly present, but for one of the business conferences I attended, the dress code was made explicit (see figure 2.4.).



Figure 2.3. Picture taken in elevator before entering the Internet of Insurance Conference 2017, dressed 'appropriately' (April 5, 2017, Dorking Surrey (UK))



XXVth ICLAM & XXIXth World Conference 22-25 May 2016 Maastricht, the Netherlands

Dress Code

Congress dress code

Dutch people do not feel comfortable with too strict dress codes. So please see the dress codes on this page as mere guidelines to help you choose the right dress for the occasion. Look at the bottom of the page for the meaning of the designations.

Welcome Reception

- Business Casual for men.
- Business Casual for women.

Congress venue

- Business Casual for men.
- Business Casual for women.
- On Tuesday : More casual, because there is no time to change for the tour afterwards!

Congress tours

- No dress code, except for visits to places of worship. Comfortable clothes and shoes are recommended.

Gala dinner

- National dress for both, if suitable for the occasion.
- Lounge suit for men.
- Cocktail dress for women.

Figure 2.4 Extract Information booklet ICLAM Conference Maastricht (May 22-25, 2016)

	FUNCTION	COMPANY	PLACE	DATE
1	Head of L&H Underwriting continental Europe	Swiss Re	Zürich	23/06/2015
	Head of Business Development	Swiss Re	Zürich	23/06/2015
2	Innovation manager	Swiss Re	videoconference Leuven-Zürich	14/07/2015
3	Innovation manager	Swiss Re	Zürich	9/09/2015
4	Head of Big Data & Analytics Center	Swiss Re	Zürich	10/09/2015
5	Senior Data Scientist	Swiss Re	Zürich	10/09/2015
6	Head of R&D Big Data & L&H	Swiss Re	skype call Leuven-London	23/11/2015
7	Director of consumer protection & economic regulation	Cabinet of Deputy Prime Minister Kris Peeters	Brussels	9/12//15
8	Director of Information Technology	Swiss Re	skype call Leuven-Zürich	18/12/2015
9	Head of Market Development Business	AG Insurance	Brussels	3/02/2016
	Head of Market & product development Health Care	AG Insurance	Brussels	3/02/2016
	Head of Data Analytics team	AG Insurance	Brussels	3/02/2016
10	Chief Customer Officer	Swiss Re	skype call Leuven-London	8/04/2016
11	Head of Health Analytics Consulting	Munich Re	skype call Leuven-Munich	4/08/2016
12	CEO	Boundlss	skype call Leuven-Perth	23/12/2016
13	Co-founder and CEO	Fitsense	skype call Leuven-Singapore	21/01/2017

Table 2.1. List of semi-structured interviews on 'Big Data and Insurance'

This general acquaintance with the field was used to further specify my research questions and to select and demarcate three sites of expectation generation and two case studies of experiments in behaviour-based personalisation in car insurance products.

2.3. Three Sites of Expectation Generation (RQ 1)

To approach the first research question regarding the generation of expectations as to Big Data and behaviour-based personalisation in insurance, I delineated three sites/sources of expectation generation for which I developed a methodological approach suited to these sites of interest. Official reports published by reinsurance companies, consultancy firms and technology providers, were a

first source of expectations as to the future of insurance markets. These official reports were mainly used to get an acquaintance with the 'frontstage' expectations as to Big Data and behaviour-based personalisation in insurance. Secondly, insurance blogpost platforms function as a grey site of expectation generation. Thirdly, the site business conferences provides a setting in which 'frontstage' expectations during the presentations are combined with informal meetings during networking moments.

Evidently, these three sites of expectation generation are interrelated. Publications by reinsurance companies are sometimes reports of stakeholder events on certain topics. Blogpost platforms are used to announce meetings, events, reports or corporate positions in some debates. During business conferences, official reports are handed out at information/sponsor booths, or referred to during presentations. Nevertheless, I discerned these three sites of expectation generation because one can find different dynamics in each site. Firstly, the official documents are publications of frontstage expectations as to Big Data and behaviour-based personalisation and are an opportunity to get acquainted with the official positions of insurance companies. Secondly, the blogpost platforms are a site of expectation generation that is less formal. Nevertheless these platforms have to be managed in order to provoke and generate expectations. Thirdly, the site of business conferences is a place where the expectations as to Big Data and behaviour-based personalisation in insurance are employed as a catalyst for 'networking activities'.

2.3.1. Official Documents

The most 'obvious' site to look for expectations as to Big Data and behaviour-based personalisation and the future of insurance products are official written documents and reports from reinsurance companies, consultancy firms and technology providers. These documents are opportunities for actors who claim to have expertise, such as reinsurance companies, consultancy firms and technology providers, to show their forecasts of technological developments or to provide possible scenarios where the role of Big Data and behaviour-based personalisation in insurance is portrayed (Lehtonen, 2017c). Forecasting and scenario building are considered to be important 'instruments of imagination' and future making (Beckert, 2016; Soneryd & Amelung, 2016; Urry, 2016).

I consulted over 60 documents (see attachment 2 for an overview). These are reports published by reinsurers, consultancy firms, and insurance interest groups, three types of actors that have to show off 'expertise', as well as 'sector briefs' by technology companies, who are happy to provide 'solutions' for the problems formulated in the reports. I analysed these documents to determine, how insurance is defined, what the role of insurance is considered to be, what the dynamics in insurance are considered to be, what the expectations are as to new technologies, Big Data, and analytics, and what types of personalisation are described.

The official documents are important instruments of imagination according to Beckert (2016). They contribute, indeed, to a better understanding of what the role of insurance is considered to be

and what the official positions are regarding the role of new technologies for insurance purposes. However, these accounts of expectations as to the Big Data and behaviour-based personalisation are very 'clean' and give a 'tamed' presentation on the expectations as to the future of the insurance industry (Hacking, 1990; Van Hoyweghen, 2010), therefore not really leading to 'surprising' observations (Tavory & Timmermans, 2014). Because of this 'clean' and 'tame' character, these official reports are not discussed in a distinct chapter of this dissertation. Yet, they were important to better understand the official positions on the importance of Big Data and behaviour-based personalisation in insurance. These 'insights' were taken into consideration when investigating and analysing the other sites of investigation and experimental practices. In chapter 7, the position on anti-discrimination legislation and fairness in insurance is based on the analysis of official Swiss Re documents on the topic.

Two other sites of expectation generation were investigated, which are less tamed, but that doesn't mean they are 'wild' (Callon, 2007b). I prefer to call them 'grey' sites of expectation generation. Grey research literature, understood as texts of a non-formal/non-official kind that circulate in a community, permit observation on different positions in debates, confusion in the use of concepts, and indistinctness that is often absent in official documents (Kelty, 2012). Grey sites, in other words, can be important places to study markets-in-the-making, as they are sites used to experiment with, and explore, possible futures, which involve the utterance of 'fictional expectations'. There are many of these grey sites to be found in the insurance world. Blogpost web-sites, where less formal opinions and expectations are published, of which we discuss one more in-depth in this article, is the first investigated site of expectation generation (see section 2.3.2.). Another locus for insurance professionals to enact their expectations as to the future of insurance are business conferences where different actors are brought together to discuss expectations as to the future of the insurance market while simultaneously demonstrating their expertise (see section 2.3.3.).

2.3.2. Blogpost Platform *Open Minds*

Most reinsurance companies have a website dedicated to their expertise and 'industry knowledge' (e.g., Zürich Insurance, https://www.Zürich.com/en/knowledge; SCOR https://www.scor.com/en/sgrc/home.html), while new players have popped up enacting platforms to discuss the future of insurance (e.g., The Digital Insurer). I selected the Swiss Re blogpost *Open Minds* as a specific 'grey' site where fictional expectations are expressed in the re/insurance industry for two main reasons. The first reason has to do with the type of texts that circulate on the *Open Minds* dialogue platform. The *Open Minds* blogposts are expectations of re/insurance professionals who are affiliated to Swiss Re as well as to other companies. It is specifically developed as an autonomous platform and not built as an explicit part of the main company website through the adoption of their own layout. This layout and corresponding feature of 'independence'

allows one to distinguish the platform and what is uttered on the platform from official corporate positions on certain topics. This distinction between 'opinions' and more formal 'position statements' makes blogpost contributions are considered to be something 'different' than a mere marketing tool of the company. This brings us to the second reason why I focused on *Open Minds* as a site of investigation. I selected *Open Minds* because it offers a glimpse at how a traditional and renowned actor in the insurance industry copes with and generates expectations as to the future of the industry. Swiss Re is globally the second largest reinsurance company with a revenue of $30.20bn and a net Income of $3.76bn in 2015 (Swiss Re, 2016a). Founded in 1863 and intertwined with the Swiss financial capital Zürich, Swiss Re has built a knowhow, expertise and reputation that is one of (Swiss) solidity. Swiss Re is not only the second largest insurer financially, but also one of the most influential reinsurance companies in terms of expertise. This influence is portrayed as important by the company itself:

> 'The Swiss Re Group is a leading wholesale provider of reinsurance, insurance and other insurance-based forms of risk transfer. (…) From standard products to tailor-made coverage across all lines of business, Swiss Re deploys its capital strength, expertise and innovation power to enable the risk-taking upon which growth and progress depends.' (http://www.swissre.com/about_us/)

The Swiss Re blogpost *Open Minds* is one of Swiss Re's newest features in performing expertise and expectations as to the future of insurance.

To empirically study the blogpost platform *Open Minds* I used different methods and sources. First, I delved into the architecture and materiality of *Open Minds* by visiting the website at least weekly between September 2015 and September 2016, reading blogs and discussions, and consulting the terms and conditions to get a better idea of how the platform is being organized and performed. Second, I read and selected blogposts for a discourse analysis. This was done by using an iterative search strategy to consult relevant blogposts and discussions that were posted between April 2013 and September 2016. This resulted in 99 blogposts that were selected for our analysis of how the platform functions in generating expectations as to the future of insurance. Thirdly, I looked into how *Open Minds* was connected to other platforms in the industry. I did this by consulting authors' twitter accounts, and tracing he blog's proliferation outside of *Open Minds*. Finally, I conducted interviews with contributors to the platform and with the platform's moderators in order to further explore the purposes and functionalities of *Open Minds* (see table 2.2.). When I quote in my empirical analysis *Open Minds* blogs, I provide the quotes with the date when the blogpost or comment was published and the number of the blog. All Open Minds blogs have their own URL address, in which the blogs are numbered. When I used this structure of the URL-addresses to trace back the first contributions to the platform, I found that the first blog that is still

online (d.d. 2016-03-29) is the blog numbered 36 and was posted on 11 April 2013 (https://openminds.swissre.com/stories/36/). Moreover, I pseudonymised the authors of these comments or blogs by referring to the job functions ascribed to themselves on the professional networking site LinkedIn and the company they are affiliated to.

	FUNCTION	COMPANY	PLACE	DATE
1	Innovation Manager	Swiss Re	Teleconference Leuven-Zürich	14/07/2016
2	Innovation Manager	Swiss Re	Zürich	9/09/2015
3	Head R&D Big Data & L&H	Swiss Re	Zürich	23/11/2015
4	VP, new & social media	Swiss Re	Skype call Leuven-Zürich	8/04/2016
5	Chief Customer Officer	Swiss Re Life Capital	Skype call Leuven-London	8/04/2016

Table 2.2. List of semi-structured interviews on Open Minds

2.3.3. Business Conferences

As a second grey site of expectation generation, I conducted fieldwork on events organized by insurance professional organisations (e.g., ICLAM bi-annual conference), re/insurance companies (e.g., FintechMunich Meetup, Munich, July 2016, Munich Re) as well as by newly emerging actors that capitalize on expertise around this 'future-making' (e.g., Internet of Insurance, London, June 2016, Internet of Business). Business conferences are a means to be updated on the topic of the conference and to generate 'take home ideas' to work with when returning to the office, while at the same time having the opportunity to network with actors that provide 'solutions' for the problems posed.

These business conferences and webinars are plentiful. The newsletters I subscribed to organise webinars devised either as debates between different professional experts or as a series of short presentations or use-cases with the possibility of interaction through the web interface. During the first exploratory phase of my research, I regularly participated in such webinars (e.g., 'Managing Data with Integrated Interoperable Mobile Devices', Fierce, December, 12, 2014; 'Risk talk on the sharing economy', Swiss Re, November, 19, 2015; 'The Insurance Blockchain', The Digital insurer, September 6, 2016), to get acquainted with 'insurance talk'. It was only later that I realised business conferences and webinars are a very interesting site of expectation generation to be included in my research setting.

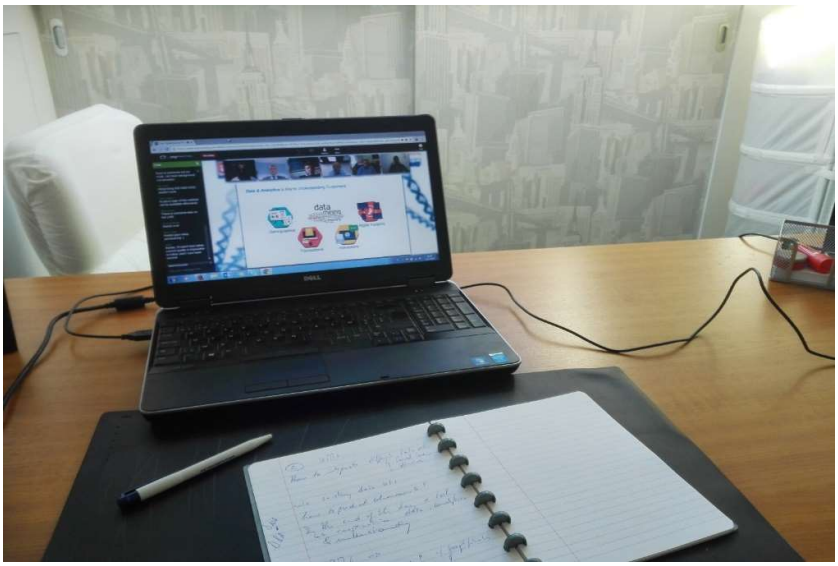


Figure 2.5. Attending a webinar, 'The Insurance Blockchain' (organized by The Digital Insurer), September 6, 2016

I conducted ethnographic fieldwork during 6 business conferences, of which one was cancelled:

- IoT & Big Data /Insurance/Conference, London (UK), Internet of Business (IoB), (British Library Conference Centre, 2015, June 2-3, CANCELLED
- Big Data Analytics Insurance, London (UK), IQPC ('International Quality and Productivity Center'), 2016, January 27-28
- Impact de nouvelles technologies sur la segmentation, Brussels (BE), ASALV (The Walloon Association of Actuaries), 2016, May 2
- Bi-annual conference, ICLAM (International Committee of Insurance Medicine), Maastricht (NL), 2016, May 22-25
    - My promotor and myself presented at this conference. Our presentation, entitled 'Big Data, Small Solidarity? Insurance and its new disruptive technologies', was awarded the third price of the 'ICLAM award 2016'
- Internet of Insurance, IoB, 2016, June 13-14
- Internet of insurance, Dorking Surrey, IoB, 2017, April 5-6

These business conferences are organised by different types of organisations. For example, IQPC, short for the International Quality and Productivity Center, is a company specialised in the organisation of business conferences and is not exclusively dealing with insurance nor the impact of Big Data and behaviour-based personalisation. When I attended the Big Data Analytics Insurance conference a training for international negotiation and diplomacy was organised by IQPC at the hotel floor the conference I attended was taking place. One week later IQPC organised a conference on Military Vehicles. ASALV. and ICLAM are professional organisations representing respectively the Walloon Actuaries and the Medical Actuaries worldwide. During the ICLAM Conference my

promotor and I gave a presentation entitled 'Big Data, small solidarity? Insurance and its new technologies of personalisation'. These three business conferences are used to compare to the '*Internet of Insurance'* conferences, organised by 'The internet of Business'.

The main focus of this site of interest has been on the three 'Internet of Insurance' conferences organised by the Internet of Business (IoB). IoB is a news media platform covering news and expectations as to the importance of the Internet of Things (IoT) for business. IoB organises, for different business sectors (Retail, Health Care, Banking & Payment, Insurance, …), business conferences dealing with the challenges of IoT for these particular business sectors. The 'Internet of Insurance' conferences are one of these conference series. For the 2015 'Internet of Things & Big Data Insurance' conference, I managed to get free access, but this conference was cancelled a few weeks before it was due. The 2016 'Internet of Insurance' conference took place in the London City centre, near the 'Silicon Roundabout'. The 2017 'Internet of Insurance' conference was organised in a Land House in Dorking Surrey.

The 'Internet of Insurance' conferences are interesting for several reasons. Firstly, as IoB is also a news media platform specialised in the linkage between IoT and Business sectors, we can find interesting cross relations with other sites of expectation generation. Secondly, the first conference of Internet of Business I was confronted with, the 'Internet of Things & Big Data Insurance' conference, was cancelled a few weeks before it was planned. This 'failure' is interesting to take into account (Ariztia, 2018; Law, 1992, 2004). Finally by attending the two Internet of Insurance conferences in the UK I am able to compare differences between two business conferences organised by the same business conference organisation. This comparison will allow me to perform my analysis in a more longitudinal way, investigating whether at these conferences the same persons meet again, whether the same speakers are programmed and whether they come with the same message, what the effect is of moving to a different type of venue, and so on.

My fieldwork for each conference I attended, started a few months before the event took place. The bargaining process to obtain access to the conference, allowed me to gain extra information on the conference and the strategies used by the business conference organisations to convince 'delegates' to 'commit' to the conference (see figure 2.6.).


ma 19/12/2016 15:23
[redacted] <[redacted]@iob-media.com>
FW: Following our call...
Aan gert.meyers@soc.kuleuven.be
U hebt dit bericht beantwoord op 21/12/2016 15:48.

Hi Gert

Thanks for taking the call, greatly appreciated.

As mentioned, if we can make this happen then great, if not, then I tried my best and sometimes you have to admit defeat.

Have a check internally, the lowest I can TRY and get signed off is £299+VAT. If we can do this then great.

I understand the cost of the hotel is a contributor, hence why I am trying to push this through.

Let me know the outcome as this would have to be done before I leave at Thursday at 5pm

Kindest regards

Figure 2.6. Follow up email by business conference organisation after a call on attending 'Internet of Insurance 2017 Conference' (December 19, 2016)

During the conference itself, I participated in the keynote sessions, roundtables, networking moments, conference dinners and even a 'networking run'.[19] I made field notes of the content of the talks during the sessions as well as of the informal discussions with other delegates and of the context of the business conference (see figure 2.7. for a drawing of one of the business conference venues). I also took pictures during the presentations, mainly of the slides as a memory support. This was a mistake. I should have taken more pictures of the interactions themselves. I will only show pictures of the event where no individual participants, 'delegates', can be recognised (except for the conference Chair, who had a more 'public' function). Finally, I used the documents that were sent or handed out before, during and after the conference as a written source for my analyses. These documents are advertisement booklets, different versions of (updated) programmes, reports handed out at information booths of sponsors, slideshows that were shared afterwards, and so on.

[19] This networking run for instance, was mentioned in the programmes that were circulated beforehand as an ideal informal way of getting to know the co-delegates of the business conference. In the final version of the programme the networking run, scheduled at 6:45 AM on the first day of the Internet of Insurance 2017 conference, magically disappeared. Nevertheless five people, including me, appeared to have run in the field surrounding the house the business conference was taking place.

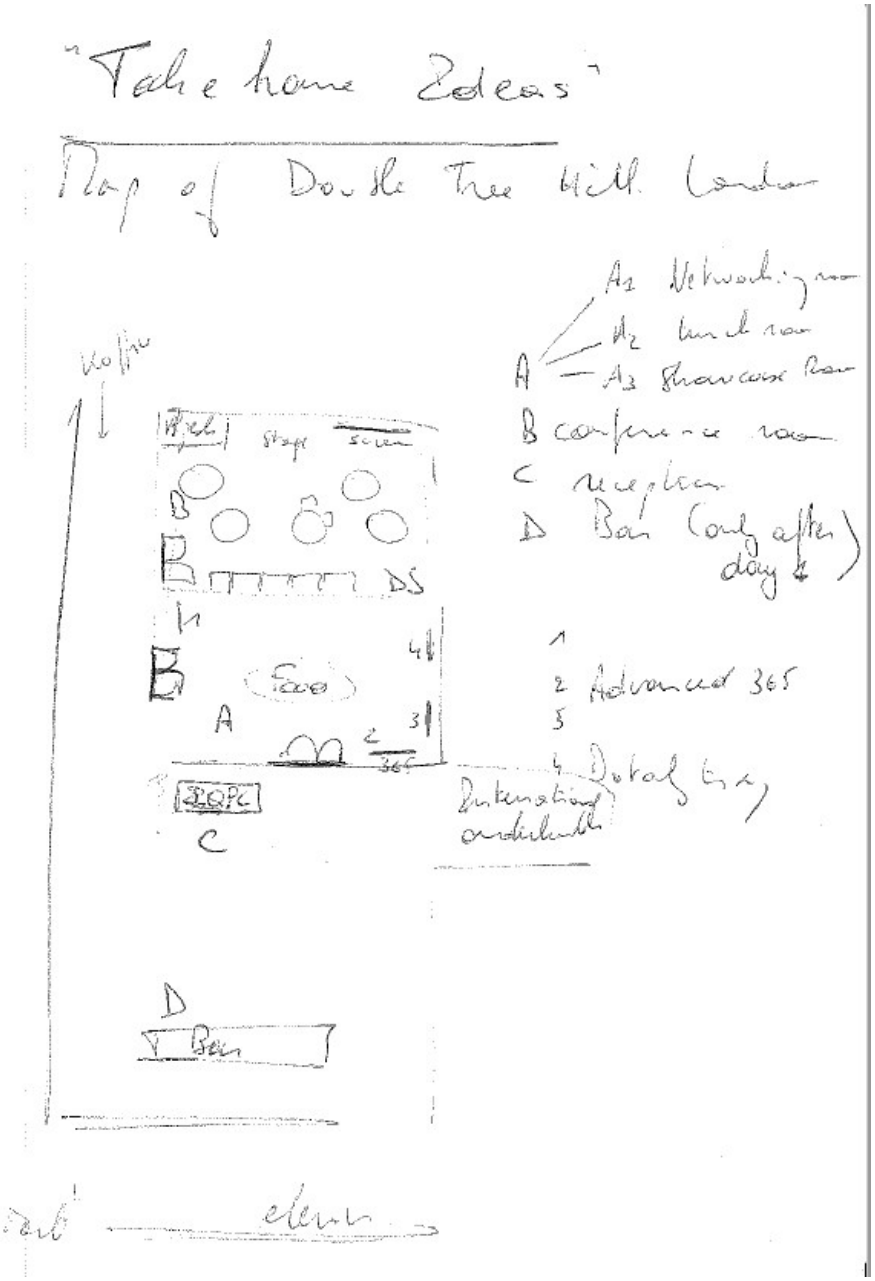


Figure 2.7. Map of Big Data Analytics Insurance conference (field notes)

In the margin of the business conferences I attended, I performed 4 semi-structured interviews discussing the role of business conferences for the respondents (see table 2.3.). I was cautious during my fieldwork at business conferences of explicitly asking for an on-the-record interview after being turned down quite resolutely for such an interview at the first business conference I attended. This request was considered too intrusive during the fieldwork. Therefore a core focus was on informal contacts. Summaries of these contacts and discussions were written down in the field notes. The field notes also document the contents of the talks during the conference, the setting of the events and reflections on what I experienced.

	FUNCTION	COMPANY	PLACE	DATE
1	Partner	CRtP	Leuven	8/03/2016
2	Actuarial Responsible Telematics	AXA	Paris	20/05/2016
3	Medical Consultant	Swiss Re	Maastricht	25/05/2016
4	Co-founder & CEO	Fitsense	Skype call Leuven-Singapore	12/01/2017

Table 2.3. List of semi-structured interviews on business conferences

2.4. Following a Detour: Two Experiments in Car Insurance (RQ2)

To approach the second research question on experiments with behaviour-based personalisation, I decided to perform two case studies (Flyvbjerg, 2011). The case studies I selected are two products/services in an experimental stage in that they are not rolled out as a 'stabilised' insurance product. The selection criteria of cases were of a practical and substantial nature (Swanborn, 2010).

The practical difficulties of obtaining access to the field were even more present in the domain of getting access to the development of behaviour-based personalisation in health insurance. Enacting (behaviour-based) personalisation in health insurance is currently still considered to be very sensitive (see chapter 5), which contributes both to a greater resistance by insurance professionals for cooperation with my research while the development of behaviour-based personalisation in health insurance products is kept less visible.[20]

Because behaviour-based personalisation in car insurance is considered less controversial and more established than behaviour-based personalisation in health insurance in markets in for instance the Italian and UK market and most insurers in Belgium are launching experimental set-ups, I chose to make the same experimental detour the insurance industry is making, from expectations as to behaviour-based personalisation in health insurance to experiments in car insurance.

Considering this practical detour, two cases were selected on substantive grounds (Swanborn, 2010). These two informative cases allow a focus on particular dynamics at work in these experiments. In the first case, I focus on the collaboration between the different partners involved in an experiment that is at the same time a 'study' and a 'commercial campaign'. The second case allows one to pay close attention to the way in which the roles and responsibilities of both insurer and insured are redefined in behaviour-based personalisation in insurance through a change in the logic and legitimation of redistribution.

[20] 'It [Drive Style information, GM] is not considered something personal, you can be around a group of friends and somebody says 'you drive like a maniac' and then you say 'yeah, sometimes' and everybody laughs and moves on. Whereas in health it is completely different, so being diagnosed with certain illnesses is something private. Heredity stuff, family illnesses, current illnesses, past illnesses, that is not something you discuss sort of openly.' (Interview Innovation Manager, Swiss Re, 2015/07/14)

A dominant position in the social sciences is that the goal of any social science research is to obtain inference from what we have observed to what we have not observed (King et al., 1994). In my case study approach I will, rather, try and show cases exemplar elements of developments that I observe in the broader field of interest, i.e. behaviour-based personalisation in (health) insurance, while keeping the specific character of the case studied in mind. Therefore, the case studies I mobilise should not be considered as pars pro toto cases, which promise inference to a broader group of cases, nor as stand-alone case, which assume a 'uniqueness' of the cases described (Swanborn, 2010). The cases I present are exemplar cases.

During my case studies I do not pseudonymise the case at hand because this would not allow a rich/'thick' description of my cases and would result in too much vagueness (Geertz, 1973). The '*Caro* Rijstijlstudie' and 'Fairzekering' are explicitly named, as are the names of the companies involved in these experiments. I mobilise, consistent with my overall 'pseudonymisation-policy', only the professional roles of the people interviewed and not their personal names.

2.4.1. '*Caro* Rijstijlstudie' by Corona Direct

Corona Direct is a Belgian direct insurer best known for its 'kilometerverzekering', a product of usage based insurance. In January 2015 they presented the '*Caro* rijstijlstudie' (*Caro* drive style study, see figure 2.8.), which aimed at tracking 5,000 clients over a period of at least one year in exchange for drive style coaching and a 20% premium discount. In the *Caro*-project four partners are mentioned: Corona Direct, Sentiance (a technology start-up providing drive and lifestyle profiles based on smartphone data), Drivolution (a company specialised in providing drive-style coaching and behavioural change) and the University of Ghent. The *Caro*-project did not enact behaviour-based personalisation in pricing, but rather in coaching individuals on their driving profile.

This case study is interesting for at least four main reasons. Firstly, this experiment is portrayed as a 'study', while it offers at the same time drive style coaching and a 20% premium reduction which immediately makes one suppose that the *Caro*-project is many things at once. Secondly, rather than presenting the 'study' as a 'Corona-study', several partners are portrayed which makes collaboration between the partners an interesting point of interest (Callon, 2017). Thirdly, during the development of the project, a questionnaire on drive style profiles was conducted by a market research firm. This form of 'traditional' market research invited me to reflect on new forms of market research and ways of 'knowing products', such as 'design thinking' which one of the partners adopts as its main philosophy. Finally, because Corona Direct established its 'kilometerverzekering' in the past decade, it is interesting to look at the move they make from Pay As You Drive (PAYD, based on the distance driven) to behaviour-based personalisation (and eventually to Pay How You Drive).



Figure 2.8. Website Caro by Corona (adapted from https://www.coronadirect.be/nl/auto/Caro)

To conduct this case study, I initially contacted the commercial director of Corona Direct, who directed and recommended me to the other partners that were mentioned in the communication and to the company providing the communication for the *Caro*-project. All these partners responded positively to my request for an interview, except for the Data Analytics team of Ghent University who did not respond to several emails and reminders from myself and my Corona Direct contact person. I performed 10 semi-structured interviews on the project (one in March 2015 during the exploration phase of this research, 6 between March and May 2016 and three follow-up interview in January and February 2017, see table 2.4.), of which I could record and transcribe 9. During the interviews the recording was sometimes stopped, when the interviewee received telephone calls or when the interviewee wanted to share confidential information. One respondent did not give permission to be recorded.

The information from the interviews was enriched with publicly available information that can be found on the company's website on the *Caro*-project. This material consists of a general 'introduction' into the study, a list of FAQs (Frequently Asked Questions), information on the premium reduction that can be obtained when participating in the study, an advertisement video, the questionnaire that was launched during the development of the project and so on.

	FUNCTION	COMPANY	PLACE	DATE
1	CEO and Founder	Sentiance	Antwerp	11/03/2015
2	Commercial Director	Corona Direct	Diegem	31/03/2016
3	Partner/Creative Director	Kunstmaan	Leuven	7/04/2016
4	Technology Director	Kunstmaan	Leuven	16/04/2016
5	Managing Director 1	DrivOlution	Wilsele	25/04/2016
6	VP Mobility	Sentiance	Antwerp	10/05/2016
7	Managing Director 2	DrivOlution	Wilsele	12/05/2016
	Follow-up interviews			
8	Commercial Director	Corona Direct	Diegem	4/01/2017
9	Partner/Creative Director	Kunstmaan	Leuven	17/03/2017
10	Managing Director 1	DrivOlution	Wilsele	17/03/2017

Table 2.4. List of semi-structured interviews for case 'Caro-Rijstijlstudie'

2.4.2. 'Fairzekering' by Chipin

Chipin is a Dutch technology-company that provides 'technology that can measure driving behaviour, for vehicles up to 3500 kg, for a very competitive price.' (Chipin, 2015, translated from Dutch). Although Chipin does not want to be(come) an insurer – they are mainly interested in developing measurement algorithms and selling their services to other businesses – they developed the insurance product Fairzekering to prove that their technology works. Seen as such Fairzekering is an experimental showcase to convince insurers to obtain their B2B (business to business) solutions (Muniesa & Callon, 2007). The Dutch word for insurance is 'verzekering', and by calling their product Fairzekering Chipin is putting fairness at the heart of their insurance product. This fairness is enacted through handing out monthly premium reductions up to 35% for those drivers who obtain good driving scores.

This case study is interesting for at least two reasons. First, the Fairzekering product is not offered by an insurer but by Chipin, a technology provider that wants to show that and how their technology works. This is deemed necessary in an industry slow in adopting new technologies. Secondly and most importantly, Fairzekering appeals to the value of 'fairness' and establishes – in the name of fairness – behaviour-based personalisation through premium reductions for those drivers who obtain good driving scores. This appeal to fairness is especially interesting because in the (economics of) insurance literature claims are made on 'actuarial fairness', a concept used by the neoclassical microeconomist Kenneth Arrow (1921-2017). This led me to broaden this case study with a genealogy of different enactments of (actuarial) fairness in insurance.

To empirically study the shifts in the enactments of actuarial fairness in insurance and the changing economic assumptions about insurance policyholders, I used different qualitative research methods to show where and how actuarial fairness is *at work* in insurance in three different settings. The material presented here is illustrative of the broader issues at stake concerning actuarial fairness in insurance, and is part of a wider-ranging research project on the ways in which re/insurers use new digital technologies to enact behaviour-based personalisation in insurance.

First, to investigate actuarial fairness in microeconomics, I performed a close reading of the seminal 1963 paper by Kenneth J. Arrow on 'uncertainty and the welfare economics of medical care', where the concept of actuarial fairness was originally coined. This paper is recognised as being a canonical contribution to the economics of insurance (Finkelstein, 2015). Moreover, Arrow's work is especially relevant as a starting point of our analysis of actuarial fairness in insurance economics since I build on Baker's (1996, 2000) work, which provides a genealogy of moral hazard from the 19th century until the microeconomics of Arrow. This close reading of Arrow's work was enriched with a literature review of academic sources reflecting on the importance of Arrow's 1963-paper for the domains of insurance economics and health care economics (e.g. Arrow, 1974, 1984; Finkelstein, 2015; Pauly, 1968; Stiglitz, 2015).

I also analysed 31 insurance and economics handbooks and textbooks in order to investigate the scientific 'stabilisation' (Latour, 1987) of the concept of actuarial fairness. The consulted handbooks were published in English between 1937 and 2014 by major academic and textbook publishers (e.g., Oxford University Press, Cambridge University Press, Springer, John Wiley). I looked for references to the notions 'actuarial fairness', 'fairness', 'fair', 'Arrow', notions containing 'fair' or 'fairness' and other notions in the index that seemed to be potentially of interest (such as 'pure premium', 'net premium', 'equitable rate') to analyse the ways in which the fairness of insurance premiums were defined. In accordance with Leaver's (2010) approach, I also investigated the citation history of Arrow's 1963 paper in the databases *EconLit* and *Web of Science*, and performed frequency counts of 'actuarial fairness' and 'actuarially fair' usage in these databases.

Second, to study the shifts and ways in which the insurance industry has employed the notion of actuarial fairness in its practices, I performed a document analysis of official publications by insurers, reinsurers and other industry expert actors to study positions on the necessity and desirability of risk selection, in the context of anti-discrimination legislation. Against this background, I present here an illustrative series of publications by Swiss Re, one of the largest and most influential reinsurance companies, explicitly dealing with actuarial fairness and anti-discrimination legislation. I analysed these sources in order to demonstrate how actuarial fairness was invoked as a principle to defend the established insurance practices of risk selection.

Third, to study how actuarial fairness is enacted in contemporary insurance markets, I selected the Dutch telematics car insurance product *Fairzekering* as a paradigmatic case (Flyvbjerg, 2011)

for understanding the changing assumptions about insurance policyholders in an era of behaviour-based personalisation. I have selected the case study *Fairzekering* because it explicitly makes reference to 'fairness', which means I am not obliged to elaborate on implicit definitions of and references to something *like* fairness. I performed a content analysis of the *Fairzekering*'s product website and its advertisement video. Furthermore, I conducted 7 semi-structured interviews with (re-)insurance professionals on behaviour-based personalisation in insurance in general and the *Fairzekering* product in particular (see table 2.5.).

The presented research methods, suited to the different empirical settings documented below, allow for an analysis of the different enactments of actuarial fairness in insurance.

	FUNCTION	COMPANY	DATE
1	Manager Tactical & Commercial Marketing	DVV	15/01/2015
2	CEO and Founder	Sentiance	11/03/2015
3	National spokesperson	AXA Belgium	9/04/2015
4	Co-founder & CDO	Fairzekering/Chipin	3/06/2015
5	Innovation Manager	Swiss Re	14/07/2015
6	CEO	MotoSmarty	9/12/2015
7	Manager Market Development Retail	Baloise Insurance	20/01/2016

Table 2.5. List of semi-structured interviews on UBI and Fairzekering

2.5. Abductive Data Analysis 'in Practice'

The principles of abductive analysis were already present in deciding on a strategy to access the field and the selection of the different sites of investigation. During the analysis of the empirical material, continuous movements were made between fine-tuning the Research Questions, going back to the field with first findings, building the argument, and returning to the data. In the remainder of this section I present how this approach helped me to reformulate my research questions, encouraged me to confront my contacts in the insurance industry with first research findings, and enabled me to engage in a discussion between my data and my argument. These moments of analysis are not distinct phases, but rather practices enforcing each other.

2.5.1. Reformulating Research Questions as Continuous Form of Analysis

The pragmatist approach and the three main research literatures guided me to investigate 'the event of Big Data' by focusing on expectations as to, experiments with, and consequences of behaviour-based personalisation in insurance. In order to approach the generation of expectations as to Big

Data and behaviour-based personalisation in insurance, the experimental practices of behaviour-based insurance and the consequences and implications of behaviour-based personalisation in insurance, three research questions (RQs) were formulated. The formulation of these research questions was guided by my theoretical approach and, as in every research project, these research questions were continuously reformulated throughout the research. I did not want to impose research questions on my field of interest, which would bear the risk of posing research questions that do not 'matter' according to the actors in the field. Acknowledging the trajectory of the research questions contributes to an accountable presentation of the results. It is not common to show this evolution of how research questions are framed throughout the research process. The original research questions (ORQs) are most of the time treated as if they never existed. Researchers, forgetting the path towards the RQs with a Double Click [DC] (Latour, 2012), present RQs as they directly came up with brilliant, highly relevant questions. The path towards my RQs is shown nevertheless for two reasons. Firstly, this closer resembles how research questions are posed and come to be, and contribute to an accountable way of presenting research findings. Research questions are inevitably reformulated and adjusted while conducting the research (Tavory & Timmermans, 2014). Reformulating research questions is the first step of analysing the data. Secondly, the shift in how the research questions are posed shows a first way in which the pragmatist approach allowed me to tackle 'the event of Big Data' in insurance in a different way, and is part of the adopted abductive analysis. To show the trajectory the research questions have experienced, I start here with the formulation of the ORQ as expressed in the research proposal (presented at the Guidance Committee meeting of April 20, 2015). Subsequently, it is legitimated why and how these were fine-tuned.

RQ1: Expectations

> **ORQ1**: How and by whom is the Big Data promise and the Big Data fear imagined? How and by whom is the promise and fear of Big Data with regards to the use of personal data for insurance purposes represented? Do insurers want to generate, store, and use personal data for insurance purposes?

The first research question is reformulated from the discussion of expectations towards the formulation of expectations for four reasons. Firstly, the use of 'promises and fears' is too dichotomous and has either overly positive or overly negative connotations. The concept of expectations is better suited because it has no such moralised connotations and allows these expectations to be treated as an actor in the development of future insurance markets. Secondly, the focus is shifted from the expectations itself to the situations in which expectations come to be. The process of 'expectation generation' is what is investigated here. Thirdly, the use of 'behaviour-based personalisation' is favoured over 'personal data' because personal data can be interpreted

very broadly while its use as a juridical concept can be confusing and limiting at the same time. Moreover, the focus on data is too narrow and disregards the technological and interactional aspects of behaviour-based personalisation. Behaviour-based personalisation can refer to the personalisation of prices, products, as well as services that take behaviour into account and may involve data, such as environmental data, that can be considered not strictly 'personal'. Fourthly, it avoids asking whether insurers want to use personal data for insurance purposes because this supposes that the developments in the insurance industry are dependent on choices by insurers. These choices are the result of networks of actors of which expectations as to the future of the insurance industry are part of. Finally, two sets of sub-questions were added, suited to the selected sites of investigation.

This results in the following reformulated RQ1:

> **RQ1:** Which expectation generation devices are employed and how do they generate expectations as to the future of the insurance industry? How are expectations as to Big Data and behaviour-based personalisation formulated and generated in grey sites of expectation generation? How is this done on blogpost platforms? How are these platforms moderated? How is this done at business conferences? How do these conferences bring different actors together?

RQ2: Experiments

> **ORQ2:** How are personal data generated, stored, and used for insurance purposes?

The second research question had to be reformulated as well. Firstly, because it is too narrowly focused on the 'use' of 'personal' data, which neglects other enactments of Big Data and wearable technologies. Secondly, the attention was specified towards behaviour-based personalisation as the research progressed. Thirdly, when formulating the second original research question, the objective was to study the use of personal data in 'real' insurance products on the market. Since the adoption of behaviour-based personalisation is still part of the expectations of insurers, the attention is focused on practices of behaviour-based personalisation in situations that can be characterised as experimental.

This results in the following reformulated RQ2:

> **RQ2**: How are experiments with behaviour-based personalisation in insurance products conducted and presented? How does this enact behaviour-based personalisation?

RQ3: Consequences

> **ORQ3:** What are the consequences of the generation, storage, and use of personal data in insurance with respect to: (Genetic) discrimination in insurance? Practices of insurance solidarity? Epistemological requirements of what 'counts' as evidence?

This research question was adjusted, in line with the previous research questions with regards to 'behaviour-based personalisation' instead of 'use of personal data'. Furthermore the sub-question regarding the epistemological requirements of what counts as evidence has lost part of its priority since it was observed during the research that the main consequences were to be found in shifts in what the roles of the different actors involved in insurance products are considered to be and what their relation will be to each other.
This results in the following reformulated RQ3:

> **RQ3**: What are the consequences of behaviour-based personalisation in health insurance with respect to: (Genetic) discrimination in insurance? Practices of insurance solidarity? The actors, roles and responsibilities in insurance?

2.5.2. Building the Argument as a Form of Analysis

Qualitative research generates data with some characteristics of Big Data.[21] Qualitative data are heterogeneous (consisting of transcribed interviews, field notes, written sources, websites, movies,…) and most of the time hard to structure, two prototypical features of Big Data (Mayer-Schönberger & Cukier, 2013). An important aspect of qualitative research, which is common to all research, is a withdrawal from the field of investigation and the generation of a distance between the observations/data and the broader argument (Davies, 2008).

When it became clear that I would approach the research as an investigation into practices of expectation generation as to 'Big Data in insurance', experimental practices with, and consequences of behaviour-based personalisation, I grouped the observed data according to the sites of investigation. Some data were relevant to more than one site of investigation. For instance, during interviews, different aspects of 'Big Data in insurance' or behaviour-based personalisation could be touched upon, and many official reports are not only a result of expectation generation but also a contribution to the reformulation of what insurance is and should be (discussed in chapter 7).

An important part of the analysis took place while collecting the data. When preparing to conduct fieldwork at the business conferences, I made sure I scanned the programme, I got acquainted with the announced speakers I certainly wanted to meet, and I read background material

[21] I thank Rudi Laermans for making this remark during one of our encounters discussing my MA thesis in Sociology (2011-2012).

(such as sector briefs provided by sponsors). This enabled me to be 'at ease' throughout the conference and be 'prepared for the unexpected'. Also, after attending already some conferences, I knew better what to look for as I was already working on the argument on the 'business of business conferences' and the 'take home ideas'. When preparing for an interview on an experiment in car insurance, I ensured I got acquainted with media coverage published on the experiment, press releases on the experiments, and the websites of the experiments. Furthermore, I read the 'terms and conditions' of the smartphone applications when an app accompanied the experiment. I compared this information with my broader knowledge of the field of experiments of behaviour-based personalisation in car insurance. This allowed me to formulate questions and look for the 'surprising' features of this specific experiment.

After collecting the data, transcribing the interviews and structuring the field notes, I read all this 'big and messy' data and made notes on what was not in line with my expectations. These elements that did not fit my expectations and 'surprised' me, were used to confront this with the research literature in the sociology of markets and the sociology of insurance. This allowed me to build an argument and look for things that my analysis could contribute to the existing research literature. This relationship between the data and the research literature was established while writing or preparing presentations. While building the argument, the data were employed to support the argument and the research literature allowed me observe the 'surprising' elements in the data.

I am well aware that this way of working may lead to an idiosyncratic reading of my data, a problem common to all qualitative research methods, and having a different research literature bibliography may lead to different observations. The employed methods and my theoretical background were performative for my observations (Law, 2004). At different times, I was in doubt on how to frame the analysis, as different approaches were possible. For instance, during the seminar series of P3G[22] discussing the work of William James, I presented the experimental detour towards behaviour-based personalisation in car insurance as a way to make behaviour-based personalisation 'alive', i.e. taken into consideration as a real possibility for future insurance products (James, 1919). Later on I decided to 'reserve' the Jamesian alive/dead reading to discuss the doing of expectation generation devices (see chapter 3.). Furthermore, the 'translation'-lens (Callon, 1998a) could also be employed to describe the Caro-experiment discussed in chapter 6, and the *Open Minds* chapter (chapter 3) was first developed as a discourse analysis chapter. This work of 'fitting' the data to a theoretical background and building the argument was an important element of the analysis as it allowed to detect what could be observed in the data.

[22] P3G stands for 'le Petit Groupe du Grand Gagnage'. It consists of a group of young Belgian pragmatist researchers in political sciences, philosophy, STS, architecture, and sociology, which discusses ongoing research projects in the light of pragmatist readings (D'Hoop et al., 2018; Thoreau et al., 2016).

2.5.3. Encounters with Insurance Professionals as Areas of Provocative Containment

A second instance where my abductive analysis became apparent, was during my contacts with insurance professionals. At several instances – during academic conferences after presentations, or at business conferences during networking moments – I was approached by insurance professionals to give some more information on my research. To this invitation I always replied positively, always keeping in mind not to give confidential information to these contacts. These contacts, together with moments of data generation, enabled me to test my previous research findings by trying to provoke reactions on some of my hypotheses.

I employ the work of Lezaun et al. (2013) on the importance of 'areas of provocative containment (see sections 3.4. and 6.2.). Lezaun and colleagues state that in experimental research and marketing research areas of provocative containment are constituted, which means that through 'triggers' (provocations) in a controlled setting (containment) reactions from the research subjects are constituted. Likewise, during my encounters with insurance professionals I tried to install 'kind provocations' that allowed me to generate reactions to my first research findings.

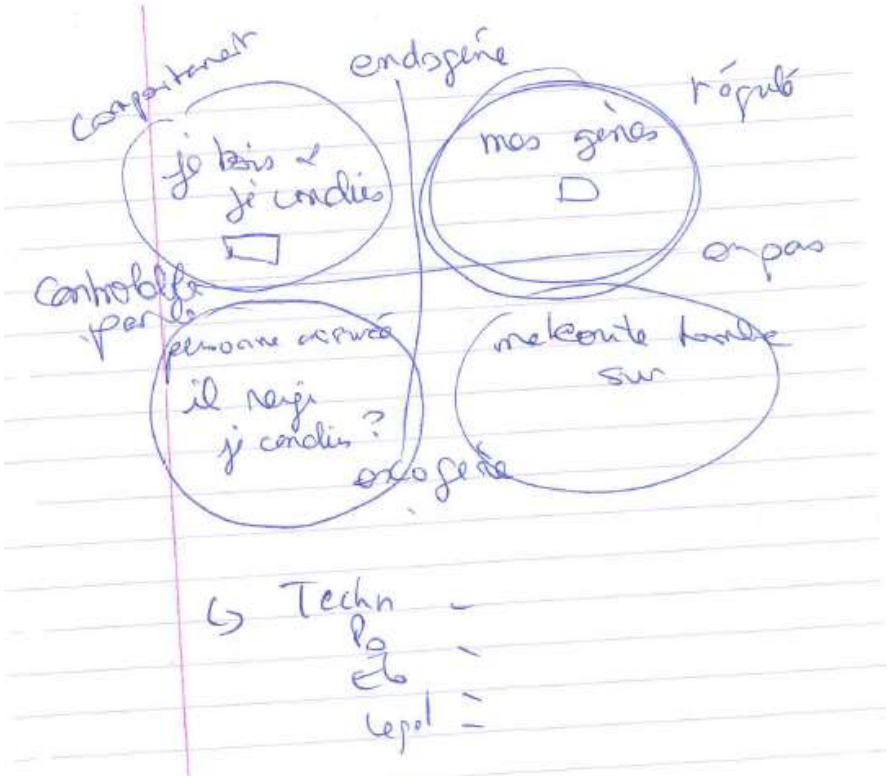


Figure 2.9. Notes by AXA 'Foresight Officer' after my presentation at 'Profile, Predict Prevent. Data-driven policies, markets and societies' Conference (October 30-31, 2015)

For instance, after exchanging notes with a 'Foresight Officer' the major French insurance company AXA on the challenges of personalisation in insurance based on behaviour (see figure 2.9.), I was invited, together with my promotor, to present our views on the role of Big Data and behaviour-

based personalisation in future health insurance products. Our presentation – in the presence of the foresight officer, the head of the company's research fund, the former head of the French data legislative board, and some assistants – at the Paris Headquarters led to further meetings on my research, contact details and collaboration of other employees within the company and collaboration on research proposals. One meeting was even explicitly characterised as 'for your eyes only – not to be quoted, used'. During this meeting, an internal document on segmentation and personalisation was discussed. I will not employ this document or discussion as data for my research. What I did, however, was to use this meeting to test some of my first research findings.

Also, during (informal) encounters at business conferences, I proposed some intuitions on what Big Data is really all about in insurance. For instance, at the 2016 Big Data Analytics Insurance conference, I dropped, during a roundtable discussion, the idea that Big Data is first and foremost interesting for insurance purposes because it allows to make things (risk categories, customer engagement,…) *smaller*. This idea was taken up in the session wrap up as an idea coming from 'the sociologist in the room' (see section 4.6.).

My promotor and I were also accepted to present at the bi-annual conference of ICLAM (the International Committee for Insurance Medicine). Our presentation, entitled 'Big Data, Small Solidarity? Insurance and its new disruptive technologies' was programmed in one of the minor parallel sessions. Our presentation at this conference of Insurance Medicine, where remarkably little attention could be found for wearable health technologies, was nominated for the third prize of the ICLAM awards. After our presentation, we could establish contact with some of the attendees working on the topic of wearable health technologies and behaviour-based personalisation in health insurance.

Being approached by actors in the insurance field and not being misunderstood by these actors, is interpreted as a sign, coming from the actors themselves, of being 'on the right track', and part of my abductive approach. Insurance professionals can recognise themselves in my approach and in the presented first research findings. I did not employ a vocabulary detached from the views of the insurance professionals I came in contact with. For me, this openness to these hints is exemplary of abductive analysis: 'That we are studying a subject matter does not mean that we are attacking it.' (Latour, 1999, p. 2).

Part I. Expectations



Detail from La Clairvoyance (René Magritte, 1936), reproduction by Pauline Swinnen (picture: Sven Peremans)

3. ‘This Could be Our Reality in the Next Five to Ten Years’: a Blogpost Platform as an Expectation Generation Device on the Future of Insurance markets

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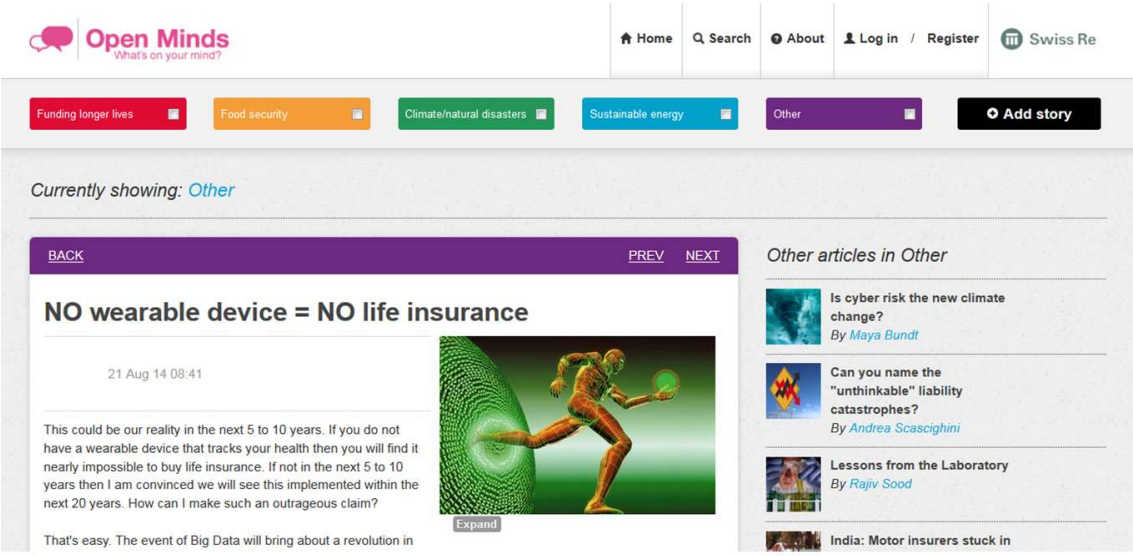


Figure 3.1. Story ‘NO Wearable device = NO life insurance’ (https://openminds.swissre.com/stories/688/)

3.1. Introduction

‘*NO wearable device = NO life insurance*’ (see figure 3.1.). This title expresses a bold expectation about the future of the life insurance market:

> ‘(…) This could be our reality in the next 5 to 10 years. If you do not have a wearable device that tracks your health then you will find it nearly impossible to buy life insurance.’ (Innovation Manager Swiss Re, story n° 688, 2014-08-21)

This is an extract from one of over a thousand blogpost ‘stories’ on the Swiss Re *Open Minds* ‘dialogue platform’. *Open Minds* is a blogpost platform designed in 2013 and hosted by Swiss Re, one of the largest reinsurance companies in the world. Reinsurance companies are multinational

'insurers of insurance companies' that operate globally by mitigating the risk incurred by direct insurers for 'low probability events' (Bougen, 2003), such as catastrophe risks, pandemic risks, and other systemic risks. Besides the financial core of the business, reinsurance companies have an important agenda-setting function for governing global developments, e.g. climate change and ageing, while providing expertise to insurers and governments facing these challenges (Florin, 2013; Lehtonen, 2017c; Van Hoyweghen & Horstman, 2009). This expertise can be used to ensure more reliable acceptance policies, reductions in the insured risk portfolios, and the development of new insurable risks (SCOR SE, 2016).

Expectations of the future of risk and how this might affect the future of insurance have been a major concern for the reinsurance industry (Munich Re, 2010). One of the topics most discussed in the contemporary (re-)insurance business is that of new digital technologies, which are considered to be a huge opportunity for insurers to 'personalise' their products and services (Meyers & Van Hoyweghen, 2017, see chapter 8). Digital health start-ups are causing a stir and are believed to possibly 'disrupt' the insurance business (Marino, 2016). These promises are part of a broader imaginary dealing with the 'Big Data revolution' (Kitchin, 2014b), which could have a massive impact on future insurance markets (Ernst & Young, 2016). Along with these promises, important social issues have been raised concerning the use of these new digital technologies in insurance, such as extensive surveillance (Lyon, 2002; Van Dijck, 2014), the unravelling of privacy, or exclusion from insurance plans (O'Neil, 2016). In this chapter, the aim is to go beyond these hopes and fears on the Big Data revolution in insurance and focus our attention instead on how *expectations as to the future* of digital insurance are being provoked, while carving out the role that market devices play in generating expectations of the future.

In his essay *The Will to Believe*, the American pragmatist William James characterises hypotheses as either live or dead. A hypothesis can be said to be live when it 'appeal[s] as a real possibility to him to whom it is proposed' (James, 1919, p. 2). In short, a hypothesis is live when it is taken into account. When investigating hypotheses that are 'proposed to our belief', one should not look at properties of the hypothesis *itself* but at the consequences/effects the hypothesis provokes to those to whom it is proposed. Through James' 'flank movement' (Muniesa, 2011), the viability of a hypothesis is thus not seen as an intrinsic property of the hypothesis: 'deadness and liveness […] are relations to the individual thinker' (James, 1919, pp. 2-3). In this chapter, this argument is expanded by investigating how, in order to make expectations 'live', market devices have to be enacted in order to generate expectations as to the future of particular markets, technologies, and products. This means that the implications of a certain technology in a certain market, such as, for instance, the importance of Big Data for future insurance markets, are not realised independently but have to be actively made 'live'.

Within Science and Technology Studies (STS), the sociology of expectations has made important contributions to analysing the crucial role of expectations for the shaping of new science

and technology (Borup et al., 2006; Brown & Michael, 2003; Verschraegen et al., 2017). Different instances of future-making such as technologies of future scenario-building (Soneryd & Amelung, 2016; Urry, 2016) and the business of producing technological expectations (Pollock & Williams, 2010) are empirically highlighted. In a similar move, the German economic sociologist Jens Beckert acknowledges, in *Imagined Futures* (2016, p. 62), the constitutive role of 'fictional expectations' of the future in realising economic markets:

> 'The future is unknown at the moment expectations about it are created. Ontologically, in other words, the openness of the future rules out the possibility of restricting expectations to empirical reality.'

Because the future is an area of uncertainty, Beckert (2016) suggests that expectations should be theorised as 'fictional' rather than as rational. Fictional expectations as to the uncertain future inform investment decisions and motivate the development of innovations.

In the last two decades, a pragmatist sociology of markets has been emerging, focussing on how markets and their properties are constituted while paying attention to the performativity of economics (Çaliskan & Callon, 2009, 2010; Callon, 1998c; Mackenzie et al., 2007b). Within the sociology of markets, 'market devices' are defined as 'a simple way of referring to the material and discursive assemblages that intervene in the construction of markets' (Muniesa et al., 2007, p. 2). They contribute to the construction of markets and their actors, (the circulation of) goods, valuation outcomes as well as estimations as to properties of markets. This approach has previously been used to study insurance markets, which are populated by calculative market devices (McFall, 2015a; Van Hoyweghen, 2014). Market devices that generate properties of markets, such as, for instance, focus groups and opinion polls, play an important role in the construction of economic markets (Lezaun, 2007). Market opinions and expectations are not waiting 'out there' to be discovered but have to be *provoked* (Igo, 2011; Law, 2009) through the deployment of market devices.

The alignment of market device theory and the theory of fictional expectations allows one to analyse the reinsurance blogpost platform *Open Minds* – the empirical case here – as an *expectation generation device*. Expectations concerning the future of insurance markets have to be provoked since insurers are considered, even by themselves (Swiss Re, 2011b), to be part of a closed business and to behave conservatively in relation to innovation. The area of 'provocative containment' (Lezaun et al., 2013) that is constituted by the blogpost platform *Open Minds* generates expectations as to the future of insurance, which urges the insurance sector to prepare for the future role of new digital technologies. Before fictional expectations as to the future of insurance can gain influence and 'become live', they first have to be provoked by expectation generation devices.

The chapter will proceed by explaining why the insurance industry in general, and the *Open Minds* blogpost platform in particular, is interesting as an empirical site of investigation for

expectation generation before explicating our methodology. In the empirical sections, the fictional character of contributions to *Open Minds*, which are called 'stories', is reported on; it is analysed how an 'openness' is constituted through the design of the platform. Furthermore it is shown how attempts are made to contain some forms of overflowing of the platform's openness. In the concluding section, on the concept of 'expectation generation devices' is reflected upon as an analytical tool to focus on the heterogeneous work that has to be invested in generating expectations about economic markets.

3.2. Actors and Sites of Expectation Generation in Insurance Markets

The insurance industry is an interesting site of investigation to study practices of expectation generation. Insurance is an industry that arose in the 19th century, together with the emergence of probabilistic thinking, statistics and nation states (Hacking, 1990). During the last 150 years, the technology of insurance has been mainly centred around the pooling of risk, a redistribution of costs between those with good luck and those who experience losses, and the calculation of prices based on historic population data (Ewald, 1991). The emergence of new digital technologies is believed to challenge insurance-'as-we-know-it'(Ewald, 2012a) and thus generates a space where expectations are likely to be formulated.

Apart from academic discussions, expectations as to new digital technologies in insurance are first and foremost uttered by actors 'interested' (Callon, 1986b) in future insurance markets. These actors are not confined to traditional re/insurance companies and professional insurance associations but are joined by other market players, such as consultancy firms as well as newly emerging independent players, characterised as *promissory organisations* by Pollock and Williams (2010). The utterance of expectations as to the future of digital technologies by actors in the field of insurance is taking place at different sites. Expectations as to Big Data are uttered, firstly, in official publications from re-insurance companies, technology companies, consultancy firms, and global politico-economic institutions. Besides these more official sites, expectations are expressed in what I call 'grey sites'. Grey literature, understood as texts of a non-formal/non-official kind that circulate in a community, allows to remark different positions in debates, confusion in the use of concepts and indistinctness that is absent in official documents (Kelty, 2012). Grey sites, in other words, can be important places to study markets-in-the-making, as they are sites used to experiment with, and explore, possible futures, which involve the utterance of 'fictional expectations'. There are many of these grey sites to be found in the insurance world. Business conferences are one forum where different actors are brought together to discuss expectations as to the future of insurance. Digital web-seminars or webinars are organised to discuss more specific topics without the costly need to be 'on site'. A final important locus are websites or blogpost platforms where less formal

opinions and expectations are published. Most reinsurance companies have a website dedicated to their expertise and 'industry knowledge', while new players have emerged and have built platforms to discuss the future of insurance (e.g. Digital Insurance https://www.the-digital-insurer.com/).

Open Minds is selected as a 'paradigmatic' case (Flyvbjerg, 2011) for the empirical investigation of expectation generation in insurance for two important reasons. First, *Open Minds* offers a glimpse of how a traditional, renowned actor in the insurance industry copes with, and generates, expectations as to the future of insurance. Swiss Re is globally the second largest reinsurance company, with, in 2015, a revenue of $30.20bn and a net Income of $3.76bn (Swiss Re, 2016a). Founded in 1863, Swiss Re has built up knowhow, expertise and a reputation of (Swiss) reliability. *Open Minds* is one of Swiss Re's latest means to perform expertise and expectations as to the future of insurance. During 2013, the year in which Swiss Re celebrated its 150th anniversary, four 'Open Minds forums' were organised in Zürich, London, New York and Beijing to discuss major global challenges in the world of risk, such as 'funding longer lives', 'food security', 'climate/natural disasters' and 'sustainable energy'. These topics were considered by the company to be crucial for understanding the future of risk, and were to be discussed with an 'open mind' in order to reimagine the future:

> 'You have to reimagine the future, but in order to do that you have to be dealing with people who have open minds.' (Swiss Re, 2014d)

In April 2013, these '*Open Minds* forums' were continued digitally with the development of the digital '*Open Minds* dialogue platform'.

Secondly, I selected the blogpost platform *Open Minds* because it is performed as an 'open' platform, as is clear from the name of the platform 'Open Minds'. It is not constructed as part of the main company website, where reinsurers usually showcase their expertise, but is explicitly built as a separate platform, allowing Swiss Re employees, clients, and wider readers, to express what is 'on their mind' concerning the future of insurance:

> 'Our Open Minds blog is our dialogue platform. It's a place to exchange views on risk, with a focus on the risks we'll face in the future. Alongside our clients and employees, we invite citizens, organisations and governments to discuss how we can come together to help find answers to some of the world's biggest challenges.' (Swiss Re, 2013d)

The name of the platform, '*Open Minds*', allows one, moreover, to investigate the importance in the insurance industry of 'openness', the innovation idiom that gained prominence through Chesbrough's book *Open Innovation* (2003). The analysis of *Open Minds* demonstrates how a particular type of openness has to be enacted.

To empirically study the way in which the blogpost platform *Open Minds* functions as an 'expectation generation device' on the future of insurance, different methods and resources have been used. First, I delved into the specific architecture and materiality of *Open Minds* by visiting the website at least weekly between September 2015 and September 2016, reading blogs and discussions and consulting the terms and conditions in order to get a better idea of how the platform was organised and performed. Second, in order to investigate the expectations uttered on the blogpost platform, I focused on one specific topic, new digital technologies, by selecting blogposts for a discourse analysis of how the future of insurance is imagined in relation to digital (health) technologies, Big Data, and opportunities to 'personalise' risk. This was done by using an iterative search strategy to consult relevant blogposts and discussions posted between April 2013 and September 2016, resulting in 99 blogposts for analysis. When *Open Minds* blogs are quoted in the empirical analysis the quotes are provided with the date when the blogpost or comment was published as well as the number of the blog. All *Open Minds* blogs have their own URL address, in which the blogs are numbered. When I used this structure of the URL-addresses to trace back the first contributions to the platform, it was found that the first blog that is still online (d.d. 2017-07-27) is the blog numbered 36, which was posted on 11 April 2013 (https://openminds.swissre.com/stories/36/). I pseudonymised the authors of these comments or blogs by referring to the job functions ascribed to themselves on the professional networking site LinkedIn as well as the company they are affiliated to.

Third, I analysed how the *Open Minds* blogpost platform was connected to other media and platforms in the insurance industry. I did this by consulting the blogpost authors' Twitter accounts and LinkedIn profiles, and by conducting searches of blogpost titles and author names in the search engine Google, in order to trace the blog's proliferation outside of *Open Minds*. Finally, I conducted interviews with contributors to the *Open Minds* platform and with the platform's moderators in order to further analyse the purposes, discourses and functionalities of *Open Minds*.

3.3. Performing 'Stories' on Expectations as to new Digital Technologies in *Open Minds*

All contributions to Open Minds are explicitly called 'stories' (the URL of the homepage announces a 'stories'-page: https://openminds.swissre.com/stories/) and contributors are encouraged to literally 'add their story' (see figure 3.2.). By naming the blogposts explicitly 'stories', the contributions are made to seem less formal, as is further supported by the *Open Minds* subtitle 'What's on your mind?' (see figure 3.2.). This invitation to discuss directly what is on the insurance professional's mind underlines the idea that the views expressed on *Open Minds* include no corporate 'cover' and that contributors can speak 'in their personal name'.

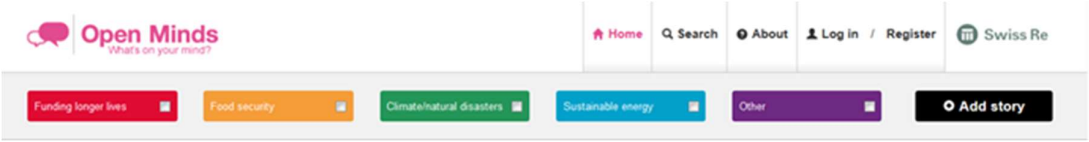


Figure 3.2. 'What's on your mind?' & 'Add Story'

Referring to the *Open Minds* contributions as 'stories' is a good way of describing the published blogposts. I identified at least three different types of 'story-telling' on *Open Minds*. First, blogs are written as a personal story. Contributors engage the reader by writing down what the contributor has witnessed, how his/her experiences contribute to an informed expectation concerning the future of the industry, or simply what happened at the event the contribution is describing.

> 'My career story begins in 2008, which let me tell you was an awesome year to graduate from college[…].' (Strategy Analyst, Swiss Re, story n° 970, 2016-01-11)

A more generalising story-like approach appeals to a recognisable particular situation:

> 'You're at a party and are introduced to someone new. The conversation quickly turns to 'so what do you do for a living?' […] Now imagine you then have to explain reinsurance! […].' (President P&C regional and national, Swiss Re, story n° 968, 2016-02-01)

This extract and the feeling of recognitions that is triggered demonstrate that these story-like elements are, first of all, engaging the reader to 'go with' the fictional expectations uttered and, at the same time, that an 'imagined community' is being assembled at *Open Minds*. Stories are, secondly, also deployed as 'exemplars' of a given situation or a given technological development.

> 'Click the link below for the truly inspiring story of a dad who found a way to get his son who was born without fingers an affordable prosthetic hand. We hear a lot about the dangers of 3D printing and its lack of regulation, but in this instance free plans posted on the internet were able to change someone's life. (…).' (Senior Strategist, Omobono, 2013-11-05, story n° 498)

These exemplar stories are used to make broader generalised claims about the potential of new technologies in insurance markets, on the basis of very concrete case stories. These case stories fall somewhere between generalisable 'particular' stories and unique 'singular' stories, which allows for a 'politics of singularity' (Moreira, 2012).

A third type of story present on *Open Minds* provides normative arguments about hypothetical situations. Imagining scenarios of future insurance markets is part of this move towards hypothetical situations and is considered to be one of the main methods of future-making (Soneryd & Amelung, 2016; Urry, 2016). The blog with which we opened this chapter is such a scenario on the possible adoption of wearable technology.

> 'If you do not have a wearable device that tracks your health then you will find it nearly impossible to buy life insurance. If not in the next 5 to 10 years then I am convinced we will see this implemented within the next 20 years. How can I make such an outrageous claim? That's easy. The event of Big Data will bring about a revolution in customer experience similar to what we have seen in communications and planning. […].' (Innovation Manager Swiss Re, story n° 688, 2014-08-21)

A situation where it becomes nearly impossible to find life insurance without allowing the insurance company to track your lifestyle is acknowledged as possible, and *hence* a fictional scenario of the future. The relevance of this scenario is defended by explaining the informed but *nevertheless* fictional expectation that 'the event of Big Data' will bring a revolution to customer experience and the insurance industry.

With this logic of imagining possible futures, several blogs encourage the reader to actively 'imagine' fictional scenarios of the future. This is done either by imposing a specific hypothetical situation on the reader's imagination or by inviting readers to unleash their imagination. The power of technological possibilities is, for instance, shown by a hypothetical situation involving driverless cars:

> 'Imagine no longer having to concentrate on driving your car to and from work each day and the free time this would bring about. Imagine being able to simply text your car to come and pick you up when you are ready to go home. Imagine the broader safety potential as human error is removed from driving altogether. This is powerful stuff.' (Head of casualty treaty for Regional & National Clients, Swiss Re, story n° 898, 2015-09-23)

Beckert (2016) focuses his analysis of 'instruments of imagination' on forecasting and economic theory as cognitive devices that hide, in the end-products, the narrative and fictional character of expectations of the future. This focus on the more technical accounts of the future has proven also to be relevant in market device theory (Callon & Muniesa, 2005). In our analysis of the blogpost platform *Open Minds*, we see, however, the explicitly narrative character of the expectations articulated. This allows one to redirect the theoretical claims about the role of 'fictional'

expectations in capitalist economies. On the blogpost platform *Open Minds*, the fictional character of expectations of the future is firmly acknowledged and welcomed. Referring to blogposts as 'stories' and the various fictional elements in the blogposts shows the importance of the *explicitly* fictional character in creating expectations. The blogposts that circulate on *Open Minds* require, moreover, an active provocation without which they would not be formulated in the first place. This infrastructural work that has to be carried out to provoke fictional expectations as to *Open Minds* will be discussed in more detail in the next section.

3.4. Be(com)ing Open: Provoking Expectations Through the Enactment of 'Openness'

Becoming 'open' is seen as a means to be better able to react to technological change and to make Swiss Re's in-house expertise employable. When preparing its 150th anniversary in 2013, Swiss Re launched the blogpost platform *Open Minds*:

> 'Swiss Re's mission is we make the world more resilient […] and to do that we have to be very open and so Open Minds is the digital expression of the way we do business and the way we fulfil our company mission.' (interview, VP new and social media, Swiss Re, 2016-04-08)

As inscribed in the blog's name, *Open Minds* aims to enact the openness that is part of the company's mission. Before fictional expectations can become 'live', to adopt James' terminology once again, they have to be generated by a market device in the first place. The openness that is aimed at in *Open Minds* is intended to encourage different types of actors to express their take on specific topics of interest. These actors on *Open Minds* are not limited to the official institutions of Swiss Re. The wish to include a broad range of professionals and stakeholders in the discussion is considered to be the characterising property of *Open Minds* (Swiss Re, 2013d).

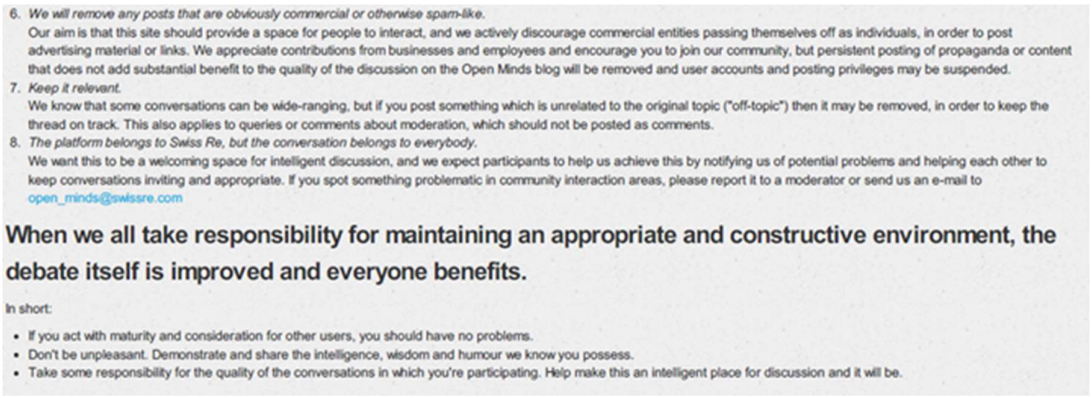
The *Open Minds* infrastructure and management actively enact a particular conception of 'openness' that had to be constituted. The platform is seen by the professionals who made and moderate *Open Minds* as something that had to be 'nurtured and taken care of' so it could grow into a more independent entity, 'a handsome blog that has a lot of friends' (interview, VP new and social media, Swiss Re, 2016-04-08). Below, two ways of actively enacting openness on *Open Minds*, which enables the generation of expectations of the future, will be focused on: the post-moderation of individual blog contributions and the invitation to people to 'be(come) open' by writing blogs.

3.4.1. Keeping the Discussion on Topic: Post-moderation and the House Rules

The moderating of the blog is the first enactment of openness. *Open Minds* is framed as a dialogue and discussion platform, and explicitly not as a marketing tool. The 'openness' of *Open Minds* is not endangered by the practice of moderating, it is claimed, since the blogs are 'post-moderated':

> '[This] means that you can post there right now and it will go online […] and then we will look at the post after it is online and only contact you if there is inappropriate content. And it is absolutely fascinating because you know it is just taking a completely different angle on risk in the sense that we are assuming that people will behave well rather than assuming that people will behave badly. […] It proves that most people really should be trusted.' (interview, VP new and social media, Swiss Re, 2016-04-08)

The contributors to the blog platform happen to 'behave well'. The 'House Rules' show what is meant by this, requesting 'maturity' of the contributors (see figure 3.3.). The House Rules have to make sure that the contributions and the comments on the blog are constructive, adding to the dialogue without being 'directed'. Only a particular type of openness is invited, allowed, and constituted. The last three House Rules, the longer statement, and the short recapitulation mould the possible contributions and the tone of the discussions.



6. *We will remove any posts that are obviously commercial or otherwise spam-like.*
   Our aim is that this site should provide a space for people to interact, and we actively discourage commercial entities passing themselves off as individuals, in order to post advertising material or links. We appreciate contributions from businesses and employees and encourage you to join our community, but persistent posting of propaganda or content that does not add substantial benefit to the quality of the discussion on the Open Minds blog will be removed and user accounts and posting privileges may be suspended.
7. *Keep it relevant.*
   We know that some conversations can be wide-ranging, but if you post something which is unrelated to the original topic ("off-topic") then it may be removed, in order to keep the thread on track. This also applies to queries or comments about moderation, which should not be posted as comments.
8. *The platform belongs to Swiss Re, but the conversation belongs to everybody.*
   We want this to be a welcoming space for intelligent discussion, and we expect participants to help us achieve this by notifying us of potential problems and helping each other to keep conversations inviting and appropriate. If you spot something problematic in community interaction areas, please report it to a moderator or send us an e-mail to open_minds@swissre.com

When we all take responsibility for maintaining an appropriate and constructive environment, the debate itself is improved and everyone benefits.

In short:

- If you act with maturity and consideration for other users, you should have no problems.
- Don't be unpleasant. Demonstrate and share the intelligence, wisdom and humour we know you possess.
- Take some responsibility for the quality of the conversations in which you're participating. Help make this an intelligent place for discussion and it will be.

Figure 3.3. 'House Rules', https://openminds.swissre.com/house-rules/

According to the House Rules, *Open Minds* bans 'obviously commercial' posts. This does not, however, mean that these posts are deleted right away. Contributors are given the chance to rewrite the story to make it more suitable:

> '[I]t is not about selling products. It is really about discussing risk and so when people nakedly market their products there, we contact them and we ask them to please take a more high-level view on the trend or the issue, and if they

> don't we take it down, and we only had to do it twice.' (interview, VP new and social media, Swiss Re, 2016-04-08)

Although the platform is intended to be open, the decision on the relevance of the blogs posted is not totally up to the *Open Minds* community. Nevertheless, the House Rules claim that the 'conversation belongs to everybody' and appeal to the responsibility of the members of the community to 'behave'. These House Rules and the enactment of these rules by the (post-)moderators make the platform a space for a 'high-level' discussion that allows and welcomes 'pretty provocative [posts]' (interview, VP new and social media, Swiss Re, 2016-04-08).

The House Rules and the post-moderation thereby constitute an area of provocative containment that shares some characteristics with the political epistemology of the focus group (Lezaun, 2007) and experimental areas of provocative containment (Lezaun et al., 2013). Market devices often constitute areas of provocative containment, which are spaces in which reactions, opinions, or experiences are generated in a controlled setting so these reactions can be taken into account or dealt with:

> 'Provocative containment is thus a technique for the production and display of social reality. Provocation is to be understood here in the sense of both generation and challenge. To provoke is to trigger an effect […]. To contain something is to have it handled 'inside' a clearly demarcated space, but also to hold it stationary, or in a manageable scale and duration, to prevent it from overflowing.' (Lezaun et al., 2013, pp. 279-280)

Contributions that express expectations as to the future of the insurance industry are provoked as long as they meet the criteria of 'high-level analysis', 'relevance', and are not 'obviously commercial'. The *Open Minds* market device provokes fictional expectations as 'open' expectations of the future of the insurance industry that are contained by prescribing and enacting a very specific form of openness that is 'mature', 'relevant', and 'high level'.

3.4.2. Getting the Discussion Online: Enacting Professionals to Be(come) Open

The House Rules and the post-moderation are not sufficient to install an open discussion. Contributors too have to 'become open', which is a personal characteristic believed to be elusive in the financial industry:

> 'It is actually quite hard for financial people to think openly and to converse openly, because in their B&A [Behaviour and Attitudes, GM] […]. It is quite hard for them to actually go out there and say what they think and ask for opinions and just be open so it's interesting. It is a cultural change and it is a

> fascinating one.' (interview, VP new and social media, Swiss Re, 2016-04-08)

To enable this 'cultural change' and to enact openness in the industry's 'B&A', the moderators take an active stance in 'opening up' the potential contributors. They invite people to make contributions on the occasion of events organised by Swiss Re without losing their 'authenticity':

> 'We wanted it to be a very credible, very authentic platform. And that means that there are all kinds of different posts, […]. So we try to guide them and explain like 'hey your blog is quite commercial, maybe you could think more you know, on a higher level'. […] You got two choices there. You either completely fabricate everything and then everything is fake, or you kind of let everybody grow with it, and that's the approach we picked and so we tried and like guide them softly.' (interview, VP new and social media, Swiss Re, 2016-04-08)

Although the 'House Rules' create a space for 'relevant', 'high-level', 'authentic', and 'mature' openness, the post-moderators have to actively encourage professionals to engage in the discussion. *Open Minds* needs professionals with an open subjectivity. The openness is not unconstrained and compromises between 'authentic' naturalness and 'fake' artificiality.

The effort that has to be invested in convincing professionals to contribute to the discussion and 'inviting' people to write blogposts for specific occasions shows the 'solicitous' nature of these efforts (Igo, 2011). The expectations are not formulated without a provocative trigger (Lezaun et al., 2013). Contributors have to be actively encouraged to form, express, and publish expectations as to the future of the insurance market.

> 'We also do events [with the Centre for Global Dialogue, GM] around key topics, and for example when we invite people to speak at our events, we will often offer them to post a blog on *Open Minds*, to keep the conversation going after the event. […] So really, we use it as a kind of a digital dialogue extension, to the work that we do and the events that we that we participate in, or manage.' (interview, VP New and Social Media, Swiss Re, 2016-04-08)

Work on the performativity of social survey research (Igo, 2011) shows that opinions are not waiting 'out there' to be discovered but have to be provoked. Focus groups, for example, create a situation where, on the one hand, participants are encouraged to share what is on their mind but, on the other hand, only share what is relevant for the focus group. This balance is safeguarded by the moderator, an actor who has to facilitate a natural discussion while intervening as subtly as possible.

Through the interventions of the moderator, focus group market research produces 'tradable opinions' (Lezaun, 2007) by facilitating a 'natural' discussion in a very artificial way. This is done by orienting the flexibility of the participants:

> 'Moderators have to steer the participants' inevitable contextualisation of their own situation and statements […], and neutralize the attention they are bound to pay to the experimental nature of their grouping.' (Lezaun, 2007, p. 136)

These elements are also present in the *Open Minds* infrastructure, although the visibility of the moderator is diminished. The House Rules outline the principles of openness that are constituted on *Open Minds*. A particular kind of openness, one that is high level and mature, is encouraged. Furthermore, everyone is encouraged to add their stories on the future of the insurance markets. The post-moderation and the active invitations to professionals to contribute to the platform are less 'in the open' in order to give the impression that the Swiss Re community expresses 'what is on their mind' without mediation and without the need for post-moderators. In the next section, what happens when these expectations leave Open Minds will be discussed, demonstrating how the proliferation of *Open Minds*-blogs contributes to the liveness of the blogpost platform *Open Minds*.

3.5. Leaving *Open Minds* to Become 'Live'

The circulation of expectations formulated on *Open Minds* can contribute to the role of Swiss Re as an expertise provider becoming a 'live' one – to take up James' characterisation of hypotheses (James, 1919). Although constituting an area of provocative containment, the *Open Minds* device is always in danger of becoming uncontrollably porous. The expectation generation device itself can start to live an unforeseen life. Some work has to be invested to ensure that the global dialogue does not flow over to other areas of expectation generation, thus undermining Swiss Re's position as an open and innovative expertise provider.

In his analysis of the economic concept of externalities, Callon (1998c) contends that overflowing is necessary for framings to be productive. What holds for market contracts equally holds for *Open Minds* as an expectation generator:

> 'No contract is capable of, or has an interest in, systematically suppressing all connections, burning all bridges or eliminating the dual nature of every element involved. Which is why the heterogeneous elements, that are linked together in order to frame the contract and its performance, in reality take part in its overflowing: and it is precisely because they are sources of overflows that they make the contract productive.' (Callon, 1998c, p. 255)

The metaphor of 'overflowing' is adopted here, in line with (Lezaun et al., 2013), because the connections that are made with other expectation generation devices or interested actors contribute to the status – live or dead – of *Open Minds* and Swiss Re's leading role in providing expertise. As well as being inevitable, overflowing can, just like externalities, be productive as well. *Open Minds* as an 'open' dialogue platform is especially susceptible to overflowings. These overflowings take different 'directions'. On the one hand, external expertise is actively welcomed to flow over to the *Open Minds* platform. On the other hand, different things, such as the expectations expressed on *Open Minds* or the reputation of Swiss Re as being an expert on the future of the insurance industry, can become live by leaving *Open Minds*.

Since *Open Minds* was launched in 2013, social networking sites such as LinkedIn and Twitter have gained even more prominence than before, generating continuous overflowing. Not surprisingly, links to these social networking sites are structurally embedded in *Open Minds*. 'Social plugins' are provided to Facebook, Twitter, LinkedIn, and Outlook (see figure 3.4.).



Figure 3.4. Social plugins on Open Minds

The texts of the blogposts published on *Open Minds* are often simultaneously published on the professional networking site LinkedIn. This could impede the prominence of *Open Minds* as a space for expert expectations and Swiss Re's reputation in providing solutions for the challenges described. Twitter, often characterised as a microblogging site, is another social networking site that produces circulation. Twitter is used as an easy and powerful tool to proliferate recent blogs. By sharing a story on Twitter, the importance of the expressed opinions can be supported, the engagement of the actor who shares a message is shown, and a blog can start to live 'a life of its own'. Links to most of the *Open Minds* blogs are also tweeted by the institutional account of Swiss Re (@SwissRe).

Another overflowing that might occur is the (overly quick) migration of the discussion on *Open Minds* towards Twitter. Because this would undermine the position of *Open Minds* as a site for an 'open dialogue', this overflow is addressed by Swiss Re employees by urging contributors to continue the discussion at *Open Minds* (see figure 3.5.).

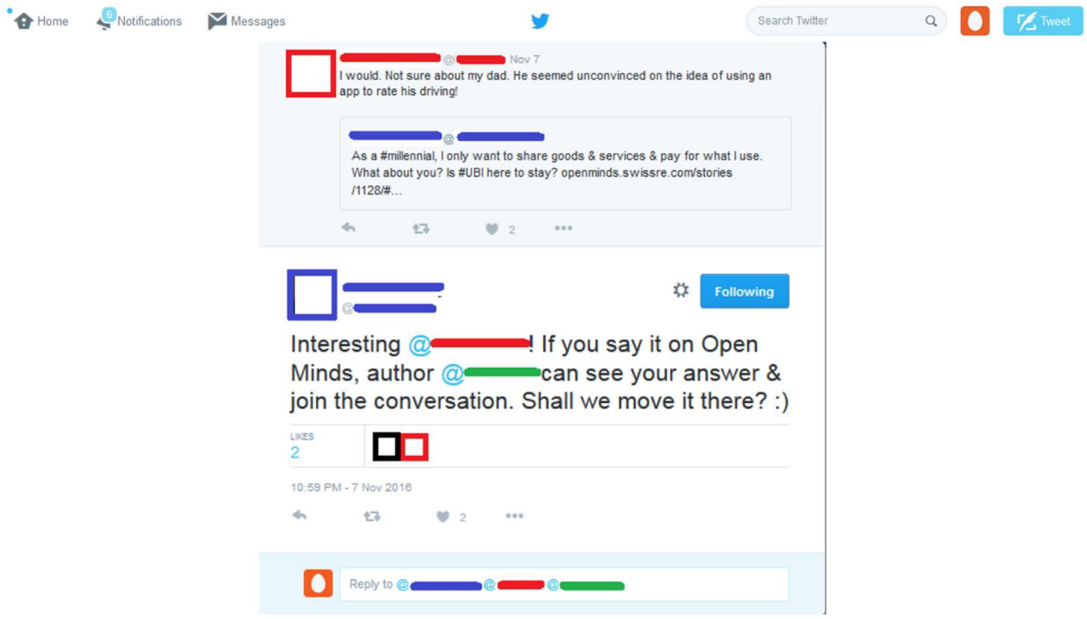


Figure 3.5. Keeping discussion 'on site' (Twitter intervention)

Besides these social networking sites, the insurance industry has also witnessed the advent of 'promissory organisations' (Pollock & Williams, 2010) specifically tailored to the insurance business. One of these organisations is *The Digital Insurer*, an internet media platform that wishes to become 'the leading "go to" site for professionals interested in digital insurance' (http://www.the-digital-insurer.com/about/). It offers a publication library and new articles, while hosting webinars and organising conferences. In parallel, the Digital Insurer is also present on LinkedIn with a group of more than 8000 members (https://www.linkedin.com/groups/4827497). *The Digital Insurer*'s content is freely available and is sponsored by traditional actors, such as Swiss Re and KPMG, one of the so-called Big Four consultancy firms.

Although *The Digital Insurer* and *Open Minds* can be considered as competing to become an influential digital expectation generation site, positive overflows between these competing entities do occur. For example, a blogpost published on *Open Minds* on 8 August 2016 by a Swiss Re strategy and Innovation Manager (story n° 1072), which discussed the introduction of gamification and Behavioural Economics in insurance on the basis of the Pokémon Go hype, was reproduced on The Digital Insurer on 15 August 2016 by the founder of *The Digital Insurer*. Three days later, the members of the LinkedIn 'The Digital Insurer' group received an email alerting them to the publication of the new post. The opinion was presented in the mailing as 'a recent article by Swiss Re'. This way of presenting the article 'disentangled' (Callon, 1998c) the authorship from the original *Open Minds* author and 'reentangled' it with the company the author was working for. This gives the opinion a much more formal character, a greater authority and hence a higher degree of liveness. Swiss Re's reputation as an expectation generator was, in this case, reinforced by a competing expectation generator.

Finally, the blog with which this chapter was started with, was also picked up outside of *Open Minds*. The claim 'NO wearable device = NO life insurance' can be found on the internet in no less than 10 languages. On 22 April 2015, eight months after the story was posted on *Open Minds*, swissinfo.ch, the international service of the Swiss Broadcasting Corporation, dedicated an article to the wearable Big Data revolution in insurance. The Swissinfo.ch article was entitled 'No wearable, No policy? Insurers grapple with wearable Big Data "revolution"' (Allen, 2015). Hence, the message of the *Open Minds* blogpost was anchored in the Swissinfo.ch article's title. Throughout the article, several Swiss Re sources were used to discuss the topic of the Big Data revolution for insurers. This overflow can be considered a successful proliferation of both Swiss Re's expertise and *Open Minds* as a place of openness:

> 'We need places where we can discuss and exchange things and some of these discussions then become face to face discussions and some of them – who knows – *take life on their own*.' (interview, VP new and social media, Swiss Re, 2016-04-08, emphasis added)

When expectations expressed on *Open Minds* are typically considered as real possibilities, the platform can gain liveness as a site of real possibilities and Swiss Re's openness to tackle the future of the insurance markets is also enacted.

3.6. Conclusions

> *'[…] I am the blog's mum. I created it* and I gave it life*, and I basically put everything around it so it could grow into a handsome blog that has a lot of friends.' (interview, VP new and social media Swiss Re, 2016-04-08, emphasis added)*

In his essay, *The Will to Believe*, James (1919) characterises hypotheses as either live or dead. A hypothesis can be said to be live when it is taken into account as a real possibility by the one to whom the hypothesis is proposed. The viability of a hypothesis is thus not seen as an intrinsic property of the hypothesis but as part of the relation to an individual. In this chapter, this argument was expanded and the claim was made that before expectations of the future of markets can become live they first have to be provoked through specific market devices which we called 'expectation generation devices'. This was demonstrated with the case of new digital technologies and its expected impact on future insurance markets. The implications of Big Data in future insurance markets are not realised on its own, but have to become and be made 'live'.

In the empirical analysis, the attention was focused on the role of reinsurers in provoking expectations as to the future of insurance by empirically analysing Swiss Re's *Open Minds* blogpost platform as an 'expectation generation' device in the insurance industry. Within the re/insurance industry, which is often labelled as conservative, *Open Minds* is one of the ways in which Swiss Re provokes expectations about digital technologies. It is only one device in a growing field of actors, institutions, and sites of 'expectation generation' where the future of insurance is discussed.

Open Minds was analysed as an expectation generation device by combining Jens Beckert's economic sociology of expectations with the literature studying market devices in the pragmatist sociology of markets. Because the future is uncertain, Beckert (2016) claims, expectations are 'ontologically' fictional. Fictional expectations differ from literary fiction in that fictional expectations are subject to 'the willing suspension of disbelief', which is important to lend credibility and 'seriousness' to fictional expectations. Fictional expectations can take a narrative form to inform and influence decisions, and to bring people, professionals, or even an entire industry, 'into motion' Latour (2012). The fictional character of expectations of the future is, however, often 'concealed' (Beckert, 2016) in economic practices. In his analysis of two 'instruments of imagination', forecasting and economic theory, Beckert focuses on how fictional elements are made technical and calculative. Characterising expectations of the future as 'fictional' is thus not unproblematic. By referring to expectations of the future as 'fictional', Beckert (2016) runs the risk of setting up a (false) dichotomy between 'fictional' and 'non-fictional' statements. To avoid the dichotomy between fact and fiction while exploiting the observable tension, Lezaun et al. proposed the term 'factitious' to characterise experimental situations:

> 'It is artificial, visibly made up, but made up in such a fashion that it carries with it an irreducible element of reality – in other words, the situation cannot be dismissed as simply fictitious.' (2013, p. 279)

This proposition avoids the constitution of a dichotomy between fictional and non-fictional statements, as if fictional statements are outside the realm of 'reality'. Likewise, Latour's analysis of 'modes of existence' goes beyond establishing different domains in reality while acknowledging what makes certain situations/things 'of a certain kind' (Latour, 2012). In this way, Latour (2012) characterises the mode of fiction as the mode that 'moves' and 'engages'. This element of engagement is definitely crucial for understanding expectations of the future of markets as either live or dead. When a formulated fictional expectation of the future of markets does not 'move' its readers, it cannot become 'live', as James (1919) characterised it. With our paradigmatic case of *Open Minds*, it is demonstrated here that the expectations formulated on *Open Minds* are explicitly 'fictional'. The blogpost contributions are called 'stories', and at least three types of stories, namely personal stories, exemplar stories, and hypothetical situations, were articulated on the platform.

While most attention has been paid to how the fictional character of certain expectations as to the future is concealed (cf. Beckert, 2016), this chapter demonstrates that is important to pay attention to sites where fictional expectations are generated *explicitly*.

Moreover, in order to generate these fictional expectations as to the future of the insurance industry, a space of 'contained openness' had to be constituted at *Open Minds*. This required different types of practices and infrastructural work, as was acknowledged by the actor who identified herself as 'the blog's mum': In order to grow, the blogpost had to be 'nurtured' into a space of 'openness'. This openness was constituted through the architecture of the *Open Minds* website, the House Rules and the practice of post-moderation. The space of openness that was constituted at *Open Minds* is a particular enactment of openness. Expectations concerning the future of the insurance market also had to be explicitly provoked, by enacting insurance professionals to be(come) 'open' by publishing stories. This contained space of openness and elements of provocation resemble the areas of provocative containment constituted in experimental market devices (Lezaun et al., 2013). The containment of openness is necessary to generate 'tradable opinions' (Lezaun, 2007), while at the same time the formulation of expectations of the future of the insurance industry had to be triggered, which shows that the generation of expectations is a solicitous practice.

Finally, it is investigated how *Open Minds* was given *life* through the circulation of blogposts to other sites of expectation generation. This overflowing of stories can contribute to the reputation of Swiss Re as a leading reinsurer and the liveness of *Open Minds* as a site of expectations openly expressed by experts. At the same time, the openness might risk becoming porous and making *Open Minds* obsolete. To avoid this, some of the overflowing was actively redirected towards *Open Minds* through interventions by the platform's moderators.

Open Minds functions as an expectation generation device that generates imagined futures for which the insurance industry can prepare. Without market devices such as *Open Minds*, the future to prepare for would be dead, to rephrase William James. The 'things' that become live through circulation are thus not restricted to expressed expectations: *Open Minds* as a space of openness had to be 'given life' in the first place in order to generate these expectations. When expectations expressed on the *Open Minds* platform are typically considered as 'real possibilities', *Open Minds* can gain the reputation of a site of real possibilities, and Swiss Re's openness to tackle the future of the insurance markets is enacted when some of these expectations 'take life on their own' (interview, VP new and social media, Swiss Re, 2016-04-08). In order to do so, the device of the *Open Minds* blogpost platform had to be given life in the first place.

This chapter has coined the concept of 'expectation generation device', which enables to focus on the heterogeneous actors and practices of 'devising' (McFall, 2015a) involved in the generation and provocation (Lezaun et al., 2013) of these expectations. Expectations have a crucial and growing importance in the development of markets (Beckert, 2016; Birch, 2017; Borup et al., 2006;

Verschraegen et al., 2017). Techniques such as forecasting and scenario building (Evans, 2007; Soneryd & Amelung, 2016; Urry, 2016), the dynamics of investment in particular emerging industries (Birch, 2017; Birch & Tyfield, 2013), venues such as industry analyst conferences or consumer electronic shows (Pollock & Williams, 2010; Schüll, 2016) or emerging professions and companies such as consultants, futurologists, and 'promissory organisations' (Pollock & Williams, 2010) contribute to the generation of these expectations in markets. Reflecting on our case study of *Open Minds* in insurance, it is important to empirically look for sites and situations where the fictional character of future expectations is explicitly present, as opposed to situations where 'actors go at great lengths to conceal the fictional character of expectations in the economy' (Beckert, 2016), which have been extensively studied in STS (Beunza, Hardie, & MacKenzie, 2006; Callon, 2007a; Callon & Muniesa, 2005; Garcia-Parpet, 2007; Mackenzie, 2008). Most of these studies focus on the transformation of fictional elements into 'technical' predictions, calculations, or forecasts. The *Open Minds* blogpost platform is interesting because it explicitly relates to expectations as to the future of the insurance industry and thereby forces actors to perform imaginative labour to envision potential implications and consequences of new digital technologies in insurance. Expectation generation devices are a particular type of market devices as they contribute to the construction of markets through provoking expectations as to dynamics of (future) markets. Rather than constituting properties 'of' markets, expectation generation devices constitute expectations 'about' markets. This second-order character and future orientation of expectations makes expectation generation devices differ from the valuation of 'futures' (Mackenzie, 2006, 2008), practices of assessing the properties of commodities (Muniesa, 2014; Teil & Muniesa, 2005; Van Hoyweghen, 2014), and devices constituting the functioning of markets (Cochoy, Hagberg, McIntyre, & Sörum, 2017; Garcia-Parpet, 2007). This study of a particular expectation generation device in insurance can be considered as an invitation for further research into expectation generation devices, in both the insurance industry and beyond. In order for expectations to 'become alive' (James, 1919), i.e. to be taken into account as a real possibility and thereby influence decisions in the present, expectation generation devices contribute to the construction of markets by provoking expectations as to the future of markets, which shows that these expectations are not self-evidently 'just there'.

4. ‘Take Home Ideas’: the Business of Business Conferences on the Future of Insurance

> *‘The future is unavoidable. The question is: ‘How prepared are you for the future?’. […] We are here not at an Internet of Things conference, but at the internet of things church, because we already believe.’ (Tony Boobier, Chair of the Internet of Insurance 2017, field notes, 2017-04-05)*



Figure 4.1. Chair Opening the Internet of Insurance 2017 conference (April 5-6, 2017, Dorking Surrey (UK), picture: Gert Meyers)

4.1. Introduction

This quote is part of the opening statement of the 2017 *Internet of Insurance* business conference by Tony Boobier, chair of the event (see figure 4.1.). This quote raises questions on how business conferences contribute to preparing insurers for the ‘unavoidable future’, and how this ‘Internet of Things church’ comes to be. In this chapter, business conferences on the future of insurance are discussed as a particular site of expectation generation and future making. Through a process of translation, several actors are brought together under the guise of a business *conference* discussing some ‘hot topics’ on the future of insurance. During the enactment of business conferences on Big Data in insurance, particular actors are present as expert speakers, particular sponsors try to find vendors for their ‘technology solutions’, and particular insurance professionals attend these conferences to form some ‘take home ideas’ on the challenges of Big Data in insurance and the

possible ways to become 'future-proof'. As a result, a particular not-yet market – that of Big Data in future insurance markets – is discussed in and through the enactment of another not-yet market – that of business conferences discussing the future of insurance markets. Different actors could be involved, different expectations as to the future of insurance markets could be discussed, different technology providers could present their solutions. In short, different futures could be made.

There are different types of actors setting up 'business conferences' on the broad topic of Big Data and insurance. First of all, traditional actors in the insurance industry organise stakeholder events/roundtables/conferences/… on pressing issues in contemporary insurance markets and crucial challenges for the future of the industry. Swiss Re, for instance, celebrated its 150th anniversary by launching the *Open Minds* blogpost platform. This launch was preceded by four 'Open Minds Forums', organised in Zürich, London, New York, and Beijing. Secondly, insurance professionals' organisations organise (business) conferences. ICLAM, the International Association for Insurance Medicine, organises a bi-annual conference. Thirdly, 'industry analysts' organise conferences to distribute their analyses on the future of the (insurance) industry (Pollock, Chris Carter, & Williams, 2015). Pollock and Williams (2010) characterise these organisations as 'promissory organisations'. Finally, a different type of organisation is emerging. This type of business conference organisations does not produce expectations as to the future themselves but mainly capitalise on the existing expectations uttered by other actors and generated by other expectation generation devices. I prefer to call these types of organisations 'expertise mediators'.[23]

[23] The concept of 'expertise mediators' gives some important twists to Pollock and Williams' concept of 'promissory organisations'. Neil Pollock and Robin Williams (2015; 2010, 2015) delve into a series of articles into the world of industry analysts and more particularly in the predictions of Gartner, one the biggest industry analyst firms, best known for the 'Gartner Hype Cycle'. They describe industry analyst firms as 'promissory organisations':

> 'Promissory organizations are defined as intermediaries, which are prodigious in the production of future-oriented research that not only represents the state of affairs in a particular marketplace but also contributes to shaping such markets.' (Pollock & Williams, 2010, p. 526)

The definition of promissory organisations provided by Pollock and Williams (2010) is instructive as a starting point for characterising business conference organisations. Business conference organisations will be characterised here as 'expertise mediators'. As will be shown throughout the chapter, business conference organisations bring together different types of actors: insurance providers are allowed to gain access to the technological expertise of technology providers. Technology providers can get in touch with the 'industry know how' of traditional insurance providers, and a 'room full of vendors'. In this process, business conference organisations are more than 'mere' intermediaries, as Pollock and Williams (2010) seem to claim. Rather, business conference organisations are 'mediators', to use the term employed by Bruno Latour (2005):

> '[I]t makes a huge difference whether the means to produce the social are taken as *intermediaries* or as *mediators*. […] An *intermediary*, in my vocabulary, is what transports meaning or force without transformation: defining its inputs is enough to define its outputs. […] *Mediators*, on the other hand, cannot be counted as just one; they might count for one, for nothing, for several, or for infinity. Their input is never a good predictor of their output; their specificity has to be taken into account every time. Mediators transform, translate, distort, and modify the meaning or the elements they are supposed to carry.' (Latour, 2005, pp. 38-39)

Pollock and Williams focus their attention on Gartner, Inc. as a major and influential promissory organisation to investigate the performativity of tech predictions (Pollock & Williams, 2010), starting from the apparent paradox that *despite* the fact that the questionable accurateness of tech predictions (Beckert, 2016) the number

This calls for an in-depth investigation of the organisation of business conferences by expertise mediators. The organisation of business conferences is a business itself. This chapter sheds light on the organisation of business conferences on the future of insurance markets because it contributes to the making of future insurance markets by bringing different actors together to build future insurance products.

In this chapter, it is argued that the expectations and expertise on Big Data in insurance, generated by different actors at multiple sites and devices (e.g., see chapter 3), are employed by business conference organisations to build networks of professionals and produce value by offering 'access' to these professionals. Over the course of the chapter, it will be outlined why (business) conferences are an understudied yet interesting site of investigation for sociologists. Using Callon's work on the fishermen of St. Brieuc and his sociology of translation as an analytical lens, I will analyse the organisation of business conferences on the future of the insurance industry. In the empirical sections, four moments of translation discerned by Callon (1986b) – problematisation, interessement, enrolment, and mobilisation – of the organisation of business conferences will be discussed.

4.2. A pragmatist Move: Approaching Business Conferences Organisations as a Site of Investigation

4.2.1. The Emergence of Business Conferences as a Site of Sociological Investigation

The site of business conferences was not approached as a site of investigation from the start. During the exploration of the field of Big Data in insurance, and while looking for entry points to contact insurance professionals working on Big Data in insurance, business conferences on the topic came across as a site apt to make contact with professionals for interviews and further fieldwork. Two

of tech predictions keeps rising (Pollock et al., 2015). Pollock and Williams analyse 'who' is gaining thought leadership/power as 'promissory organisations' (Pollock & Williams, 2010), or 'how' the emergence of industry analyst conferences contributed to a shift in the way predictions on the future of technology are 'produced and disseminated' (Pollock & Williams, 2015). When studying the work of 'expertise mediators' and the business conferences they organise, it is paramount to focus on how the business conferences 'come to be', how they are enacted.

'Expertise Mediators' are most of the time very hybrid organisations, carrying some characteristics of the first three characterised actors, viz. traditional (re)insurance actors, insurance professionals' organisations, and 'industry analysts'. Some expertise mediators also act as consultant figuring out some 'Insurtech solutions' and resemble therefore the 'promissory organisations' described by Pollock and Williams (2010). Traditional (re)insurance companies are often present as sponsors and expert speakers. *The Digital Insurer* (TDI) is a good example of such an organisation. TDI was founded in 2012 as a blog by Hugh Terry, a consultancy/insurance professional mainly active in the Singaporean market. It has enlarged its' activities over the years, for instance by building a 'digital insurance library' which collects 'official' reports on the topic of digital insurance published by the main reinsurance companies and consultancy firms. This library is sponsored by Swiss Re and KPMG. In 2016 TDI organised its first annual 'TDI Asia conference'. In 2017, a European event was also organised.

encounters with business conferences on the future of insurance revealed the importance of approaching the organisation of business conferences as a site of sociological investigation.

Firstly, the postponement/cancellation of a business conference, made clear that business conferences are not self-evident events taking place, but always have to be enacted into success/failure. In order to get a detailed overview of the 2015 *Internet of Insurance* conference, I tried to download the event's programme. Before being able to do so, some contact details and personal information (including name, job function, name company, size company, budget of the company, email address, telephone number,…) had to be filled out in a web form, which is a common practice on corporate websites to access these types of information. On the website www.iotbigdata.com[24] several conferences, where the possibilities of the Internet of Things (IoT) and Big Data are applied to specific business sectors, were announced. *The Internet of Retail* was announced for February 2016. *The Internet of Manufacturing*, *The Internet of Insurance* and *The Internet of Healthcare* were announced to be 'coming soon'. *The Internet of Insurance* conference was announced for June, 2-3, 2015. I asked the business conference organisation[25] 'behind' the *Internet of Insurance* events, access to attend the conference. Not finding an email address, several messages were sent through the 'contact device' on the website.

These messages remained unanswered until a phone call from an unknown English telephone number came in in May 2015. 'John', working for the business conference organisation, guided me through the programme of the conference. A discount to the conference fee (the full two-day conference pass costed £850) was offered if a 'confirmation' could be provided that same day, or the day after at the latest. A negotiation process took off, through email and telephone calls, where it was tried to gain a free ticket for the conference. As a result of this negotiation process, I was allowed to attend the 'IoT and Big Data Insurance Conference' for free. The enthusiasm for this opportunity was turned down very quickly. A few days later another telephone call conveyed the message that the conference was 'postponed' (certainly not cancelled, I was assured), because not enough attendees 'confirmed' their presence. The *Internet of Insurance*-conference turned out to have become a failure.

The series of telephone calls, emails and negotiations was my first first-hand confrontation with the business of expectations as to Big Data in insurance. It is only after this negotiation process and, more specifically, after the 'postponement'/cancellation of the event, that these business conferences came into mind as an interesting site of investigation. A failing business conference reminds one that business conferences which 'succeed' in taking place are an accomplishment

[24] This URL is not functioning anymore. IoB's current webpage is https://internetofbusiness.com/.
[25] I will call the companies who organise business conferences 'business conference organisations' because the word business conference organiser might insinuate that there would be one person organising these events.

(Ariztia, 2018; Law, 1992): they are 'enacted' (Law & Urry, 2002) and with different practices different not-yet markets would be enacted (Van Hoyweghen, 2014).

Secondly, a small remark during an interview pointed out that the business conferences are interesting to be studied *sociologically*. When preparing for an interview and searching for the respondents name in the search engine Google, the programme for a business conference entitled 'Big Data Analytics Insurance Conference' (London, January 2016, 27-28), in which my respondent was announced as one of the expert speakers, came up. During my interview with the announced speaker, the interviewee was asked whether attending the conference would be interesting for my research interest – 'the importance of Big Data for insurance'. The interviewee, scheduled to speak at the *Big Data Analytics Insurance Conference,* 'warned' me of a possible lack of 'academic quality' at the conference:

> 'DIT: Look, Gert, I'm sorry but I need to stop here because I have a meeting.
>
> GM: Can I ask you just one last thing? I saw there is an insurance and big data and analytics conference in January [2016] in London and that you are speaking there.
>
> DIT: Yes.
>
> GM: Do you think it will be very interesting? Because I was contacted to attend [after downloading the programme in preparation of the interview, GM] but it is quite expensive for me to go there. I am considering going there, but I could use some advice.
>
> DIT: It's ok. I've been a PhD student as well, so I would…, maybe from an academic perspective this is not necessarily the most interesting conference. These [conferences, GM] are more interesting if you work in the industry and you want to establish [your] network. But it is up to you, you know, you can maybe come up with a few good interviews with some execs [executives, GM] that can be useful but content wise, I don't know. *Maybe… You are sociologist, maybe it is different. You might grasp something.*' (interview, Director Information Technology, Swiss Re, 2015-18-12)

While warning me that the conference might not be that interesting content wise, the interviewee very clearly explained why the site of business conferences is important for insurance professionals and why it is interesting to be studied *sociologically*. Business conferences are used to established networks. What is to be grasped in a sociological investigation of (business) conferences?

Conferences are an interesting 'grey' (Kelty, 2012) site of expectation generation and the making of future technologies and/or insurance markets.[26] This site of expectation generation is only rarely investigated (Gross & Fleming, 2011), and pleas are made for 'more research' on this site of interest (cf. Lupton, 2014).[27] Natasha Dow Schüll (2016) explores *The Consumer Electronics Show*[28] as a site where the 'vision' (Ewald, 1991) of technologically assisted self-care that drives the design of 'wearable tracking technology', is uttered. Through her analysis of this industry expo she wants to gain insight into the 'behind the scene' ideas on digital self-care.

> 'While Lupton attempts to illuminate these practices and tacit assumptions by considering product logos, Websites and advertisements, my approach in this article is primarily ethnographic, looking 'behind' finished products to document the debates, challenges, and emergent articulations of wearable technology stakeholders.' (Schüll, 2016, p. 5)

Schüll's ethnographic attention to these venues is supported. She takes this site seriously into consideration. Yet, she employed her ethnographic approach mainly to distil a discourse/vision on technology that drives its development (Schüll, 2016).

It is important to also pay closer attention to how these conferences 'come to be'. This chapter chooses to follow/study business conference organisations as actors 'translating' the interest of the other involved actors.

The data for this site of investigation were collected by conducting ethnographic fieldwork before, during, and after six business conferences (see section 2.3.3. for more details). The collected data consist of field notes, emails, advertisement documents, and interviews. I conducted ethnographic fieldwork at 6 business conferences, of which one was cancelled:

- IoT & Big Data /Insurance/Conference, London (UK), Internet of Business (IoB), 2015, June 2-3, CANCELLED

[26] A distinction is often made between business conferences and academic conferences. This distinction is self-referentially defined: academic conferences are attended and organised for academic purposes, while business conferences are organised and attended for business purposes. This distinction is, of course, quite artificial in that in some academic disciplines, such as medicine, also commercial interests are represented and business conferences often welcome speakers and experts from the academic field. The conferences that are discussed here are undoubtedly to be characterised as business conferences. Yet, I think the main findings on the constitution of business conferences, and the process of translation 'at work' there, also hold to some extent for academic conferences.

[27] 'Much more research is required from a critical perspective on these technologies. […] We know very few details about how health professionals such as medical practitioners, hospital administrators, public health professionals and health promoters are incorporating apps and associated mobile digital technologies into their work practices. Little knowledge is available on the practices and tacit assumptions of app developers and designers and the companies that commission apps.' (Lupton, 2014)

[28] The Consumer Electronics Show is 'the leading international venue for showcasing consumer technology' (Schüll, 2016) and annually organized since 1967 in the Las Vegas Convention Center.

- Big Data Analytics Insurance, London (UK), IQPC ('International Quality and Productivity Center'), 2016, January 27-28
- Impact de nouvelles technologies sur la segmentation, Brussels (BE), ASALV (The Walloon Association of Actuaries), 2016, May 2
- Bi-annual conference, ICLAM (international association of medical actuaries), Maastricht (NL), 2016, May 22-25
    - My promotor and myself presented at this conference. Our presentation, entitled 'Big Data, Small Solidarity? Insurance and its new disruptive technologies', was awarded the third price of the 'ICLAM award 2016'
- Internet of Insurance, IoB ('Internet of Business'), 2016, June 13-14
- Internet of insurance, Dorking Surrey, IoB, 2017, April 5-6

4.2.2. Investigating Business Conferences and Insurance Professionals as Fishermen and Scallops: on Translation

The call from 'John', who informed me that the conference was 'postponed' because not enough persons 'confirmed their presence', inspired me to use Michel Callon's work on research on the scallops of St Brieuc Bay in France and his 'elements of a sociology of translation' (Callon, 1986b) as an analytical lens to discuss the object of business conferences on the future of insurance markets. Early ANT-scholarship is often characterised as a study of processes of translation (Callon, 1986a, 1986b; Callon & Latour, 1981; Michael, 2017; Shapin & Schaffer, 1985).

The translation-concept is very powerful to investigate how actor-networks are enacted, and how these actor-networks consist of associations between different actors and dissociations from others (Callon, 1986a).[29] The concept resembles that of enactment (see section 1.3.2. and 7.2.) in that it opposes the idea of construction or performance where the ingredients of what is 'made' seem to be presupposed. Rather, 'actor-networks' and 'actor worlds' are performatively made/enacted/translated into being:

> '[A]ctor worlds must not be represented as shoppers in a well-stocked supermarket choosing what they wish to buy from a pre-established list. Once an actor-world comes into being, it does not draw its entities from previously established stock. It is not constituted in the way a shopping cart is filled. In short, there is no world, or worlds, from which pre-existing elements can be extracted.' (Callon, 1986a, p. 24)

[29] The 'translation'-concept which is employed here, should not be confused with the idea of translational research, referring to the endeavour of turning scientific knowledge into tangible innovation (Aarden, Blassime, Holloway, & Marelli, forthcoming; Mittra, 2016).

The concept has been employed to study the constructedness of knowledge (Callon, 1986b; Shapin & Schaffer, 1985) and the performativity of practices of knowledge production (Esposito, 2013; Mackenzie et al., 2007b; Muniesa & Callon, 2007). In the context of knowledge production, the process of translation mainly consists of establishing an actor-network to constitute uncontested knowledge:

> 'To translate is to redefine 'another's interests or identity by whatever means possible […] so that they do one's bidding, or allow one to speak or act on their behalf (as a spokesperson). Through translation, actors become enrolled into an actor-network.' (Michael, 2017, p. 164)

In this chapter, the focus will be on the ways in which actors – IoT, insurance professionals as delegates, and technology providers as sponsors – are enrolled into the actor-networks business conferences. The constitution of representative and uncontested matters of fact is not so much at stake here. Business conference organisations will be followed as the actors establishing the actor-network.

In his pioneering and ground-breaking article, Callon (1986b) follows three researchers that study the development and anchor mechanisms of scallops, and more particularly, that study the development of Pecten Maximus in St. Brieux Bay. This enables him 'to examine the progressive development of new social relationships through the constitution of "scientific knowledge"' (Callon, 1986b, p. 202). During business conferences new social relationships are also developed, in this case not through the constitution of knowledge but rather under the guise of 'knowledge communication'. Before this knowledge communication takes place, the insurance professionals have to 'anchor' to the conference and confirm their presence.

Callon (1986b) distinguishes four moments of translation – problematisation, interessement, enrolment, and mobilisation. These four moments of translation can also be used to examine how a business conference market is made out of the expectations of new technology. I will discuss these four moments of translation and show how they are relevant to study the work of expertise mediators. This will be done in the following sections by first outlining how Callon (1986b) describes each moment of translation, and subsequently showing how this was at work in the constitution of business conferences on the future of insurance industry. I will focus mainly on the *Internet of Insurance* business conferences, organised by Internet of Business.

The concept of translation is criticised for being centred too much on one actor, as it shows how an actor-network is established by one heroic actor in the case of success, or an anti-hero in the case of failure (Sismondo, 2004). Indeed, there is an unease in describing and attributing the four moments of translation of/to just one (type of) actor, the business conference organisation in this case. This conflicts with the principle of 'agnosticism' (Callon, 1986b), which requires

'impartiality between actors engaged in controversy'. Also, this apparent actor-centrism is slightly uncomfortable with the way the concept of 'enactment' is adopted elsewhere in this dissertation (see section 1.3.2. and 7.2.). Enactment is adopted as a way to avoid concepts like 'construction' or 'performance', which seem to presuppose a pre-existing plan that is executed. Yet, it is chosen to discuss the four moments of translation 'by' the business conference organisations for practical reasons. Using the 'perspective' of the business conference organisations reduces the level of complexity. Section 4.4.4. will shortly show a form of interessement conducted by other actors, viz. the sponsors of the business conference who try to 'catch' the attention of delegates during 'networking moments'.

4.3. Problematisation: Interdefinition of Actors by Introducing Oneself

The first moment of translation discussed by Callon (1986b) is that of 'problematisation'. By following the three biology researchers and the different written documents they produced, Callon (1986b) claims that the three researchers did more than 'just' formulate the research questions. In doing so, they defined a set of actors (interdefinition of the actors), and presented concomitantly their own research project as an Obligatory Passage Point (OPP) for each of the actors:

> '[T]he three researchers did not limit themselves to the simple formulation of the above questions. They determined a set of actors and defined their identities in such a way as to establish themselves as an obligatory passage point in the network of relationships they were building. This double movement, which renders them indispensable in the network, is what we call problematization.' (Callon, 1986b, p. 204)

By defining what is 'at stake' for the future of insurance and the role of wearable technology/IoT therein, a demand is shaped for spaces where 'solutions' to these challenges are proposed. Every business conference organisation wants to become an OPP for actors involved in the sector they want to 'cover'. *The Digital Insurer*, for example, describes itself as 'the leading "go to" site for professionals interested in digital insurance' (TDI, 2016). This self-description is very instructive for the OPP-notion as it claims that if someone is an actor interested in digital insurance, one should visit/pass this site of expertise. In the case of *Internet of Insurance*, the business conferences organised by 'Internet of Business' (IoB), at least four actors are defined in the moment of problematisation, viz. the 'Internet of Things' (IoT), 'delegates', 'sponsors' and 'content partners'. IoB and the *Internet of Insurance* business conferences are presented as an OPP.

The Internet of Things (IoT) is the first actor defined by IOB. IoT is the technology around which the Internet of Business (IoB) media platform and the *Internet of Insurance* business

conferences are built. IoT is, therefore, a very important actor for IoB. IoT is also introduced as an important actor on the *Internet of Insurance* conferences.

The 2016 *Internet of Insurance* conference was preceded by a session called 'breakfast meeting: introducing the Internet of Things for insurance – a beginner's guide'. During this breakfast meeting the potential of IoT was presented as the heir of M2M (machine to machine) technology, and it was claimed that through connecting sensors, computers and users, connected devices enable technology to become a service. This implies that the main locus of value creation shifts from selling (disconnected) devices that lose their value for technology providers once the devices are sold, to offering services and producing value once consumers have obtained their (connected) devices:

> 'This shift means that value is created by the use of devices and devices themselves are becoming less important. Connected thing keep producing consumables and value. This means that IoT is never just a product that can be purchased, but an opportunity to change the business model: new value is created throughout the life cycle.' (Robin Duke Wooley, CEO Beecham Research, *Internet of Insurance* 2016, field notes 2016-06-13)

This opportunity to turn technology into a service rather than a product is a first important property of the IoT. A second important property of IoT was discussed in a sector brief, where the issues at stake for the 2nd annual *Internet of Insurance* conference were introduced particularly to the insurance sector. The IoT is presented here as a technology which has several benefits.

> 'In order to be able to insure a subject or object, a quantitative idea of the risk must be known. This can come from a wide range of information such as demographic, historic and other data. That said, the advent of M2M [machine to machine, GM] and the IoT now make possible the collection of very large amounts of hitherto unobtainable data from a wide variety of sources. This is part of an ongoing trend towards collecting data routinely in a variety of market segments […]. Further, the arrival of the IoT will enable data stored in diverse systems to become exchangeable and interchangeable, for the purpose of greater understanding and better decision making. Clever analysis of sensor-collected data will allow analysts to better understand the behaviour of a particular group of subjects or objects in great details, so as to provide a more accurate calculation of risks than ever before.' (Beecham & IoB, 2017, p. 3)

This story on the reliability, real-time nature and granularity of data generated by IoT devices coincides with qualities attributed to the broader Big Data-category (see sections 1.2.1. and 1.2.2.).

This means that through the adoption of IoT, 'insurance-as-we-know-it' may be challenged. A more accurate understanding of risk can give a competitive advantage to those insurers knowing how to exploit this better knowledge, and the services provided through wearable devices might change the role of insurance companies altogether.

Delegates are a second actor defined by IoB. IoB approaches, for every business sector, professionals in need of specific IoT solutions as potential delegates for their *Internet of ...*-events. For the *Internet of Insurance* conferences, 'forward looking insurers' are targeted/defined by IoB. Traditional insurers, often referred to as incumbents, need to adjust to a changing business world, where start-ups are considered to disrupt the industry. On the IoB website several documents refer to the perception of 'conservative' insurance companies and the potential of IoT to get out of this conservative stance:

> 'Insurance may traditionally be seen *as a laggard as far as new technology is concerned*, but that perception is quickly changing thanks to the Internet of Things (IoT) and the arrival of new business models. IoT in insurance is fast becoming reality….' (Drinkwater, 2016, emphasis added)

Traditionally being 'laggards', insurers need to learn more about the challenges of IoT. For the *Internet of Insurance* events, insurers are not just targeted insofar as they are insurers. Rather, IoB tries to catch the attention of 'forward-thinking insurers' who can be defined by their interest in IoT as one of the solutions for the challenges of the insurance industry:

> 'Forward-thinking insurers may utilise ubiquitous connectivity to create digital ecosystems, from which they can offer new customer centric services and completely reshape the customer experience. In doing so, they will need to engage with new digital partners.' (Beecham & IoB, 2017, p. 3)

Forward thinking insurers are defined by their interest in IoT as a possible solution for the problems the insurance industry is coping with. These professionals are defined to become delegates at the IoT events.

Classical insurance companies are not the only commercial entities that are presented and defined by IoB. A third type of actor defined by IoB are technology providers and start-ups who can potentially be interested in becoming a 'sponsor' or a 'content partner'. In 'The Internet of Business. Digital Prospectus' (IoB, 2017a) potential 'Content Partners' are approached:

> 'Addressing industry trends and predicting the next emerging technology is useful, but only if the right people read your content. Becoming an IoB

> Content Partner gives your business space on our website to become an authoritative voice in a crowded IoT market.' (IoB, 2017a, p. 3)

Content partners are defined here as the producers of predictions or companies that 'address industry trends'. Gaining space on the IoB website as a content partner comes with a price. The entry level package, which consists of a 'case study' that is promoted for one month on the website, 'metrics and traffic reports' on this article and the mention of 'direct email contacts and hyperlinks on every page', costs £3,450 per month. This price is 'calculated on the basis that the client provides the content. Whitepapers can be produced by the IoB journalist team at additional costs, starting from £4,995' (IoB, 2017a, p. 3). These prices are legitimated by claiming that IoB gains many visitors and, more importantly, is visited by 'the right people' (see figure 4.4.).

For the IoB events, IoB searches for sponsors that work in the specific market sectors, for instance as technology providers. For the 2018 *Internet of Insurance* conference, an overview is made of the different 'packages' offered to sponsors in a 'Key info pack' (see figure 4.2.). The distinction between 'content partners' and 'sponsors' is hard to make as many 'sponsor packages' come with 'speaking slots'.



Sponsorship & Exhibition Packages

Position	Qty	Rate	Expo & Delegate Passes	Speaking slots
Lead Sponsor	1	£45,000	Fixed boardroom style meeting room 18 sqm lounge 6 delegate passes	• **Day 1** Keynote Plenary 20 minute speaking slot (first vendor to speak, before morning coffee break) • Opportunity to be the only vendor to take part in the opening keynote panel discussion on **Day 1** • Opportunity to chair the main event • 14 pre-arranged meetings min guaranteed
Diamond Sponsor	1	£35,000	Fixed boardroom style meeting room 18 sqm lounge 5 Delegate passes	• **Day 1** Keynote Plenary 20 minute speaking slot (second vendor to speak, before morning coffee break on **Day 1**) • 10 pre-arranged meetings min guaranteed
Platinum	2	£27,000	18 sqm lounge 4 Delegate passes	• **Day 2** Keynote Plenary 20 minute speaking slot before morning coffee break • 10 pre-arranged meetings guaranteed
Gold	4	£20,000	9 sqm lounge 3 delegate passes	• 20 minute solo speaking slot on a streamed session on **Day 1** of the event • 7 pre-arranged meetings guaranteed
Silver	2	£15,000	9 sqm lounge 2 delegate passes	• 20 minute solo speaking slot on a streamed session on **Day 2** of the event • 7 pre-arranged meetings guaranteed
Bronze	4	£10,000	9 sqm lounge 2 delegate passes	• Opportunity to sponsor a hosted round table
Panel	3	£12,000	2 delegate passes	• Opportunity to be an exclusive sponsor of a panel discussion on the agenda and work with IoB conference programme manager to define the topic and suggest speakers for your sponsored panel
Associate Sponsor	6	£6,000	9 sqm lounge 2 delegate passes	• 10 minute solo speaking slot during the Innovation Showcase which will run for an hour in the afternoon of Day 1 of the event
Exhibitor	5	£7,950	9 sqm lounge 2 delegate passes	• 4 pre-arranged meetings guaranteed
Exhibitor	5	£5,000	6 sqm lounge 2 delegate passes	• 2 pre-arranged meetings guaranteed

Networking and Lead Generation - Exclusive	Rate	Speaking Slots
Breakfast Briefing	£20,000	50-minute session Day 1
VIP Dinner	£20,000	Evening of Day 1
Workshop	£20,000	1 hour session, afternoon of Day 1
Branding - Exclusive Options		
Badges & Lanyards	£10,000	N/A
Delegate Lunch	£10,000	N/A
Drinks Reception	£15,000	N/A
Registration Area	£10,000	N/A
Expresso Bar	£15,000	N/A

Figure 4.2. 'Sponsorship & Exhibition packages'. Key Info Pack Internet of Insurance 2018, p. 9

The potential sponsor companies are divided into 'regular' companies and start-ups. Start-ups are, according to IoB, 'smaller companies that "need a break[through]", but cannot afford the £15,000-

£60,000 to be present at the events as a normal sponsor.' (Telephone call, senior delegate acquisition manager, 2017-09-15).

Finally, by describing what the *Internet of Insurance* conferences are, IoB is presenting itself as an 'Obligatory Passage Point' (OPP), the one and only actor which can help other actors realise their interests. Callon (1986b, pp. 205-206) formulates it as follows:

> 'The three researchers do not limit themselves simply to identifying a few actors. They also show that the interests of these actors lie in admitting the proposed research programme. The argument which they develop in their paper is constantly repeated: if the scallops want to survive […], if their colleagues hop to advance knowledge […], if the fishermen hope to preserve their long term economic interests (whatever their reasons) then they must: 1) know the answer the question: how do scallops anchor?, and 2) recognize that their alliance around this question can benefit each of them.'

Before stressing the importance of the *Internet of Insurance* events, IoB is presenting itself as a media partner, specifically focusing on the Internet of Things (IoT):

> 'We are a leading media partner to the IoT industry and provide multi-channel platforms that promote engagement and discussion about the value and opportunity of IoT/Digital transformation adoption. Our IoB online publication captures independent IoT and disruptive technology content from the broader industry.' (IoB, 2017a, p. 2)

The focus on IoB as a website that provides 'independent' content on Internet of things is stressed upon as the logo of IoB (see figure 4.3.), which focuses on 'informing' rather than advertising or promoting InsurTech companies and solutions.



Figure 4.3. https://internetofbusiness.com/about-us/

This independence and seriousness is furthermore stressed upon by mentioning Beecham Research as the IoB's 'research partner' and by referring to the credibility of the editor of IoB and her journalist team:

> 'The Internet of Business team of experienced journalists is led by editor, Jessica Twentyman. An editor and writer with more than 20 years' experience in analyzing and explaining trends in the world of technology, Jessica has written for national newspapers and trade media publications, including The Financial Times, The Economists Intelligence Unite, Diginomica.com and Computer Weekly. Her team includes [….] . Collectively, this team can offer decades of knowledge, contacts and expertise in all areas of the tech industry.' (IoB, 2017a, p. 2)

This credibility and seriousness of the 'independent' journalists working for the news media platform, which results in a large and relevant reading audience (cf. figure 4.4.), can be seen as a means of making the information circulating on the IoB web page trustworthy and 'live', i.e. 'taken into consideration as a real possibility' (Beckert, 2016; James, 1919, see chapter 3). The 'content' on the IoB website is organized alongside the different market sectors in which IoT is crucial or expected to become paramount, such as 'Banking & Payments', 'Energy & Utilities', 'Health', 'Insurance', or 'Transportation'.



Figure 4.4. Digital Prospectus Internet of Business (IoB, 2017a)

The IoB website gives an overview of the planned events, divided in USA events and EMEA[30] events, which mainly take place in the UK (and mostly in London), but also in Amsterdam, Munich or Berlin. Events are organised for each market sector:

> 'The Internet of Business Sector Event series is specifically designed to help each market sector understand how this technology is affecting their industry and their jobs today and tomorrow. With a mixture of insight, case studies and analysis tailored to your business and stripped of technology jargon, these are the two most valuable days you can spend. Business events for business people.' (IoB, 2017b)

All events are named after the market sector they cover, 'The internet of Health', 'The Internet of Retail' and 'The Internet of Insurance'. The insurance sector 'in particular' is – just like all the other sectors covered by IoB – confronted with urgent challenges for the future. *Internet of Insurance* is presented here as a site at which insurers should be present to catch up, be up to date on the technology available and get in touch with the technology developers who can provide 'solutions'.

For technology providers, being present at the *Internet of Insurance* events is presented as crucial to get in touch with insurance professionals who control the investments of insurance companies. The problem, it is argued, is that insurance companies do not have professionals with job titles as 'head of IoT'. The *Internet of Insurance* events provide technology developers with a 'population' of investment decision makers in insurance companies, it is claimed. By becoming a sponsor of the *Internet of Insurance* events, access is offered to members of the C-Level, the name referring to insurance professionals holding 'Chief' in their job title (cf., CEO, CFO, CTO,…) (see figure 4.5.).

[30] EMEA stands for Europe, Middle-East, Africa.

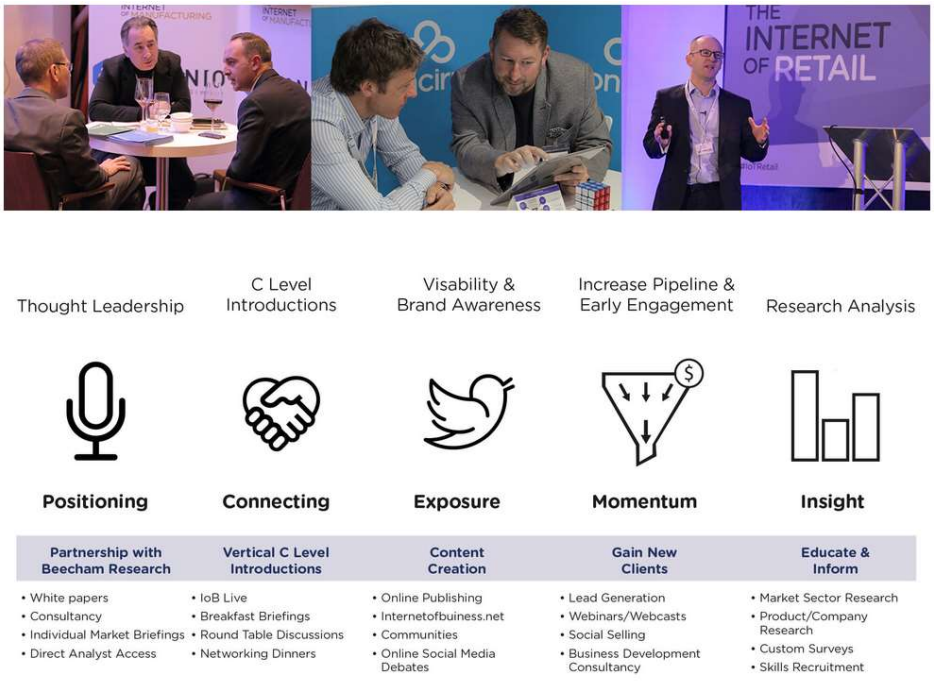


Figure 4.5. Promote your business https://internetofbusiness.com/promote-your-business/

IoT has a crucial place in the problematisation that is carried out by IoB. IoT is presented as an unstoppable force that will change numerous business sectors, including the insurance industry. At the same time, insurance companies are assumed to be able to turn this technology into a competitive advantage. To do so, attending *Internet of Insurance* is presented as a first obligatory step, an OPP.

4.4. Interessement: How the Allies are Locked into Place

The different actors that are defined by IoB, have to become 'interested' in attending the *Internet of Insurance* business conferences. Making actors 'interested', or 'interessement', is defined as follows in Callon's sociology of translation:

> 'Interessement is the group of actions by which an entity (here the three researchers) attempts to impose and stabilize the identity of the other actors it defines through its problematization.' (Callon, 1986b, pp. 207-208)

Interessement is discussed by Callon as the enactment of alliances with the actors and shielding these actors from other actors that could impede a proper functioning of these actors. For the *Internet of Insurance* events, alliances are made by making sure that people attend the events, or

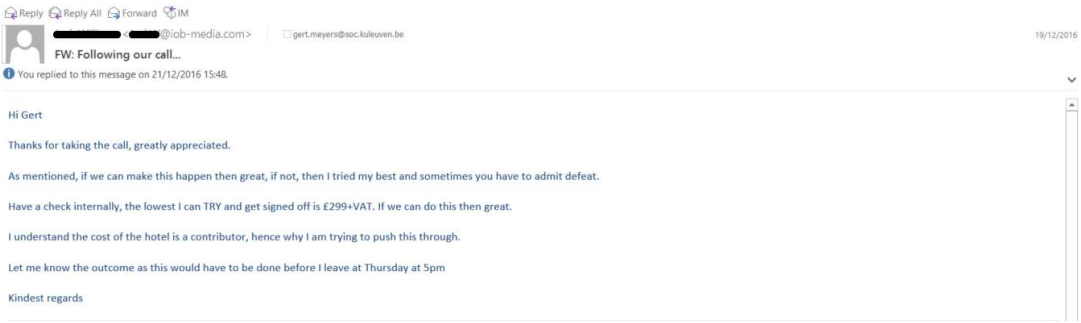
sponsor the event. I focus here on getting delegates 'confirmed' and ensuring their 'commitment' during the events.

The first instance of 'interessement' consists of 'getting delegates confirmed' to attend the business conferences. IoB invests much effort in making sure that the 'right' insurance professionals attend the *Internet of Insurance* events. During my fieldwork and talks with people working for IoB, it was repeatedly stressed that IoB takes great care in compiling the delegates of the *Internet of Insurance* events, to make sure that only top notch professionals would attend the events.

> 'GM: I got my first call in September 2016 to attend the *Internet of Insurance* conference in April 2017. Isn't that early?
> SDAM: Yeah, we invest a lot of effort in compiling a great group of attendees.
> We don't accept just anyone. That's our quality offer.'
> (conversation, Senior Delegate Acquisition Manager, Internet of Business, field notes *Internet of Insurance* 2017, 2017-04-05, Dorking Surrey)

When people download the programme of an IoB event, such as the *Internet of Insurance* event, one has to leave contact details. This is common on corporate websites. Reports from reinsurers (e.g., Swiss Re), consultancy firms (e.g., McKinsey), cannot be downloaded without leaving these contact details. These contact details enable business conference organisations such as IoB to contact potential delegates personally by email or telephone. This is done systematically and almost immediately (when downloading these documents during UK office hours).

IoB attempts to stabilise potentially interested individuals as delegates by requiring them to get 'confirmed', i.e. making the decision to buy a delegate pass. This is pursued by offering discounts for people who make the decision to join quickly. Offering 'early-bird' discounts is common practice in the organisation of conferences and other events. Yet, this practice is personalised by business conference organisations by offering special offers over email/phone that expire that same week or even that same day (see figure 4.6.).


Reply Reply All Forward IM

[redacted]@iob-media.com> gert.meyers@soc.kuleuven.be 19/12/2016

FW: Following our call...

You replied to this message on 21/12/2016 15:48.

Hi Gert

Thanks for taking the call, greatly appreciated.

As mentioned, if we can make this happen then great, if not, then I tried my best and sometimes you have to admit defeat.

Have a check internally, the lowest I can TRY and get signed off is £299+VAT. If we can do this then great.

I understand the cost of the hotel is a contributor, hence why I am trying to push this through.

Let me know the outcome as this would have to be done before I leave at Thursday at 5pm

Kindest regards

Figure 4.6. Email Senior Delegate Acquisition Manager 'following our call', 2016-12-19

Making these offers is not only important for the business conference organisations to generate as early as possible some certainty on the success of the event. When delegates start to confirm early on, this can be used to convince more sponsors (for instance by providing some more details on the attendants, cf. supra). Furthermore, when people are 'confirmed' to one business conference organisation, the money spent on the delegate pass will not be spent on events of competitors: 'If you decide to join us today, you won't spend your money elsewhere!', the logic seems to be.

> 'To interest other actors is to build devices which can be placed between them and all other entities who can define their identities otherwise. A interests B by cutting or weakening all the links between B and the invisible (or at times quite visible) group of other entities C, D, E, etc. who may want to link themselves to B.' (Callon, 1986b, p. 208)

Business conference organisations try to weaken the potential links with other competing business conferences sometimes quite explicitly, as can be found in the email that was sent by the Senior Delegate Acquisition Manager of IoB, who explicitly want to avoid 'losing me to IQPC' (see figure 4.7.).

From: [redacted]
Sent: 12 December 2016 14:54
To: 'gert.meyers@soc.kuleuven.be' <gert.meyers@soc.kuleuven.be>
Subject: Following our call...

Hi Gert,

Firstly, many thanks for taking my call, it was great speaking with you and look forward to hopefully meeting you on site at Wooton house in April. I totally understand where you are coming from in regards to pricing etc and I understand that although the Big Data Analytics event is something you would happily go to with IQPC I sense that ours would hold some key value for you being in attendance and would be great to see you here. As you can see, the price at a standard is £1399+VAT however we have managed to secure the price of £550+VAT for you to be with us.

In regards to the hotel, we will have a preferential rate for this but our allocation has not yet been provided to us. So for now it looks like the £324 for two nights would be the price you would have to budget for until we get the discounted rooms.

I know this is quite unfortunate but due to us having a select limit of early bird passes for next years event the price we have put in play for you would be available until we close for the Christmas holiday next Wednesday.

I appreciate you have to speak to your supervisor about the choices but I hope that the get away from central London to ensure a great event is seen as an advantage rather than your finance team seeing it as a disadvantage.

Have a discussion internally and let me know the stance as I personally would not like to lose you, even more so to IQPC ;)

Any questions please do let me know

Kind regards

[redacted]
Senior Delegate Acquistion Manager
Internet of Business

DD: [redacted]
Cell: [redacted]
Web: www.internetofbusiness.net

Click here for our upcoming events

internetofbusiness.
London, UK | Boston, USA

Figure 4.7. Email Senior Delegate Acquisition Manager 'following our call', 2016-12-12

IQPC, short for the International Quality and Productivity Center, is a company specialised in the organisation of business conferences, and hence a firm competing with IoB. IQPC is not exclusively

dealing with insurance or a technology niche (like IoB is focussing on IoT).[31] It is important for business conference organisations to ensure that delegates get confirmed to attend their events, which diminishes the chances of attending the events of competitors.

The interessement of delegates is not only focused on making them 'confirm'. The choice of venue also plays a role in the interessement of delegates.

> 'Except in the extremely rare cases when the shaping of B coincides perfectly with the proposed problematization, the identity and 'geometry' of the interested entities are modified all along the process of interessement.' (Callon, 1986b, p. 209)

Most business conferences are organised in hotels in a large city. Most international business conferences on the future of insurance take place in London. Yet, for the 2017 *Internet of Insurance* event, a Land House in Dorking Surrey was chosen as the venue (see figure 4.8.). The 'De Vere Wotton House' is situated 40 miles outside of London, and at least a forty minute drive from London Heathrow:

> 'The venue, it's an experiment, and we know the consequences. In London, it is easier, but people pop in and out. They say they go back to the office for one important meeting, but never return. *We want people to be committed*. It is in the countryside, a lot of recreation is possible.' (telephone call, delegate acquisition manager, Internet of Business, 2016-12-12)

[31] When I attended the Big Data Analytics Insurance conference a training for international negotiation and diplomacy was organised by IQPC on the hotel floor the conference I attended was taking place. One week later IQPC organised a conference on Military Vehicles.



Figure 4.8. Break during Internet of Insurance *2017 (picture: Gert Meyers)*

By choosing a venue outside of the City, the delegates were disassociated from the everyday business obligations from the office which were now definitely out of reach.

The interessement-practices to settle the role of sponsors is comparable to the strategy adopted for delegates, but what is on offer is a more extended 'package deal'. During my fieldwork, I talked with the man who claimed to have organised the event – his job title on LinkedIn mentioned 'Business Development Manager'. He explained:

> 'I did the sponsorships for this event. We offer sponsors an information booth in the networking room, privileged prearranged business meetings, the opportunity to talk during the conference, and full attendee lists. This package costs between £15,000 and £16,000 but it is really tailored to the offer. If you want to be only a sponsor this is ca. £8,000 - £9,000' (conversation with Business Development Manager, Internet of Business, field notes *Internet of Insurance* 2017, Dorking Surrey, 2017-04-05)

The interessement of delegates and sponsors go hand in hand. Confirmed 'high-quality' delegates and their ensured commitment contribute to attracting sponsors with an interest in a pool of 'high-quality' and 'committed' insurance professionals.

The programmes of the events provide much space for breaks in between conference sessions. These breaks are never called 'coffee break' or 'lunch break'. They are always called 'networking breaks', or 'network lunch' (see figure 4.9.). These 'networking breaks' take place preferably in the 'networking room', the room where coffee and lunch is provided and, more importantly, where sponsors have their 'information booth'.

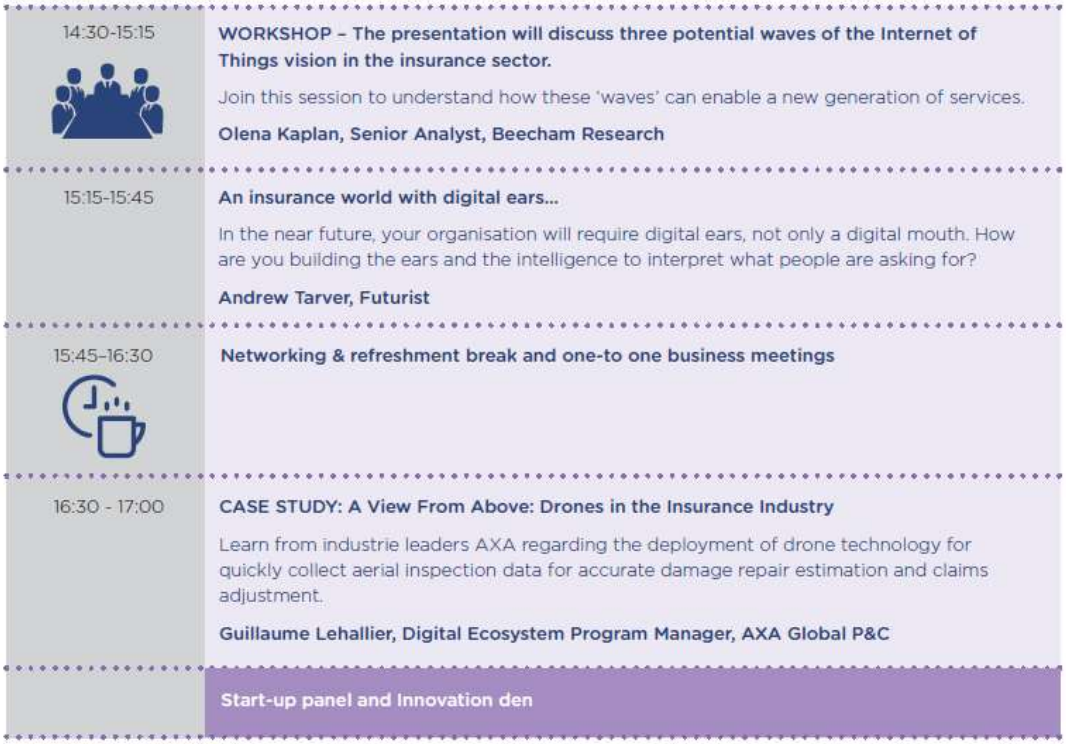


Figure 4.9. Excerpt of the 2017 Internet of Insurance *conference programme*

In the networking room, another moment of interessement of delegates takes place. This time the interessement is 'conducted' by the sponsors. The sponsoring companies want to associate delegates to themselves and disassociate delegates from being distracted by the exquisite lunch buffet, a call coming in from the office, or the information booths of other (competing) sponsors. The sponsoring companies are making a market for themselves, with their competitors being in the same room.[32] At these information booths, information brochures can be found, goodie bags are handed out (consisting of pens, large paper notebooks, smartphone power banks, USB sticks with company information, etc.), and employees of the sponsoring companies try to convince delegates of the importance of their InsurTech 'solutions' by employing large TV-screens. Delegates are

[32] 'We witness the creation of what ANT (Actor-Network Theory) called a socio-technical network which, by dint of exclusion, managed to organize highly regulated competition allowing a few agents to derive sustainable profits. In this struggle – in which the structure of the industry, the forms of competition and the technologies are shaped simultaneously – anything goes when it comes to strengthening its ties. […] we cannot show more clearly that the very nature of competition is to rarefy competition.' (Callon, 1998b, p. 44)

asked to leave their contact details – preferably a business card – and out of the business cards a winner is picked at the conference. Through the device of a glass see-through box, sponsors are collecting contact details and are establishing their network. During the *Big Data and Analytics Insurance* conference (January 2016), even a mini golf course was provided by one of the sponsors, which should attract delegates to see what else the information booth had to offer.[33]

Visiting the information booths was not only planned in the programme during the 'networking breaks'. One session during the *Big Data and Analytics Insurance* conference was devoted to a tour of the sponsor booths, where each sponsor had a time slot of 10 minutes to present their company. There seemed to be a worry that delegates would not attend this particular session. Therefore they organised a little interessement game: sponsors would confirm the attendance of delegates by autographing an attendance form that was handed out to all delegates. If delegates were present at presentations of all four sponsor booths, they could win a bottle of Champagne at the end of the conference. Ironically, the winner of the bottle of Champagne had already left the conference when the prize was handed out.

4.5. Enrolment, or (Un)successful Interessement

Some 'Insurtech experts' were appearing repeatedly at different business conferences organised by different companies. When introducing themselves, they also made apparent that they were attending these kind of business conferences almost full-time:

> 'Hello, my name is Alpesh. I'm doing this [chairing conferences on Big Data, IoT, AI,…] all the time. Drop me a line!' (conversation with CEO Fintricity, *Big Data and Analytics Insurance* conference, field notes, January 27 2015)

It seems that the professionals who are offering their expertise (Insurtech experts, sponsors, Futurists, …), being sponsors or invited speakers, are most comfortable in their role and in the making of a market for their own business/expertise/'Insurtech solutions'. For instance, a key-note speaker, who repeatedly gave offensive talks on how his expertise as a data wizard would disrupt/ruin the insurance industry, saw the role he was enacting as follows:

> 'F: I show people what the outside world is doing. Insurers do not necessarily know what is out there.'

[33] This 'game' aspect was also employed during the 2017 *Internet of Insurance* conference. The dinner after the first day of the conference, 'the Country Escape', also consisted of a quiz and other forms of entertainment such as and indoor 'croquet' competition.

> GM: ‘are you then some kind of bulldog barking loud at some sheepish insurers?’
> F: ‘Yeah, I give key-note speeches, I have to provoke!’
> (conversation Founder, YigSaw, *Internet of Insurance* 2017, Dorking Surrey, field notes, 2017-04-06)

Yet, despite all the efforts invested in the interessement of the different actors to turn the business conferences into a success, this success is never assured:

> ‘No matter how constraining the trapping device, no matter how convincing the argument, success is never assured. In other words, the device of interessement does not necessarily lead to alliances, that is to actual enrolment. […Enrolment] designates the device by which a set of interrelated roles is defined and attributed to actors who accept them. Interessement achieves enrolment if it is successful.’ (Callon, 1986b, p. 211)

The acceptance of the role attributed to the different actors by the business conference organisation during the moment of interessement cannot be taken for granted. In the remainder of this section, some scenes that show the success or failure of enrolment will be described. First, a ‘spontaneous’ dinner will be described. Then, two ‘failed’ interessements, instances where the enrolment was not achieved, will be shortly mentioned. Finally, I shortly sketch how it is not that easy to ‘shift roles’.

The first day of the official programme of the 2016 *Big Data and Analytics Insurance* Conference ended with a reception, where delegates could continue to network, exchange business cards, and discuss the future of insurance in the light of the Big Data revolution.

> ‘During the reception, I talked with a data analytics guy for one of the main Belgian insurance companies. He stresses that the breakthrough of Big Data, analytics and innovation will come slowly in Belgium because the Belgian insurance market still has large margins. Moreover, he believes that personal car insurance will cease to exist because of the developments with driverless cars […] He is complaining about the pre-conference workshops [the day before the conference some pre-conference courses were organised, GM]: “The workshop on Tuesday was a big mess. The social media workshop was even cancelled. I asked for a refund but now they are ignoring all my emails.”’
> (field notes *Big Data and Analytics Insurance* conference, London, January 2015-01-27)

While we were talking, the co-founder of the main sponsor of the event invited everyone for a 'spontaneous' dinner at the Italian place 'Tozi' of the Park Plaza Victoria hotel. During dinner the co-founder of the main sponsor kept the discussion on-topic and did not skip an opportunity to show his expertise, 'data plumbing', and mentioning the software package they developed to 'plumb the data'. Besides, there was some small talk on cricket and snooker, a few professionals were discussing how hard it is to find qualified employees with Big Data skills, a heated debate emerged on who is entitled to be called a 'data scientist', and a rumour on a Belgian insurance company having a truck which stored all data as a back-up and could be physically moved in case of fire or water damage. During the reception and the 'spontaneous' dinner, a successful enrolment came to be.

Yet, not all actors are accepting the role they are (tried to be) interested in. During the 2016 *Internet of Insurance* conference, a young Dutch insurance professional, who was at the time working for a Brazilian insurance company, was not so much interested in accepting the role of IoT for the insurance industry, nor really listening to the success stories and offers made by companies sponsoring the event. Rather, he was more interested in the ongoing football world cup and he was actively and explicitly networking in order to look for a good job closer to the European mainland.

As we have seen, an important part of the interessement consisted of making delegates 'confirm their presence'. For the 2017 *Internet of Insurance* conference this happened to be quite hard and was partially due to the venue outside of the City. One week before the event (on March 28, 2017), I received an email offering an additional delegate pass:

> 'Dear Gert
> We are looking forward to welcome you at the Internet of Insurance next Tuesday at Wotton House.
> Our sponsors have expressed an interest in meeting you and working with Ku Leuven, so we would like to extend an additional complimentary pass for one of your colleagues to join us at this exciting event. […]
> I look forward to meeting you in Dorking next week.'

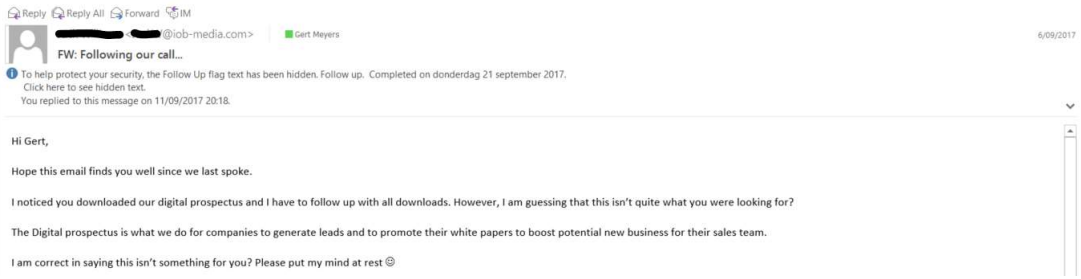
This desperate email to gain extra attendees shows that it was hard to 'confirm' attendees and that Internet of Business wanted to have enough attendees to make sure that sponsors were not disappointed by the number of attendees.

> 'During the opening statement by the Chair of the event, I counted 33 attendees, lots of empty chairs. […]. The Chair exclaims happily: "We are about 100 people today" […] People slowly hop in. We are 50 by the end of the chairman's introduction. […]

> After the coffee break the room seems to be fuller. Some extra attendees arrived, also some chairs were removed.' (field notes *Internet of Insurance* 2017, Dorking Surrey, 2017-04-06)

During the conference a delegate entrusted me that he was active in banking, not insurance, and that he had no interest in IoT whatsoever. Two days in advance he was offered a free pass and accepted the offer mainly for the nice land house and the punch during dinner. In 2018, the IoB website made a change to the sectors they were covering. 'Insurance' and 'Banking and Payment' were merged into 'Insurance and Finance' (http://internetofbusiness.com/).

The enrolment is not only about the different actors accepting their role, or not. The enrolment also involves management from the business conference organisation, before, during and after the conferences. For instance, I received the following email after I downloaded the 'Digital Prospectus':


Reply Reply All Forward IM

[redacted]@iob-media.com> Gert Meyers 6/09/2017

FW: Following our call...

To help protect your security, the Follow Up flag text has been hidden. Follow up. Completed on donderdag 21 september 2017.
Click here to see hidden text.
You replied to this message on 11/09/2017 20:18.

Hi Gert,

Hope this email finds you well since we last spoke.

I noticed you downloaded our digital prospectus and I have to follow up with all downloads. However, I am guessing that this isn't quite what you were looking for?

The Digital prospectus is what we do for companies to generate leads and to promote their white papers to boost potential new business for their sales team.

I am correct in saying this isn't something for you? Please put my mind at rest ☺

Figure 4.10. Email Senior Delegate Acquisition Manager 'following our call', 2017-09-21

By downloading the Digital Prosspectus, a documents targeted to potential sponsors for the IoB-events, I was no longer behaving as a 'delegate', the type of actor I was interested/enrolled to be, would do. It appeared that I 'changed roles'. By explaining why I downloaded the Digital Prospectus to the IoB Senior Delegate Acquisition Manager, I could 'put his mind at rest'.

4.6. Mobilisation: 'Reach out, Don't be Shy!'

A fourth moment of translation discussed by Callon (1986b) is that of mobilisation. In the case of the production of scientific knowledge on the scallops of St. Brieuc Bay, mobilisation is mainly concerned with the question of representation in science and reducing the 'noise' which can be caused by the different actors that are not enrolled according to what the researchers envision. This makes Callon (1986b, p. 216) remark that 'to speak for others is to first silence those in whose name we speak.' Rather than to silence others, the moment of mobilisation during insurance business conferences is focused on encouraging insurance professionals to speak out (see chapter 3 on the importance of expectation generation devices), and establish networks with other insurance

professionals, technology providers, and sponsoring companies. For instance one delegate confided in me during a networking break that he 'didn't participate much because he used these conferences to reflect' (field notes, *Internet of Insurance* 2017). A lack of participation by the delegates would generate the impression that the delegates are not 'interested' in the discussed topics and the technology solutions provided by the sponsors. To cope with this potential problem, all the actors were mobilised to participate in the discussions and to actively network. Or, as the chair of the IoI formulated it: 'speak up, don't be shy!' (Chair of the conference, *Internet of Insurance* 2017, Dorking Surrey, field notes, 2017-04-05)



Figure 4.11. Picture of the throwable 'Catchbox'-microphone at 'Internet of Insurance' (April 5-6, 2017, picture: Gert Meyers)

In order to mobilise the actors to 'speak up', different mobilisation devices – or should I say, 'expectation generation devices'? (see chapter 3) – were employed. At the 'Internet of Insurance' conferences the catchbox, a soft throwable microphone is used for instance to make the Q&A sessions 'more fun' (see picture 15).[34] The Catchbox removed the unease and boringness of a hard microphone:

> 'One of the things that really damages the energy at an event, is waiting for someone to walk around with a hard microphone and then people testing to see 'Am I on? Am I talking? So one of the things that was good about this event was that people were throwing this foam cube with a microphone in it

[34] See http://bit.ly/2qzcmRg for an account of the function of this microphone, followed by footage of me throwing the Catchbox during the fieldwork at the 2016 *Internet of Insurance* conference in an 'aftermovie' of the Internet of Insurance 2016 conference used while advertising for the 2017 event.

> at each other. It really kept the energy high.' (Craig Beatle, Senior analyst Celent, at http://bit.ly/2qzcmRg IoB, 2016)

A second device to mobilise delegates are workshops, where delegates are divided into smaller groups where all have to work out a business case using the technologies and insights presented during the conference. Yet, these workshops were not really successful in that most participants were not really keen to play a serious game, and participate fully.

Furthermore, roundtable sessions on Big Data in insurance were organised. During the *Big Data and Analytics Insurance* conference, roundtable sessions were organised around the very broad scope of 'Best practice approaches to analytics for insurers: where are we and where do we need to go?':

> 'I was part of table 2. […] The Belgian data analyst remarked that the topic of the roundtable is too broad: 'it is really important to start with business questions: no analytics for the sake of analytics, no data for the sake of data.' The moderator asked everyone to shortly define Big Data and how it will affect insurance. When it was my turn I proposed – as a question, so I would not be too definite: 'isn't the real value of Big Data the ability to make risk into something small?' The moderators of the three tables shared the main 'insights' with the full group of delegates […] the moderator of table 2 [my table, GM] recapitulated our discussion: 'We think overall it is important to build consistency in customer relations. We have discussed three main things: *Firstly, make data small again, that's what Big Data is about. The sociologist in the room came up with that.* [idea stuck with roundtable participants when I proposed it, GM]. Secondly, Big Data can connect to customers but will this make customers connected/engaged? [the example of pregnancy advertisements was given (see Morozov, 2013)] Finally, Big Data is about ROI [Return on Investment, GM], but does this make the customer journey secondary?' (field notes, *Big Data and Insurance Analytics Insurance* conference, London 2016-01-28)

A final form of mobilisation is the generation of 'take home ideas'. Many speakers during the conference end their talk with some 'take home messages', and at the end of the *Big Data and Insurance Analytics Insurance* conference, the Chair of the event invited all participants to share their key 'take home ideas'.

4.7. Conclusions

Throughout this chapter, the translation work by business conference organisation has been discussed. This showed that this site of expectation generation, comparable to the expectations expressed on blogposts discussed in chapter 3, is not self-evidently out there, but has to be constituted. I employed the translation-concept as employed by Callon (1986b) to investigate how business conferences are problematizing the emergence of Big Data in insurance as an issue where different stakeholders should be interested in, how these interested actors are enrolled to attend these business conferences, and how the delegates are mobilised to participate in the conferences and make use of the multiple networking opportunities. Before business conferences can start to function as an expectation device (see chapter 3), an actor-world has to be built, of which the actors are only there insofar as their identity and role is translated/enacted. The actors present at business conferences are not to be chosen like groceries 'in a well-stocked supermarket' (Callon, 1986a, p. 24).

During business conferences as to the future of insurance the expertise and expectations that are discussed are not the main attraction of the events. Everything is centred around the 'networking activities':

> 'But the key thing isn't the speakers. The key thing is the networking with people. The lunches and so on, that's when you get the information. Because that's when people share. And that is what it's about in my view.' ('breakfast meeting' interview, Partner, CRtP, 2016-03-08)

By setting up informal business encounters, business conferences contribute to the making of future insurance markets. How big or effective this contribution is, is open for dispute. What 'in the end' the role of business conferences is in the making of future insurance markets, can never be known for sure. The major issue to resolve here is to ask 'for who' these events are a success.

I have investigated in this chapter how business conference organisations set up their events by translating the interests of other actors to attend and be committed during business conferences they are organising. This focus on the business conference organisation was due to the actor-centrism of the translation concept (Sismondo, 2004), yet helped to reduce the level of complexity in analysing this site of investigation. During these business conferences, all other actors are doing the same thing and make their own future market. All actors try to enact themselves as an Obligatory Point of Passage (OPP, cf. Callon, 1986b): sponsors try to convince delegates to hire them to provide technology solutions, keynote speakers who act as 'futurists' try to perform well so their expertise will result in new speaking opportunities, and delegates want to catch some 'take home

ideas’ and establish professional contacts that might be helpful to gain a competitive advantage to other insurance providers.

What the role of business conferences is for the making of future insurance markets, will stay unresolved, and is a topic of debate (Cheatham, 2016; Sherlock, 2016). Yet, while waiting on a cab to go back to Heathrow and complaining that Uber drivers were happy to bring him to the land house but it was impossible to find an Uber to drive from rural countryside to the city of London, one of the sponsors told me he was relieved on the outcome of being present at the *Internet of Insurance* 2017:

> ‘Our name starts to resonate, so even when we do not sign contracts during this conference, it has positive influences. I am confident that in the next month, I will already go to London for further meetings.’ (Director Europe IOT, Zwave, *The Internet of Insurance* conference, Dorking Surrey, field notes, 2017-04-06)

Hence, what the effect of a business conference is for the making of future markets is impossible to observe. Nevertheless, while listening to some ‘take home ideas’, it was much more important to know which business cards were taken home, an how a network of ‘forward-looking insurance professionals’ was established.

Part II. Experiments



Detail from La Clairvoyance (René Magritte, 1936), reproduction by Pauline Swinnen (picture: Sven Peremans)

5. Experimenting with Behaviour-based Personalisation: Making a Detour Towards Car UBI



Vice-Eersteminister en Minister van Werk, Economie en Consumenten, Belast met Buitenlandse Handel

Vice-Premier Ministre et Ministre de l'Emploi, de l'Economie et des Consommateurs, Chargé du Commerce Extérieur

PERSBERICHT DOOR KRIS PEETERS
VICEPREMIER EN MINISTER VAN WERK, ECONOMIE, CONSUMENTEN
EN BELAST MET BUITENLANDSE HANDEL

Vrijdag 27 november 2015

Gezonde levensstijl en veilige rijstijl = lagere verzekeringspremie?

Kris Peeters: *"Opletten voor privacy en solidariteitsmechanisme !"*

Figure 5.1. Press Release Kris Peeters on the NN smartwatch initiative, 2015-11-27

Whereas the first part of this dissertation (chapters 3 and 4) discussed the generation of expectations as to 'Big Data in insurance', the remaining chapters more specifically focus on experiments with and consequences of behaviour-based personalisation. The concept of behaviour-based personalisation is employed to point to the broader and growing interest in and practices of the personalisation of products and goods where markets and services are increasingly focused on the behaviour and lifestyle of actors, particularly in insurance markets. What behaviour-based personalisation could look like, will be explored gradually over the next chapters. Experiments in the enactment of behaviour-based personalisation in (health) insurance take place in a societal and regulatory context, of which some elements are touched upon in this chapter.

Belgian news media and politicians have been quite silent on the role of Big Data in future insurance markets, or on particular initiatives of 'behaviour-based personalisation' in insurance. One particular initiative concerning healthy lifestyle in an insurance context generated a small controversy. In November 2015, the Belgian branch of Nationale Nederlanden, which is part of the ING group, handed out free smartwatches to 500 clients (ZD net, 2015). This communication by Nationale Nederlanden was interpreted in news media as if Nationale Nederlanden was setting premiums based on lifestyle data generated by the smartwatches (AM:web, 2015; De Morgen, 2015; Knack, 2015; Newsmonkey, 2015). This small commotion urged Kris Peeters, Belgian vice-prime minister and minister for economy and consumer protection, to react in a press release, claiming that he would protect the principles and solidarity mechanisms of insurance at all cost:

> 'Setting premiums is a contractual freedom between the insurer and the insured. Yet, from the moment I observe that the solidarity mechanism is being hollowed out, I will intervene. The premiums and tariffs have to be affordable for every citizen. From a privacy-perspective, the consumer has to always have the opportunity to explicitly consent with the sharing of his or her data.' (Peeters, 2015, translated from Dutch)

In his statement, Peeters, warned of experiments in health insurance as well as in car insurance. The threshold of what is, according to the Director of consumer protection and economic regulation working for Kris Peeters, considered to be an unacceptable form of personalisation based on behaviour, is when behaviour-based personalisation would affect premiums:

> 'It is a difficult balance. In my opinion, you cannot have much objection against advantages in kind for consumers that are in line with normal marketing budgets, and when it stays reasonable. When it is substantial, and when it has really an influence on the premiums itself, it gets harder for consumers to compare premiums between different insurance companies, and we have problems with these practices, indeed.' (interview, Director Consumer Protection and Economic Regulation, Cabinet Kris Peeters, 2015-12-10)

It is, furthermore, remarkable that Kris Peeters published this statement as a reaction to an initiative of a health insurance provider that 'only' handed out 500 health wearables to its customers. The commotion happened to be 'much ado about nothing':

> 'It has happened a few times that some alarming incidents were reported to us and that we published a reaction towards the [insurance, GM] sector. In those instances, we ask the sector to explain what they are doing. And their story is often much more nuanced than we thought at first. This was, by the way, also the case here [with the discussed press release, GM]. You have to be particularly cautious with the stories that circulate in the news media. Often, a spectacle is made of the news, and in the end, it happens to be much more nuanced.' (interview, Director Consumer Protection and Economic Regulation, Cabinet Kris Peeters, 2015-12-10)

This chapter describes the environment in which experiments with behaviour-based personalisation are enacted in the Belgian-EU context. This environment can help to better understand Peeters' strong reaction to such an 'innocent' initiative. Although the main interest of this research is to

study what Big Data does in life and health insurance, the conducted case studies (see chapter 6 and 7) are situated in car insurance. This is due to an experimental detour made by the insurance industry itself. Car insurance is a 'harmless' safe space to experiment with behaviour-based personalisation and seen as a way of prototyping. In Europe, the use of telematics and Usage Based Car Insurance (Car UBI), has been developed and marketed mostly in the UK and Italian markets. In the UK and Italy, car UBI, also known as car telematics, is already well established (Carbone, 2016; Insurance Journal, 2017). The Italian market is the car insurance market with the most connected vehicles. It was estimated that in 2015 around 4.8 million connected cars were driving on Italian roads, representing a market share of 15-16% (Doronceanu, 2016; Swiss Re, 2017). In the Belgian car insurance markets, telematics and car UBI are still in an experimental phase, with many initiatives investigating the possibilities to enact behaviour-based personalisation in car insurance products.

The experimental detour towards car UBI will be discussed in this chapter. First, the Belgian-EU regulatory context, as well as the logic that enables the 'turn' to behaviour-based personalisation, will be discussed. This regulatory context fits in a discursive logic that legitimates differentiation based on things individuals do control, and protects elements which individuals are considered to have no control over. Section 5.3. particularly goes into how the detour towards car insurance is legitimised. Section 5.4. gives an overview of the main initiatives of behaviour-based personalisation in the Belgian car insurance market between 2013 and 2016. The concluding section shortly reflects on how the detour towards car affect future forms of behaviour-based personalisation in life and health insurance.

5.1. Insurance Regulation in the Belgian-EU context

The insurance industry, and especially the practices of underwriting or risk selection, is a highly regulated economic sector. Since the 1980s, the insurance industry has been the subject of public controversy on the use of (medical) risk selection (Abraham, 1985) with reference to, among others, the HIV epidemic (Clifford & Iuculano, 1987; Daniels, 1990; Stone, 1993), race (Duster, 2015; O'Neil, 2016; Prainsack, 2015), the use of genetic testing (Ewald, 1999; Lemke, 2013; Liukko, 2010; Van Hoyweghen, 2007; Wauters & Van Hoyweghen, 2016) and gender (Davey, 2015; Rebert & Van Hoyweghen, 2015). All these discussions/controversies are dealing with the issue of 'what differences should make a difference'. More extensive knowledge on risk generates new observed/objectified differences. The less is known on a risk, the more importance is attributed to the residual 'chance'-category.[35]

[35] Insurance-as-we-know-it generates different forms of solidarity (Lehtonen & Liukko, 2011, 2015; Liukko, 2010). These forms of solidarity do not exclude each other and are at work concomitantly and are dependent on the knowledge available on a risk and a 'decision' on what differences should make a difference. First of

In the process of risk selection or underwriting, insurance companies make use of different types of variables and attribute individuals to risk groups. What types of data can be used to conduct underwriting is prescribed by law. Insurers are allowed to differentiate on the basis of risk data when this is done proportionally and when the data have proven to be relevant and reliable. Some of the above mentioned characteristics (HIV, race, gender, and genetics) have a special status as these data are prevented from being used by law. This section shortly mentions the conditions under which, in the Belgian-EU context, insurance companies can freely set premiums and the circumstances under which forms of discrimination are prohibited.

Insurance providers are in principle free to set premiums. Yet, from a legal perspective, a growing number of constraints are to be found (André-Dumont, 2013). To begin with, discrimination based on 'age, sexual preference, marital status, capital, religion, political convictions, union membership, language, present or future health status, handicap, physical or genetic properties, or social background' is, in principle, prohibited from use by insurers to set insurance premiums, protected by the Belgian anti-discrimination legislation of 25 February 2003 (Fontaine, 2017). Yet, differential treatment is not considered to be discriminatory under certain conditions. First of all, the criteria to differentiate should be justified by pursuing a legitimate goal. Secondly, the legitimation has to be objective and pertinent. Thirdly, the criteria used should be necessary, which means a less discriminatory alternative test is not available. Finally, the differential treatment has to be proportionate.

Discrimination based on gender is particularly protected by the Belgian law of 10 May 2007 (Wet *ter bestrijding van de discriminatie tussen mannen en vrouwen*) giving effect to the European Directive 2004/113/EG (Fontaine, 2017). A deviation from this anti-discrimination legislation was granted to differential premiums for life insurance. This deviation was appealed to the constitutional court by the Belgian consumer-protection organisation *Test-Achat*. The rejection by the constitutional court of the deviation led to the 2011 European Gender Directive, also known as the *Test-Achat* rule, that came into effect on 21 December 2012 prohibiting the differential treatment of Gender characteristics to set insurance premiums (Fontaine, 2017; Rebert & Van Hoyweghen, 2015).

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all, there is chance solidarity, taking place *within* risk groups. Chance solidarity takes place when, as a result of the chance related to an insured risk, policyholders who experience a loss related to the insured risk will receive pay-outs that are financed by the premiums of those policyholders who do not experience a loss related to the insured risk. According to some, this form of solidarity is the purest form of insurance solidarity. The second major form of insurance solidarity is subsidizing solidarity, taking place *between* risk groups. Here, one *distinguishable* group subsidizes (parts of) the costs of another group. This form of solidarity can be constituted between risk groups (subsidizing risk solidarity) or between income groups (subsidizing income solidarity – mostly in social insurance and mutuals). I want to shortly remark here that the status of the solidarity that takes place depends whether or not it is possible to make a distinction between two risk groups. When evidence has been provided for the existence of a new risk factor, this will lead, *ceteris paribus,* to a shift of chance solidarity to subsidizing risk solidarity. This shows that when more precise knowledge on risk groups exists, more subsidizing risk solidarity can takes place and 'pure solidarity' automatically diminishes.

Genetics also has a special protected legislation. In 1992, Belgium was one of the first countries to fully ban the use of genetic testing information for insurance underwriting (Van Hoyweghen, 2015). Since the 1990s, most European countries have taken legislative action to govern the use of genetic testing information for insurance underwriting (Geneva Association, 2017; McGleenan, 1999; Van Hoyweghen, 2015). The different EU member states have enacted different ways of governing the use of genetic testing information for insurance underwriting.[36] The main discursive logic at work in Genetic Non-Discrimination Acts (GNDAs) is that people do not control the genetic risks they carry, whereas other risks are in control of individuals, allowing to 'take' or 'embrace' risks (Baker, 2002; Baker & Simon, 2002b; Van Hoyweghen, 2018; Van Hoyweghen et al., 2007). This control/no-control logic generated an openness for lifestyle underwriting and other ways of taking the behaviour into account (French & Kneale, 2009, 2015).

Although insurers are in principle free to set premiums, when insurers want to segment risk by differentiating premiums for different risk groups, they have to abide by the same requirements that are in force to differentiate the differences protected by antidiscrimination legislation:

> 'The law resumes in the case of the segmentation the introduced requirements for discrimination: "every segmentation…has to be legitimated objectively by a legitimate goal and the means to reach this goal have to be fitting and necessary." (art. 44) Moreover, the insurer has to publish the employed segmentation criteria on its webpage and explain the reasons for doing so.' (Fontaine, 2017, p. 301, translated from Dutch)

Having to provide objective legitimations for segmentation in the differentiation of premiums introduces a burden for the introduction of new types of data, and new types of segmentation criteria. For instance, objectifying the health risk effects of doing 10,000 steps per day, measured by a health wearable, is only possible in the long run. These objectified findings are not provided (yet?), and it is expected that this process of objectification will not be there soon:

> 'The next move will be into group-based discounts so saying 'ok, let's actually give discounts' but it will still be group-based. So for example, I who do 9,000

[36] In the UK, a concordat and moratorium has been agreed in 2001 between the Association of British Insurers (ABI) and the UK Department of Health to regulate the use of genetic test information in insurance. This moratorium has been currently extended until 2019 (HM Government & Association of Britisch Insurers, 2014). This moratorium, which has to be renewed/renegotiated continuously, allows to react and adapt more easily to new genetic technologies than 'hard' regulation by law. Not all countries implement a full ban of genetic test information. In Switzerland the 'Federal Act on Human Genetic Testing' (Gesetz über genetische Untersuchungen beim Menschen (GUMG)), is in force since 2007. With regards to the use of genetic information, Article 27 of GUMG ("Bundesgesetz über genetische Untersuchungen beim Menschen (GUMG)," 2007) stipulates the conditions under which it is forbidden to use genetic information in insurance. It is, among others things, prohibited to use genetic information for life insurance contracts up to 400,000 CHF and for voluntary invalidity insurance contracts up to 40,000 CHF.

> steps on an average day versus you who do 11,000, we might end up having the same premium because we are around 10,000 but it might be less than someone who provides no data. But it is still sort of distinct groups that you fall in. The holy grail is that you eventually end with 11,270 steps and will have a slightly higher discount than me who has 10,930 steps. So even if it is a 0.1% difference, it should be detectable up onto that level. So, that's why I think that level of integration into the product, the way insurance works, that sort of holy grail status will be probably 5 to 10 years away. And that has to do with the kind of experience you have to build up, keeping in mind how an insurance company works. Insurance companies, although they are headed up by a CEO, are basically run by two people; your chief pricing officer and your chief underwriter. And if they don't like it, they don't sign off on it. They are still very uncomfortable with all of this.' (interview, Innovation Manager, Swiss Re, 2015-07-14)

It should also be remarked here that traditional forms of underwriting and the use of risk-group categories for segmentation in insurance-as-we-know-it take place *before* the insurance contract goes into force. Collecting data to personalise insurance products, prices, and services – *after* the base premium has been calculated and *after* the contract goes into force – changes this logic of risk selection and underwriting.

The main European data protection regulation, the 1995 directive by the European Commission (95/46/EC), had to be updated to the new and emerging data technologies (Mayer-Schönberger & Padova, 2016). This 'update' is provided by the General Data Protection Regulation (GDPR), which attributes more rights to the data subject, for instance by inscribing the 'right to be forgotten' and the principle of 'data portability' (Marelli & Testa, 2018). The GDPR came into force on 25 May 2018.

This short overview shows that the use of data is highly regulated in insurance.[37] Particular types of variables, falling under the anti-discrimination legislation, are protected from use by insurers. For some variables, such as Gender and Genetics, a full ban on the use for insurance underwriting is in force. And when insurers want to segment risks by differentiating insurance premiums, this has to be legitimised objectively for a legitimate goal and by employing proportionate and necessary goals. Yet, during the empirical work for this research, through

[37] While is often stated that legislation restricts the possibilities of insurance providers, legislation can make a huge difference, also in favour of the adoption of telematics in insurance. For instance, in Italy, the 2012 'Monti decree' requires that car insurance policies employing telematics should be cheaper than car insurance policies that do not (Tong et al., 2015). In August 2017, new legislation came in effect that 'recommends telematics for all [car, GM] insurance' (Hallauer, 2018). These legislative initiatives have contributed to the growth of the Italian telematics market. The Italian Car UBI market is globally the largest car UBI market (Swiss Re, 2017).

interviews and fieldwork, legislative issues did not came up as an important concern in the making of new insurance products adopting behaviour-based personalisation. Short remarks, for instance notifying that 'everything is done according to the rules of privacy' (see section 6.4.2.), seemed to suffice for the actors themselves.

Another often formulated argument on the (overemphasized) importance of privacy, is the so-called privacy paradox: although people claim they care for their privacy, this attitude is not found in their behaviour (Kokolakis, 2017). Moreover, in my empirical work, I found that privacy is often black-boxed (Latour, 1987) in experimental practices of behaviour-based personalisation. For instance, it is quickly ascertained that all data experimental practices are 'according to the rules of privacy', or by swiftly accepting the 'terms & conditions'. This way, privacy is 'double-clicked', both literally as well as in the understanding of Latour (2012).

5.2. A discursive openness to differentiate based on risk taking

Along with the stabilisation of risk classification in insurance practices, debates about the need vs. desirability of risk selection were increasingly prevalent in the early 20th century (Horstman, 2001). For the insurance industry, the position that risk selection was both needed and desirable was dominant with insurers arguing that risk selection was needed to ensure the solvency of insurance companies, it was argued. This logic still resonates in contemporary discussions on risk selection (see section 7.5.). By attributing individuals to risk groups and attributing insurance premium based on belonging to a risk group, some differences between risk groups are taken into account while other differences are not. The legitimisation and discussion of 'what differences should make a difference', has always been crucial in making an insurance policy 'work', and fits in the regulatory framework sketched above.

All productions of (risk) knowledge generates 'difference' (Blom, 1997; Spencer-Brown, 1969; Vivieros de Castro, 2009). New knowledge constitutes previously unperceived differences in the 'risk pool', which urges to reflect on whether or not, and if so how, to turn these observed differences into a differential treatment of insurance clients. The controversy on the use of genetic testing for premium differentiation is particularly interesting here (Ewald, 1999; Harper, 1993; Lemke, 2013; Liukko, 2010; Van Hoyweghen, 2007). Genetic information can be considered a 'sticky category', comparable to some other types of information:

> 'The question of who the groups were that should be represented in this manner was answered on the basis of categories that public authorities traditionally used to classify people: gender, race, and age. Because of how deeply these categories are engrained in the social and political fabric of our societies, they

> seemed to be a 'natural' choice to classify people (see also Prainsack 2007). These categories continue to be advantageous for governments also because in contrast to medically relevant categories such as 'smoker', 'athlete', or 'vegetarian', demographic categories such as gender, race, or age are less easily malleable: They stick to people.' (Prainsack, 2015, p. 29)

Legislative measures have been enforced in most European countries to ban the use of genetic testing in insurance (Van Hoyweghen, 2015, see section 5.1.).[38] During the 1990s, a discursive and legislative space emerged in which an agreement was reached on bans for the use of genetic test information for insurance purposes (Van Hoyweghen, 2007). It became 'obvious' in Europe that, because people do not have control over their genetics, insurers (and other institutional actors such as employers) should not be allowed to use genetic test information to set premiums (Van Hoyweghen, 2018). This obviousness was recognised during all of the conducted interviews for this research. The innovation manager I encountered at several stages during the research, formulates it as follows:

> 'For example, we are not allowed to use genetic testing because you are born like that. You have no say in it. No matter what you eat, you have no influence at all on your genetics. So in the long run the regulator and consumer interest groups will probably shut down the use of things that people have no control over. Now, the one thing people have clear control over, is their behaviour.' (interview, Innovation Manager, Swiss Re, 2015-09-09)

The main argument employed to defend Genetic Non-Discrimination Acts (GNDA's) is that people do not have control over their genetic risk and the risk associated with it.[39] The argument of the absence of control over one's genetic information, instantiated a strong control/no-control logic and created a distinction between risk-carriers and risk-takers (Van Hoyweghen et al., 2007).[40] The control/no-control logic was very effective in making a case for GNDAs, yet also constituted an openness towards differentiation based on categories that are considered being less 'sticky', namely our behaviour/lifestyle. Hence, this discourse was not only restrictive ('no use of genetic information in insurance'), but also productive in creating an openness to differentiation based on

[38] Yet, these legislations do not necessarily alleviate the fears and concerns surrounding genetic discrimination (Lemke, 2013; Wauters & Van Hoyweghen, 2016).
[39] A lack of control over genetics, does not imply that genetics is a sphere without any responsibility (Hendrickx, Meyers, Wauters, & Van Hoyweghen, 2017; Lemke, 2013; Annet Wauters & Van Hoyweghen, 2017)
[40] This control/no-control logic is, certainly in the case of the use of genetic knowledge in insurance, firmly anchored on the nature/nurture dichotomy and its politics of nature (Fox Keller, 2010, 2016; Hendrickx et al., 2017; Van Hoyweghen & Meyers, 2017).

what is 'in control' of individuals (Foucault, 1971; Van Hoyweghen, 2018).[41] For instance, individuals' weight, captured with the BMI-metric, is considered to be under the control of the individual (Saguy, 2013) and is used by insurers to set premiums. BMI and smoking status are still used as quasi-static categorical lifestyle characteristics to be used during underwriting.

The constitution of a control/no-control logic, which makes a distinction between risk carriers and risk takers (Van Hoyweghen, 2018; Van Hoyweghen et al., 2007), was later also employed to defend laws prohibiting price discrimination using gender categories (Rebert & Van Hoyweghen, 2015), and opened up a space for telematics:

> 'The gender directive gave telematics insurance products an added push. Since insurers are no longer able to differentiate by gender in their rating – and previously gender had quite an influence on the premium charged – telematics offers the opportunity to see how someone really drives. *Hence, you get products now that are designed to reward better drivers, regardless of their gender. The likelihood is that, certainly at the younger end, more of the better drivers will be female*.' (Mike Arrey in: Munich Re, 2015, p. 29, emphasis added)

The control/no-control logic has a binary character. One is supposed to be either 'in control' of a certain 'risk factor', or not. Smoking status is also treated as a binary category in underwriting practices. One is either a smoker or not, and if one is a smoker, this is considered to be the result of decisions by a strong economic actor, 'fully' in control of his/her behaviour/lifestyle. Despite the strong control/no-control logic, which legitimates GDNA's and open up a space for personalisation base on the behaviour of policyholders, insurance companies are very cautious in employing this openness in the field of life and health insurance. Rather, an experimental detour towards behaviour-based personalisation in car insurance is made.

[41] The 'discourse' concept should be broadly understood, including statements and material practices belonging to a 'discursive apparatus'/'dispositif discursive': « ce que j'essaie de repérer sous ce nom c'est, […] un ensemble résolument hétérogène comportant des discours, des institutions, des aménagements architecturaux, des décisions réglementaires, des lois, des mesure administratives, des énoncés scientifiques, des propositions philosophiques, morales, philantropiques ; bref, du dit aussi bien que du non-dit, voilà les éléments du dispositif. […] C'est ça le dispositif : des stratégies de rapports de force supportant des types de savoir, et supportés par eux. » (Michel Foucault, Dits et Ecrits III p. 299, cited in Agamben, 2007, pp. 8-10)

5.3. 'I Mean, Telematics for the Cars is Wearables for the People': Car UBI as a Detour

In line with the control/no-control logic, developments in wearable (health) technologies and predictive data modelling, and the possibilities of personalised health care solutions, offer an opportunity for the growing insurance interest in personalisation based on behaviour. These developments go beyond the insurance business' interest to refine their actuarially based risk categorisation (Schneier, 2016). Rather, they are part of a broader interest in and practices of the personalisation of products and goods where services are increasingly focused on the behaviour and lifestyle which are called behaviour-based personalisation here.

Insurance companies are working on health insurance policies that make use of personalised risk technologies, although its adoption is considered to be slow. For examples, in the last few years the American-based start-up health insurer Oscar caught lots of attention in the news media and as an academic curiosum (Macmillan, 2015; McFall, 2015b; Nusca, 2015). This small insurer that originated in New York offers a so called 'holistic approach' towards health. Digital platforms are used to provide policyholders with information on their Health Maintenance Organisation (HMO), give feedback on results of their fitness activity trackers and provide other preventative tools. Another main player that works on the axis of life and health in the insurance market is *Discovery*. This South Africa based company encourages its policyholders since the 1990s to live a healthy lifestyle by offering rewards for demonstrated preventive health activities (French & Kneale, 2009). More recently, Discovery launched insurance brand '*Vitality'*, and offers 'Vitality Points' for good behaviour. These vitality points can be used by the policyholders to obtain discounts in other companies like cinema, sports shops and so on. *Generali*, an Italy-based insurer, announced at the end of 2014 that they are working – in a partnership with Vitality - on a health insurance policy that makes use of fitness data for the German market (Gröger, 2014; Krempl, 2015), which was launched two years later, in July 2016 (Wellisch, 2016).

These insurance policies that experiment with introducing (healthy) lifestyles and predictive modelling in insurance policies to personalise risk gain a lot of attention and are expected to disrupt the insurance industry (McFall, 2015b; The Economist, 2017). However, they have not (yet?) broken through as the new dominant insurance model. Instead, a detour is currently made by health and life insurers towards the field of car insurance for the development of these more personalised insurance (AXA, 2013a; Swiss Re, 2017) because the reliability of health wearables is still discussed (Cambell, 2017; Case, Burwick, Volpp, & Patel, 2015), establishing a clinically/actuarially valid link between health behaviour and health risk is not yet established (Neff & Nafus, 2016), and health-related behavioural data are considered to be too sensitive.

> 'You can be around a group of friends and somebody says 'you drive like a maniac' and then you say 'yeah, sometimes' and *everybody laughs and moves on*. Whereas in health it is completely different, so being diagnosed with certain illnesses is something private. *Heredity stuff, family illnesses, current illnesses, past illnesses, that is not something you discuss sort of openly*. So that shift is really fundamental which is why privacy is such a big concern for health insurance and life insurance whereas telematics, *I mean, telematics for the cars is wearables for the people*.' (interview, Innovation Manager, Swiss Re, 2015-07-14)

While investigating the enactment of behaviour-based personalisation in insurance, this research follows an experimental detour taken by the insurance industry itself. The insurance industry chose to develop behaviour-based personalisation in the first instance with car insurance, as an experiment before moving to life and insurance products, as this reinsurance publication illustrates:

> 'Telematics can be seen as a starting point and a door opener to many new opportunities for both insurers and customers. Other areas, such as property and life and health will also change, as connected cars, connected homes and connected lives could merge into a connected world protected by connected insurance policies.' (Swiss Re, 2017, p. 31)

This 'detour' to car insurance allows the insurance industry to articulate what is at stake in behaviour-based personalisation, since its application in car insurance is considered to be more socially accepted than in domains such as life & health insurance. Yet, it is often seen as a prelude towards behaviour-based personalisation in health insurance, which made the innovation manager at Swiss Re remark: 'I mean, telematics for the cars is wearables for the people.' (interview, Innovation Manager, Swiss Re, 2015-07-14) This short remark shows that the experiments in car insurance function as a model for life and health insurance. Car insurance is a model in several ways. Firstly, experiments with behaviour-based personalisation in car insurance function as a model for other sorts of insurance because it is relatively easy to track the behaviour of a car. New cars have many sensors built in, generating data that might be of use of tracking driving behaviour. Secondly, as this section shows, car insurance is a less sensitive site of experimentation than behaviour-based personalisation in health insurance. This makes car insurance the preferred site to experiment with new models of behaviour-based personalisation, and to learn what behaviour-based personalisation might be capable of, to possibly employ later on in other insurance products, such as life and health insurance policies.

5.4. Why 'Behaviour-based personalisation': a deliberate choice of words

The expectations as to Big Data and experiments with new wearable technologies crafted a different discursive space in which new insurance can be developed: a space for behaviour-based personalisation emerged. During this research, I observe some characteristics of behaviour-based personalisation that differ in important ways from 'insurance-as-we-know-it'. In this section, I shortly defend why I choose to name the experimental practices I am observing practices of 'behaviour-based personalisation'. What follows is not an attempt to define what behaviour-based personalisation in insurance *is*.

The contemporary[42] focus on the behaviour of insurance policyholders could be seen as part of a lifestylisation of health care, a concept coined by Lucivero and Prainsack (2015). Lucivero and Prainsack (2015) coined the concept of lifestylisation to point at the growing importance of lifestyle in health care discourses and practices:

> '[H]ealthy living, or healthy *lifestyle,* has become central to the commercialisation of consumer products. […] There is no area of research, it seems, that is not used for commercialisation of 'personalised' services to consumers: companies offer personalised health and diet recommendations on the basis of micro-organisms inhabiting their bodies, on their blood type, or on their DNA.' (Lucivero & Prainsack, 2015, pp. 44-45, emphasis in original)

It is tempting to see the developments in the use of wearable devices in insurance as part of the lifestylisation of healthcare, and to look for practices of lifestyle underwriting. Yet, I opted to study '*behaviour-based personalisation'*. I employed the concept of behaviour-based personalisation to point to a broader and growing interest in and practices of the personalisation of products and goods where markets and services are increasingly focused on the behaviour and lifestyle of actors, particularly in insurance markets. I am hesitant to define what behaviour-based personalisation *is*, because it is a 'not-yet entity'. It is not stabilised (yet?) in insurance practices and can be employed in different, and at this moment unknown, ways.

'Behaviour-based' is preferred over lifestylisation because the concept of lifestylisation also invokes connotations to esthetical, dandyish lifestyles and assumes the possibility of freely 'adopting' a lifestyle. Moreover, the concept is not well developed in Lucivero and Prainsack (2015). Behaviour does not carry the assumptions of something that can be adopted freely, yet it is considered something that can be changed or altered through 'choice infrastructures' (Thaler & Sunstein, 2009). Furthermore, 'behaviour' is to be found in multiple domains, more so than

[42] This attention for behaviour/lifestyle is certainly not 'new' in insurance and health contexts (French & Kneale, 2009, 2015).

'lifestyle'. One has indeed a drive style, but this not often considered a driving lifestyle. Finally, calling the personalisation that takes place through the tracking of how people act or drive 'behaviour-based' allows to make a link with the importance of behavioural economics.

It is preferred to use the concept of 'personalisation', rather than 'individualisation'. The term 'individual' has strong connotations concerning its relation to the aggregate and refers to a tendency towards 'what can no longer be divided' (it is in-dividual). These properties would automatically demand a technical-epistemological analysis as to how aggregates such as risk group categories are dismantled. Moreover, together with individualism comes a focus on independence, responsibility and autonomy, as is found in neoclassical microeconomics (see section 1.1.). While one can see that the responsibility of policyholders is deemed important in behaviour-based personalisation in insurance, it is not an isolated responsibility. Insurers provide guidance and help, through incentives and nudges towards 'responsible action', and propose services tied to 'persons'. By calling these developments behaviour-based personalisation, the discourse is followed and a focus on how the aggregate (as 'opposed' to the individual) is dismantled is avoided. Therefore it was preferred, throughout this dissertation, to call the openness to things people do control, an openness for behaviour-based personalisation in insurance.

5.5. Experimenting in the Belgian Car Insurance Market

The Belgian car insurance market is slowly conducting experimental test projects with behaviour-based personalisation in car insurance, and launching 'real' car UBI products at an even slower pace. Different elements are mentioned to explain why the Belgian market is not exactly at the forefront of the realisation of behaviour-based personalisation in car insurance. Firstly, the power of insurance brokers is considered to be strong in Belgium:

> 'The Belgian insurance market is in general a very conservative market that is really immobile. […] Our neighbouring countries, and certainly the UK and the Netherlands, know the phenomenon of aggregators. […] Only in Belgium these aggregators do not really come about. Why? Because the main actors in the distribution of insurance are brokers, and they want to defend *by all means* [English in original, GM] stop these aggregators to defend their margins. And the same holds of Usage Based Insurance.' (interview, commercial director, Corona Direct, 2016-03-31)

Besides the strong position of brokers, who sell the insurance policies to their customers, the Belgian insurance industry is considered to be more conservative and risk averse than others:

> 'They have to be risk adverse. But you know, if you look at innovation, for instance, banks are way ahead of insurance companies. Insurance companies now realise they have to go online, some did it, Belgium is on top of that mix. The Belgian insurance sector is the most conservative, or at least one of the most conservative in Europe. So I think we are lagging behind in the interaction with people. If you go to the UK or Italia or Poland, it is way further. They are already doing much more than here.' (interview, co-founder and VP Product & Analytics, VivaDrive, 2015-12-09)

Yet, as stated by a technology provider, who benefits from making this claim, the change that is promised by the emergence of new technologies and the new requirements posed by clients, is unavoidable:

> 'There are different trends in the world [of technology, GM]. And yeah, insurance has to adapt to that as well, you know. The digitalization, personalisation, all the technology, the Internet of Things, it is all coming to our lives, and insurance is not immune to that. I work for different insurance companies for seven years, so I saw a lot. And I don't think that they can simply run away from this change. Because they are working with people, they are close. But currently there is no good interaction between the insurance section and people.' (interview, co-founder and VP Product & Analytics, VivaDrive, 2015-12-09)

A major obstacle in the insurance industry for employing new types of data, such as drive style data, is that the usefulness of these data is unclear until they are *proven* to be useful. This means that the conservative insurers are situated in a paralysing catch 22 (Heller, 2011 [1955]).

> 'When we look into the average historical data of our car insurance products, we see that clients experience a loss once every twenty years, on average. This means that, to really know if a product works, and what the impact is of a loss history, you actually should wait 20 years. So when people would ask us after five years what our experiences are with this application… we could make some statements on the quality of the app, but actuarial-technical, this is *peanuts* [English in original, GM].' (interview, Spokesperson AXA Belgium, 2015-04-09)

This need to get to learn how to adopt car UBI in Belgium steers insurers to experimental projects, where some functionalities can be tested without being *committed* to the consequences of having a proper insurance product (setting adjusted premiums, paying out losses,…). Moreover, experimental practices are a first way to 'get to know' the potential of new technologies:

> 'An insurance market is always a somewhat conservative market. We wanted to know before we went for it. We don't know anything, so we won't go for it. It is very simple. We don't know yet, so we do not go for it. If you don't know anything, and if you do not start with it, you will never know. That is a hard catch to get out of. That's why we need experiments.' (interview, manager market development retail, Baloise, 2016-01-20)

One of the difficulties of enacting behaviour-based personalisation in 'real insurance products' is making a connection with insurance premiums. For instance, handing out discounts to people who allow to be tracked by a dongle might be seen as problematic:

> 'Yeah, you can hand out gifts. But if you build this gift in your pricing, you have a problem. Buy a tennis club membership and you get an Ipad for free: problem. That's tying. In insurance that is a problem as well.' (interview, manager market development retail, Baloise, 2016-01-20)

Although tying is only forbidden when customers have no choice but to buy two products tied to each other, and it does not seem to be really applicable in providing discounts when allowing the insurance company to track driving behaviour, the experienced burden is worth noting here.

Many Belgian insurance providers launched studies, test cases, showcases, smartphone applications, marketing campaigns and the like as a way to get out of the catch 22 that without knowing what car UBI does, insurers cannot start to collect data through car UBI. In October 2013, AXA launched the smartphone application *AXA Drive* (AXA, 2013a, 2013c). This application enables to 'give the driver insight in their driving behaviour' (AXA, 2013b, 2013d), and provides drive style tips. Gamification techniques are used to ensure that the users keep on checking their drive style. The app is used also to provide assistance services to their clients. Yet, downloading and using the application is not limited to AXA clients. Everyone is free to use the app. In the press release, the AXA spokesperson makes a comparison to lifestyle trackers:

> 'AXA Drive is what the Nike+ ® running application is for the runner: an enthusiastic way to do something to your behaviour, without any obligations. The success is not made by the number of downloads but by the frequency

> the tool is used. […] There is no link with our insurance politics and the launch of the app will not change this.' (AXA, 2013d, translated from Dutch)

In February 2016, AXA launched the insurance product *AXA DriveXperience* (AXA, 2016a, 2016c). *AXA DriveXperience* is open for drivers between 18 and 24 years old, and drivers between 25 and 29 years old with less than one year driving experience, and tracks policyholders with an 'AXA Drive Key', a dongle plug in. Policyholders are awarded a start discount of 20% . Based on their driving score this discount is recalculated yearly and can go up to 50%. GPS[43] Data, gyroscope data and the mileage of the car are used to calculate the indicators acceleration, breaking, cornering and speed (AXA, 2016b).

In September 2014, DVV, a daughter company of ING, handed out free dashcams to new customers who bought two insurance policies (in car and at least one other domain, such as fire or life insurance) and did not cause an accident in the last five years (DVV, 2014). With the catch phrase '*Shit happens* [English in original, GM], also to good drivers' (see figure 5.2.), the campaign was launched.

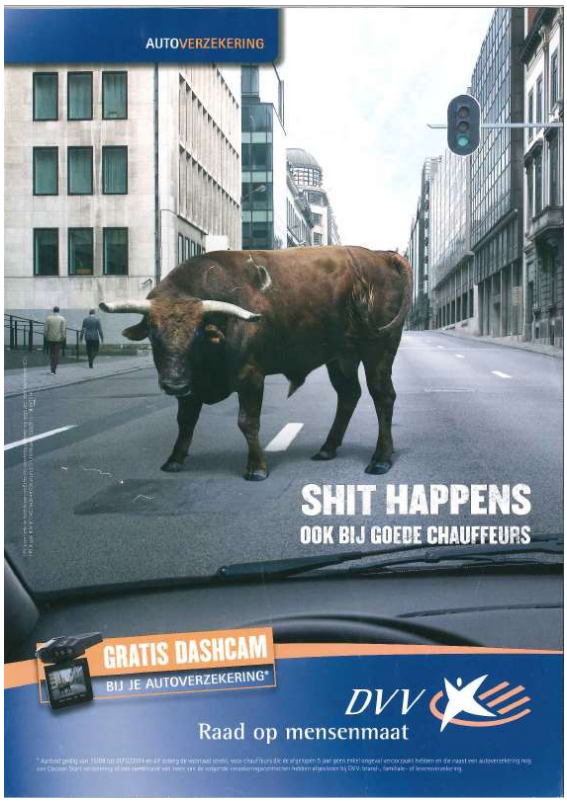

Figure 5.2. Advertisemnt dashcam action, DVV

[43] GPS stands for Global Positioning Systems.

The dashcam campaign was a marketing campaign, but with the goal of attracting the 'safe drivers':

> 'It was our goal to attract new clients, but not just every new client. We want to attract clients with a good profile. What we define by a good profile are persons that did not cause an accident in the last five years. [...] we wanted to do with the dashcam action something new which was in line with our objectives which are security *etcetera etcetera*. So it is a bit like the carrot – with the message that you are good drivers *etcetera* – to try and attract the attention of good drivers who say 'this is for me and if I have to be insured, let it be under good conditions' (interview, Manager Tactical & Commercial Marketing, 2015-01-15, translated from French)

The campaign made no link whatsoever between the images and insurance policies, although it was claimed that – if the images were in the benefit of their clients and with the consent of their clients – these types of dashcam images might be used in the future as evidence to solve claims.

Baloise insurance declared Friday the 13th 'Safety Day' and presented on Friday November 13th 2015 the results of a test project:

> 'The test project proves that dongles have an influence on road safety indeed, as long as users stay actively aware of it. The real challenge becomes to motivate people to do so. Rewards are of key importance here. This can be achieved through gamification, but also by giving bonuses for safe driving. This *'Pay how you drive'*-model [English in original, GM] will be investigated at Baloise Insurance: we consider to offer, alongside the existing policies, also a car insurance policy where one gets rewarded for safe driving. By doing this we hope to reduce the number of car accidents.' (Baloise, 2015a, translated from Dutch)

Press releases that experimental projects failed are scarcer than the enthusiastic announcements of new initiatives. Yet, AG Insurance, the Belgian insurer with the largest market share and part of the Belgian multinational Ageas, announced in February 2016 that they stopped an experiment with black boxes, which were used to track their own employees (De Tijd, 2016). Two days before the business newspaper *De Tijd* brought this news, I had an interview with the Head of Market Development Non-Life, the Head of Market and Product Development Health Care, and the Head of Customer and Data Analytics at AG Insurance:

> 'In 2007-2008 we didn't really carry out a test project, but rather a study, a preliminary study. We did not go through with it back then, and the main

> reason for this was the cost of the technology, which was still very high at the time. […] The idea was to focus this to young drivers. […] In 2015, last year, we did a new test project, focused on the fleet market of professional vehicles. We experimented again, and this time with our own colleagues. All three of us [this interview was conducted with three AG insurance employees, GM] participated. We all built in a *black box* [English in original, GM] in our car, and a device that gave auditory and visual signals, when one was, for instance, cornering aggressively or accelerating aggressively. Then, we asked ourselves: 'let's see, what is the effect on drive style?' […] We concluded that drive style did improve but we decided to stop the project. Because we still had problems with the technology from time to time […] and the issue of costs remained. It stays a relatively expensive technology. I know there are, by now, a sufficient number of alternatives.' (interview, Head of Market Development Non-life, AG Insurance, 2016-02-03, translated from Dutch)

Some initiatives were made in the Belgian car insurance market that did not entail any form of behaviour-based personalisation, but were making use of new wearable (smartphone) technology. In March 2016, the bank and insurer Argenta launched a smartphone application that switches of all smartphone functionalities while driving. Only the GPS route application and hands-free calling will be allowed (Argenta, 2016). In June 2016, Allianz insurance launched the smartphone application Allianz Connect. Allianz Connect is an application focused on providing assistance to customers (Allianz, 2016). Also other Belgian insurance companies and technology start-ups are working on the development of telematics insurance product.

Most experiments and experimental car insurance products in car UBI focus on younger drivers, for two reasons which make younger drivers a group that is hard and at the same time interesting to insure. The group of younger drivers has on average a higher risk to be involved in car accidents, but they have not yet build a track record which can be used as a crude indicator of the risk of being involved in car accidents. At the same time, young drivers are an interesting group of potential clients as this group is expected to be in need of insurance products for a long time.

5.6. Conclusions: the Safe Space of Safe Driving

Minister for work and consumer protection Kris Peeters took up a very combative style to ensure the solidarity mechanisms of insurance and avoid practices of premium personalisation based on the health behaviour or drive style of policyholders. On the one hand, the stance taken up by the minister could be considered too strong, because the initiative that was provoking the minister to

react was 'only' handing out free health wearables to its customers as a marketing campaign. Yet, the news media made some misrepresentation of this marketing campaign and seemed to suggest that Nationale Nederlanden was planning to personalise insurance 'for real' based on the behaviour of policyholders. On the other hand, the minister was right in that exploring, through experimental practices in car insurance, the possibilities of enacting behaviour-based personalisation in health insurance are also explored. The insurance industry has taken a detour to experiment with behaviour-based personalisation in car insurance as this is a safer space to experiment than the sensitive space of health behaviour. Yet, the experiments with behaviour-based personalisation in car insurance function as a model for enactments of behaviour-based personalisation in health insurance. Two of these experiments are investigated in the next chapters.

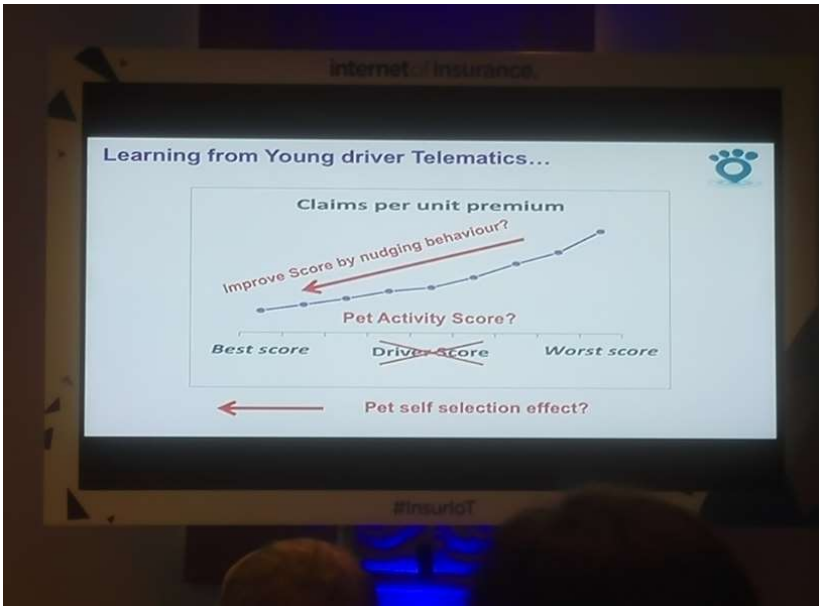

Figure 5.3. Picture taken during 'Internet of Insurance' 2017 (April 5, 2017, Dorking Surrey) (Picture: Gert Meyers)

Of course, on has to raise the question what happens 'after the detour', and how experiments with behaviour-based personalisation in car insurance have consequences for future life and health insurance products. During the second 'Internet of Insurance' conference (April 5-6, 2017, Dorking Surrey (UK)), Paul Middle (Global Telematics Partnering Director for RSA) proposed during his presentation to 'learn from young drivers telematics' by applying nudging techniques to reduce risk and improve lifestyle habits to other types of risk (see figure 5.3.). Although the speaker proposed to apply nudging techniques in order to make insured pets[44] – who on a population scale are obese

[44] It is remarkable to see that one of my interviewees also mentioned the sensitivities around practices in pet insurance as a 'prelude' to the sensitivities in health insurance:

> 'The sensitivities in car insurance are not too bad. Health is of course very personal. Allow me to give an example. It happens that we terminate a contract, because sometimes enough is enough and some people really exaggerate, having extraordinary loss frequencies. If we do this with a car insurance policy, the client often knows why

– more active and healthy, using activity and lifestyle tracking for health insurance was being discussed heavily as well in presentations by sponsoring technology providers, CEO's of insurance companies, and keynote speakers introduced as 'futurists'.

One way in which some 'parallels' can be found in behaviour-based personalisation in car insurance and expectations of future health insurance products, is that it may help hard to insure profiles insurable. Some insurance professionals believe that people who experience difficulties finding affordable insurance coverage will find it easier through behaviour-based personalisation, which offers an opportunity for these slightly 'abnormal' people to prove that they are on the right track and willing 'to behave well':

> 'So in the long run the regulator and consumer interest groups will probably shut down the use of things that people have no control over. Now, the one thing people have clear control over, is their behaviour. And that is a very easy discussion to have with people to say: 'You know you are doing wrong.' 'Yes, I do.' 'Why don't you change it?' 'I don't feel like it.' Then you say: 'You understand, I cannot actually reward you for that or accept you as a client.' There is not much you can argue because all you have to do is act in a positive way and that solves the problem. Something they have full control over. […] Forget the actual status of their risk. We should be insuring somebody who is super healthy and somebody who is very ill. Obviously the very ill person will probably pay more than the super healthy one. But an ill person, who is doing everything in his power to live a good live, should get insurance at good rates! Rather than somebody who is healthy right now but doesn't give a shit. […] And that is what we as an industry need to learn and see the potential in wearables and technology as such.' (interview, Innovation Manager, Swiss Re, 2015-09-09)

In this way, behaviour-based personalisation might turn into a disciplinary device to allow slightly ill or obese persons to prove that they are on the right track, and prevent 'normal' policyholders getting off track. It is remarkable here to see that this argument coincides with the arguments made

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his contract is terminated. On the other hand, we also have a pet dog insurance. If a customer really exaggerates by visiting the veterinary five times in one year, causing very high costs we comparably have to terminate a policy sometimes. And again, the client often knows that the cost of the health care of their dog is too high. Yet, it considered their sweet little dog. Then I receive on Facebook, publicly, a reaction: 'Sir, you are condemning my little dog to death. I cared so much for my dog, he is like a child to me. And I do not have the money to pay the much needed operation. Therefore I will have to euthanize him, and that is your fault.' If you extrapolate this to health, it becomes very hard.' (interview Commercial Director, Corona Direct, 2016/3/31)

in favour of car UBI to ensure the insurability of young drivers. This is just one example of how studying the enactment of behaviour-based personalisation in car insurance is relevant to better understand possible developments in behaviour-based personalisation in life and health insurance. When behaviour-based personalisation would be further adopted in life and health insurance, this should be seen as an invitation to investigate in which ways elements of behaviour-based personalisation in car (and pet) insurance are translated to the sensitive sphere of health, and reflect on the ways in which this rearticulates what health is. Continuously focusing on behavioural change and health optimisation further contributes to 'healthism' (Crawford, 1980) and the emergence of the 'lifestylisation in health care' (Lucivero & Prainsack, 2015), turning health into a never-ending and never-achievable objective. This certainly challenges the logic of insurance-as-we-know it, comparably to what was observed in the enactment of behaviour-based personalisation in car insurance, but more prominently so because the area of health is a much more sensitive area where the linkage of insurance to practices of solidarity is more explicitly made. Furthermore, it has to be seen how the logic of behaviour-based personalisation challenges the logic behind the ban for the use of genetic test information when new knowledge may arise on preventative behavioural action to counteract possible expected health effects of certain genetic conditions.

6. '*Caro* Rijstijlstudie': Experimenting towards 'an insurer that cares for you'

> *'We drew a banana shaped figure, based on very raw and limited data, because no insurer knew what the correlation was between driven kilometres and loss ratio. At the time, we did not perform a study beforehand. We just drew our banana. In the end, the banana was wrong, it happened to be a linear curve. But nowadays we are one of the few in the insurance industry who know what the relation really is, and that is taken into account in our premiums today. We think the same will happen with Caro as well, because the logarithms are becoming more 'right' when more data comes in.' (interview, Commercial Director, Corona Direct, 2016/3/31)*

6.1. Introduction

Understanding the relation between drive style and loss risk in car insurance is crucial for insurance providers, when they plan to build insurance products taking drive style into account: does this relation resemble a banana? Or is it a straight line? On Monday January 25, 2016, Corona Direct launched the *Caro*-app at a press conference. In the press release, *Caro* is presented as a large national research project, aiming to collect data from 5,000 participants. The study was set up to measure the correlation between drive style and loss frequency, and with the goal of developing an innovative car insurance product:

> 'From its tradition as an innovator in the insurance sector, Corona Direct does want to offer an advantageous solution for people who drive little. We also want to offer an innovative, smart and advantageous product for drivers who drive a more than average amount of kilometres per year. *The Internet of Things* [English in original, GM] provides us this area with new possibilities.' (Corona Direct, 2016a, translated from Dutch)

In the process of developing a product that introduces a Pay-How-You-Drive (PHYD) scheme, the *Caro* project was presented in the press release as a national research study on driving behaviour. At the same time, *Caro* is also a marketing campaign to obtain new customers as well as an experiment on the feasibility of a PHYD product in the Belgian insurance market.

The multiplicity of *Caro*, being a study, a smartphone application, a marketing campaign and so much more, became apparent in a series of 'publireportages' (advertorials) in *De Standaard*, one of the main newspapers in Belgium. In February 2016, an advertorial entitled 'Op weg met *Caro*' ('on the road with *Caro*', see figure 6.1.) was published. In this one-page advertorial, *Caro* was presented. *Caro* is a smartphone application that measures the drive style of the driver and is part of a research project:

> '[T]he app collects data on five parameters that are decisive for drive style: breaking, accelerating, cornering, speed, and phone usage while driving. These data are sent and analysed once your device is connected to the internet through wifi. Are you an assertive driver? Are you more like a calm and controlled driver? *Caro* Knows.
>
> WHY *CARO*?
>
> The app is part of a large research project. The central question is: will people start to drive safer and hence have less accidents, if we provide drivers with tailored tips and coaching on their drive style? During one year 5,000 drivers, more or less experienced, will be on the road with the app. After one year and after tracking some 50 million kilometres, it will become clear whether the testers experience less car accidents indeed.' (Corona Direct, 2016d, translated from Dutch)



Figure 6.1. Picture of advertorial Caro (De Standaard Magazine, 2016-02-20)

During February and March of 2016, five advertorials were published in the weekend editions of *De Standaard*. Together with other small articles on *Caro*, a themed webpage was made at www.standaard.be. Each of these articles highlights one aspect of *Caro*, one of the partners involved in the *Caro* project, or some myths and misconceptions on driving behaviour and safe driving (Corona Direct, 2016a, 2016b, 2016c, 2016d, 2016e, 2016f, 2016g, 2016h). Also, the advertorials were used as a platform to attract participants to the study. *Caro* is the 'thing' under investigation in this chapter. That *Caro* is presented through advertorials is a first remarkable sign that *Caro* is not 'just' an insurance product (that can be advertised for), nor 'just' a research study (that can be reported on). It is an experiment with behaviour-based personalisation in car insurance, as well as a study on finding a link between driving behaviour and car accident risks, a tool to explore possibilities of drive style coaching through a mobile application, a showcase for the reliability of smartphone sensor-based risk profiling, and *at the same time* a marketing campaign to attract new customers. Multiple modes are at work in *Caro* (Latour, 2012; Thoreau et al., 2016), yet it is recognised to be one thing (Mol, 2002).

This chapter investigates how *Caro* came to be as an experiment on behaviour-based personalisation in the Belgian car insurance market. This will be done by first outlining my theoretical approach, employing the sociology of markets literature, which stresses the importance of experimental practices in the constitution of markets. Subsequently, in section 6.3. the different partners involved in the *Caro* experiment will be presented. This allows to highlight 'why' the different partners are interested in conducting the experiment. Section 6.4. goes into how the *Caro* application and its infrastructure works, and how the functionalities of *Caro* are designed. Next, the 'failure' of the experiment will be discussed. Finally, the concluding section, discusses the ways in which different means of 'knowing markets' and 'knowing products' are employed throughout the *Caro* project, and how the *Caro* experiment is employed to 'act and reflect' on behaviour-based personalisation in insurance.

6.2. Market Research, Experimentation and the Making of Economic Objects

An insurance policy is, like all commodities, an economic *product*, the result of heterogeneous practices. The importance of economic knowledge practices in this process has received a large share of the attention in the sociology of markets literature, focussing on the performativity of these economic knowledge practices (Callon, 2007b; Esposito, 2013; Mackenzie, 2006; MacKenzie, Muniesa, & Siu, 2007a; Mackenzie et al., 2007b; Muniesa, 2014). Muniesa and Callon (2007) propose to call this very diverse set of knowledge practices, conducted by heterogeneous actors, 'economic experiments'.

In experimental sciences, high demands are requested for research practices to be called an 'experiment'. An experiment in the strict sense of the word requires a controlled environment, set up by the experimenters, in which certain parameters can be manipulated in order to test scientific hypotheses. This means, according to Muniesa and Callon (2007), that experimental knowledge is a highly local type of knowledge (with challenges to extrapolate findings outside of the experimental setting), and aims to demonstrate through manipulation. Muniesa and Callon (2007) are not interested in limiting their attention to 'purely' experimental situations. Rather they are focusing their attention on 'economic experiments at large':

> 'These experimental activities are research activities in the sense that they aim at observing and representing economic objects, but also – and quite explicitly – in the sense that they seek to intervene on these economic objects: to seize them, to modify and then stabilize them, to produce them in some specific manner. To experiment is to attempt to solve a problem by organizing trials that lead to outcomes that are assessed and taken as starting points for further actions. *Experimentation is action and reflection*.' (Muniesa & Callon, 2007, p. 163, emphasis added)

Economic actors have different means to perform economic experiments. The best known forms of market research are surveys (Law, 2009), focus groups (Lezaun, 2007; Merton, 1987), and consumer tests (Muniesa, 2014; Teil & Muniesa, 2005). Also, for strategic analysis for future action, consulting firms conduct experimental research practices as to the future (Kaniadakis, 2017; Pollock et al., 2015).

The 'action and reflection' of experimental practices in the economy generates areas of provocative containment (Lezaun et al., 2013). A particular and 'contained' form of social reality is 'provoked' through the manipulations of economic experiments (see, for instance, section 3.4.). Research on customer preference-experiments for the design of perfume shows that participants become measurement instrument that have to generate as quick as possible their 'first impression', not taking the time to build a substantiated judgement (Muniesa, 2014; Teil & Muniesa, 2005).[45] Also, in focus groups, the manipulations of the focus group moderator generate/provoke a situation resembling as much as possible a 'spontaneous' group discussion on the topic of investigation (Lezaun, 2007). Finally, classical surveys need to solicit for the contribution of participants (Igo, 2007, 2011), and enact, through the ways in which questionnaires are filled out, a particular type of

[45] 'But there is no time, and this is an essential element in the dosage of reflexivity in the testing device, or rather in its paradoxical neutralization. The pace of the test made any reflexive attitude unlikely, and that was on purpose.'(Muniesa, 2014, p. 87)

participants that allow to 'see like a survey' (Law, 2009). This contributes to the performativity of these knowledge practices (Osborne & Rose, 1999), and the performation of economic objects.

> 'Economic experiments perform economic objects, in a quite general sense. What experimenters describe is indeed produced by them in the experimental setting. They account for what they provoke. Experimental objects are both observed and fabricated – fabricated in order to be observed and vice-versa.' (Muniesa & Callon, 2007, p. 163)

The economic objects performed by economic experiments are not all 'economic products' or commodities. For instance, surveys constitute a public opinion to which companies can react. Or, to give an example of the sector of insurance, research into the insurance protection and underinsurance performs a 'protection gap' (Geneva Association, 2014) to which insurance companies and governments can formulate appropriate policies (Howard, 2018). These market research practices constitute 'prospective markets':

> 'Markets here are those groups of people that may be susceptible to a common approach, proposition or idea, whether or not they have an existing transaction history with the seller. These "markets" are only potential markets, and that is what is most interesting about them. Prospective, susceptible groups of customers are just as important for markets as customers with a transaction history because market survival depends on continually extending and repeating chains of relations or associations.' (McFall, 2015a, p. 15)

The *Caro*-experiment can be seen as a way of getting to know innovative possibilities in a conservative insurance market by employing new and innovative forms of market research.[46] Yet,

[46] One of the participating actors for *Caro* proposed 'Design Thinking' as a new 'philosophy'/approach to build innovative products. Design Thinking, which is inspired by Tim Brown's bestselling book *Change By Design* proposes to create products that are designed 'clever', and tailored to how customers are really going to use the products. The design thinking philosophy focuses on building/designing products that seriously consider the actual behaviour of people and the ways in which products/commodities will be actually used by their customers. When Brown opposes design thinking to more 'traditional' forms of 'market research', a non-judgemental form of observation is proposed. The design thinking philosophy, Brown (2009) claims, calls for ethnographic observation and the use of prototypes. Ethnographic observation is employed to better understand what it is to *be* in a given situation. Prototyping is used to see what products are capable of and to understand what could go wrong:

> 'There are many approaches to prototyping, but they share a single, paradoxical feature: they slow us down to speed us up. By taking the time to prototype our ideas, we avoid costly mistakes such as becoming too complex too early and sticking with a weak idea too long.' (Brown, 2009, p. 105)

The design thinking philosophy is proposed to be a counter-weight to traditional market research, which is not any longer considered to be capable of resulting in innovative ideas:

> 'The tools of conventional market research can be useful in pointing toward incremental improvements, but they will never lead to those rule-breaking, game-changing,

this experiment is not detached from traditional market research practices. In the development phase before launching *Caro,* a short survey on different types of drivers was conducted. This survey, characterised by one of the partners as a 'little Flair-test'[47] (see figure 6.2.), can be seen as one of the more classical forms of market research that are used to get an idea whether or not a product in development will be successful.



Figure 6.2. Invitation for drive style questionnaire, website 'Caro Rijstijlstudie', (https://www.coronadirect.be/nl/auto/Caro)

The survey, conducted by a traditional market research company, did not learn much, according to one of the *Caro* partners. It only confirmed that 'Flanders is a society of sixes and sevens', referring to the fact that answers to survey questions only result in standard nothing-out-of-the-ordinary answers. The *Caro* drive style study was an attempt to look beyond the 'sixes and sevens', yet it was anticipated to be much more than that. *Caro* did not want to produce *knowledge about (prospective) markets*, where new insurance products might be in high demand. The focus is on *getting to know a not-yet insurance product* enacting behaviour-based personalisation and building an evidence base on the link between drive style parameters and car insurance loss risk. Furthermore, *Caro* is a way of testing ways to change driving behaviour of participants.

As economic experiments constitute economic objects, it is important to study how economic experiments come to be, what objects are made, and if they 'succeed'. These processes will be discussed in the next sections describing the *Caro* experiment. The economic object constituted is a not-yet insurance product enacting behaviour-based personalisation, which may be turned into a 'real' insurance product when it proves to be(come) successful. Being both a study, an experiment and a marketing campaign, *Caro* offers an opportunity to study the importance of 'economic experiments at large' (Muniesa & Callon, 2007). The case study of *Caro* invites a reflection on the

paradigm-shifting breakthroughs that leave us scratching our heads and wondering why nobody ever thought of them before.' (Brown, 2009, p. 40)

[47] Flair is a Belgian weekly young women's magazine.

importance of experimentation for the making of future insurance markets and future insurance products. *Caro* was selected because the way in which different actors/partners are explicitly involved in the experiment offers a particularly interesting entry-point to study the experiment. The different partners provide their own take on the making and functioning of *Caro*. Investigating the different partners involved in *Caro*, allows to look beyond one 'state of affairs' which would be provided when there is only one entry-point to conduct a case study.

6.3. The Partners Involved in *Caro*

In January 2016 Corona Direct presented the '*Caro* rijstijlstudie' (*Caro* drive style study), which aimed at tracking 5,000 clients over a period of at least one year in exchange for drive style coaching and a 20% premium discount. In the *Caro*-project five partners were involved. Four of them are mentioned on the projects' website: the insurance company Corona Direct, Sentiance (a technology start-up providing drive- and lifestyle profiles based on smartphone data), Drivolution (a company specialised in providing drive-style coaching and behavioural change) and the data analytics team of the University of Ghent. One involved partner is not mentioned in the communication on the project. Presenting the different partners will give a first insight into how *Caro* was presented by the different partners and how they got involved.

6.3.1. Corona Direct: Enlarging the Playing Field

Corona direct is a Belgian direct insurance provider, a daughter company of Belfius Bank.[48] Corona Direct is best known for its 'kilometerverzekering' (kilometre insurance), a product of usage based insurance launched in 2006 (https://www.coronadirect.be/nl/corona-direct/over-ons). The 'kilometerverzekering' has differential premiums based on the distance driven. To determine the distance driven, policyholders have to report yearly the mileage of the car.

> 'In the beginning of the 2000s everyone was claiming "we have the cheapest car liability insurance!" There were no *Unique Selling Points* [English in original, GM]. Moreover, 99,9 % of the liability insurance policies are exactly the same, there is literally no difference. So the only thing that can differ, is the price. The *challenge* [English in original, GM] for us was to look for something where we could really make a difference. And that is how we came up with the 'kilometerverzekering', where the premium is linked to the number of kilometres driven. We stopped claiming "we are the cheapest". We

[48] Belfius bank is the bancassurance company that resulted in 2012 out of the Dexia group during the European debt crisis.

> just say "if you drive less, you pay less. If you drive more, you pay more"'. (interview, Commercial Director, Corona Direct, 2016/3/31)

During the past ten years, Corona Direct has built a strong product that is well-known. Where most insurers distrust their customers,[49] Corona Direct took a bold step by relying on the self-declared yearly reporting of the car's mileage. Quickly, they found out that most customers are 'surprisingly' honest in reporting how much they drive per year, which is used to calculate the premium:

> 'We do not control how much our customers really drive. Why? Because it is unpayable and unfeasible. We cannot send a controller to all of our policyholders. […] Moreover, we trust our clients. We ask them what the mileage of their car is. There is obviously one moment where we do control. When a policyholder has a crash and an expert has to pass by, he will have a quick look [at the mileage meter of the car]. Clients are much more honest in this domain than we first thought. […] We are in this sense an exception in the insurance sector. The distrust of insurers towards their policyholders is immense. The distrust really makes one cry [of despair].' (interview, Commercial Director, Corona Direct, 2016/3/31)

The 'kilometerverzekering' was first based on a rather premature hypothesis on the correlation between the number of driven kilometres and loss ratio, namely the banana-shaped figure mentioned in the opening quote of this chapter. By analysing the data coming from their risk portfolio, which had both information on the loss ratio and the self-reported distance driven per year, an evidence base was built throughout the years. The correlation between the number of kilometres and loss ratio was somewhat surprisingly a quasi-straight line:

> 'There is a relation between kilometres and loss ratio. Originally, we thought that with more driving, the risk of loss increased but with a compensation for the gained driving experience: *Bullshit!* [English in original, GM] One straight line: the more you drive, the more you are exposed to traffic, the higher the risk.' (interview, Commercial Director, Corona Direct, 2016/3/31)

Corona Direct gained customers by their 'kilometerverzekering', but as this policy is mostly interesting for people who drive less than average, they claimed to have reached their market potential. The *Caro*-project fits in the search for an increase of their market share:

[49] This distrust is related to an (over)emphasis on the dynamics of adverse selection and moral hazard in insurance economics (see section 1.1))

> 'So the 'kilometerverzekering' was a real success, with only one constraint. We did not reach half of the 'playing field' [metaphor for the market (demand), GM]. Imagine a football field [with a distribution of all the car drivers ordered by driving distance per year, GM], the average in Belgium is 15,000 kilometres. Our 'kilometerverzekering' product is only really interesting for someone driving less than 10,000 kilometres. […] So to answer our growing ambitions, we were looking for something to appeal/attract to the second half of the playing field, for those drivers driving really a lot, or at least more than average. Throughout the years it quickly became clear that the solutions would be telematics.' (interview, Commercial Director, Corona Direct, 2016/03/31)

Corona Direct is aiming at a larger playing field, a larger, 'prospective market' (McFall, 2015a) where they can find new purchasers of their insurance policies. *Caro* is a first visible step towards a telematics product by Corona Direct. The exploration of telematics has started from the moment the 'kilometerverzekering' was launched. Many technology providers from all over the world visited Corona Direct to present their 'technology solutions' to measure and visualise driving behaviour. In general, there are three types of possible technological solutions provided to measure and visualise driving behaviour. Firstly, black boxes are considered the most 'solid' piece of technology. A black box has to be installed in the bonnet by a car mechanic. Because this device is hidden in the car bonnet, it has little risk of being manipulated while driving, and, since it provides all the sensors to measure driving behaviour, it is relatively easy to come with reliable measurements. The downside of the black box technology is that it is quite expensive. Secondly, 'Dongles' are less expensive and can be plugged into the OBD II[50] connector of the car:

> 'The customer himself can install the dongle in the ODB II connector of the car. Every car produced after 2001 is obliged to have such a connector. It is comparable to plugging a plug into the switch-plug. Sometimes, but very rarely, it is a bit more complicated and you have to do some stuff with a little cable. But I drive a BMW and it is extraordinary simple. You just plug it in below the dashboard and you are done.' (interview, Chipin/Fairzekering Manager, 2015-06-03)

These dongles make use of the sensors of the cars themselves and are therefore a less expensive solution than the black boxes. Different car constructors, however, make use of different technologies, which makes calibration of the measurements harder. But, even cheaper is, thirdly,

[50] OBD stands for On Board Diagnostics. OBD II is the second generation of the OBD technology.

the use of smartphone sensors. This technology is remarkably cheaper because the hardware is provided by the phone users themselves. This means that 'only' the algorithms to code, capture and 'read' the sensors has to be written.[51]

A often cited main downside of using smartphone sensor data is the reliability of the data. The quality of the data is, however, not the one and only parameter that is used in choosing the type of technology that is employed:

> 'Indeed, there are some technological constraints of smartphone sensors. It is clear that the built in black box and the dongles are technically more correct. But the question is how technically correct you want to go. Today, I know virtually nothing about the driving behaviour of my policyholders: *Nothing!* [English in original, GM]. If the use of this [smartphone] technology allows me to know tomorrow 90% of his driving behaviour, that will be 90% more than I know today. If I can increase this to 100% with a black box, it will provide only a little more insight while it will cost much more. So we are not looking for the technically perfect measurement. So if we can capture 90% of behaviour, we will have 90% more than today, because today we have nothing. And that is the reason we went for the smartphone sensor data.' (interview, Commercial Director, Corona Direct, 2016/3/31)

One can see here that the accuracy of the data to be generated is not an absolute prerequisite in the choice of the technology. The cost of data collection is an important parameter too in this choice. The data of smartphone sensors and the drive style profiles derived from these data are seen as 'good enough' (Mayer-Schönberger & Cukier, 2013) and very valuable when comparing to a

[51] As many different sensors are in use in the major smartphone brands, the calibration of these sensors and making them comparable or commensurable (Espeland & Stevens, 1998; Peeters, Verschraegen, & Debels, 2013) is a real challenge. The Chief Product Officer and Founder of Sentiance called it a 'recalibration':

> 'Before the sensor-data go to the algorithm – this happens still on the smartphone itself – a small piece of *pre-imposed processing* (English in original, GM) takes place in order to get the calibration right' and to make sure that the data that arrive at our algorithms are already normalized. And indeed, Apple data for instance, includes gravity in the gyroscope while this is separated at Android. These are different data, so we really have to filter out the proper gyroscope data before we send it to our algorithms.[…] all these data are differently calibrated. In the past we have invested much effort to literally buy all types of *handsets* [English in original, GM] and for us it stays an *ongoing concern* [English in original, GM]. If a new smartphone is launched, we go and buy it, we test it and adapt a part of the recalibration to make sure the data arrive in our platform in a normalised condition. […] Luckily we see that in the market of *chip set manufacturers* [English in original, GM] some particular companies are really gaining some market space. […] I estimate that in five years five or six dominant players will be present in the market of sensors. Then, it will be easier for us too.' (interview Chief Product Officer, Sentiance and Founder, 2015-03-11)

situation where no data are available at all on drive style. The smartphone 'solution' was, however, only taken into consideration very late in the process of setting up the *Caro*-project:

> 'Before the smartphone technology came up, we were about to choose a Dongle because the technology is somehow affordable, easy to handle and installing that little thing is not terribly difficult. It was only in the very last instance that we came into contact with Sentiance. When working on these kinds of projects you continuously have this radar working, looking for new contacts.' (interview, Commercial Director, Corona Direct, 2016/3/31)

6.3.2. Sentiance: Becoming a Trustworthy Technology Provider

To generate the smartphone-based sensor data, Corona Direct started to work with Sentiance, an Antwerp-based start-up that makes use of smartphone data to turn this sensor data into 'behavioural insight' (http://www.sentiance.com/).

> 'We use the sensors present in smartphones and other wearables – and we see more and more wearables – and *basically* [English in original, GM] all devices with sensors. We build profiles with these sensors and believe that these sensor data are better than the profiles of Google, Facebook and the like. The problem with their profiles is that they build data based on *self-declared data* [English in original, GM]. Facebook asks you on its *wall* [English in original, GM]: '*what are you doing today?'* [English in original, GM]. And it is a bit obvious of course: every person, every human being has the *habit* [English in original, GM] of presenting oneself somehow better than we really are. We will deduce profiles based on sensor data, so essentially based on observation. Our software works in the background. The software is integrated in a mobile application – which can be for instance an insurance app, something like Spotify or whatever […].' (interview, Chief Product Officer and Founder, Sentiance, 2015-03-11)

The problem of self-declared data is also present in the insurance industry, according to Sentiance:[52]

> 'What we do is interesting for a lot of industries. One of these industries is indeed the insurance industry. They already make use of profiles, risk profiles, but they are based on the *self-declared data* [English in original, GM] on

[52] By defining the problem of self-declared data as a problem particularly applicable to the insurance industry, Sentiance is enacting a process of translation, defining the problems/challenges of the insurance industry and establishing itself as an Obligatory Point of Passage (OPP) to overcome these challenges (see section 4.3.).

> things like loss history, age, and so one. And there are not that much data points used to set up risk profiles. These are static profiles, using averages that are not individualised. Moreover, it is the car that is insured and not so much the driver. […] But driving behaviour is actually a highly individual thing. […] Therefore, I think that a car insurance [policy, GM] should be based on the driving behaviour and not the car that is driven.' (interview, Chief Product Officer, Sentiance and Founder, 2015-03-11)

The fact that the insurance industry has to deal with problem of crude statistical categories and self-declared data, provides an opportunity for Sentiance to make a case and show that their technology solution works. Sentiance presents itself as an Obligatory Point of Passage (OPP) (Callon, 1986b). This showcasing of the technology is needed because the reliability of smartphone sensor data is still debated (Case et al., 2015). This means that the data extraction methods developed by Sentiance have to gain a trustworthy reputation. Sentiance is involved in the *Caro* app to provide an SDK.[53] The technology they provide, is built into the *Caro* app but not visible to its users, and activates the sensors in the smartphone to generate the drive style tracking.

> 'At the moment, we are doing projects with insurers to check the validity of these data and we are doing this with real-life cases. I hope that by the time your research is finished [by the end of 2017, GM] we will be passed that. Right now we cannot say that these data are *certified* [English in original, GM] or calibrated and that is often what insurers ask and are worried about. Black boxes are calibrated while smartphone data are not, at least for now. And that is where we have to go to. […] We are investigating now, in cooperation with insurance companies, what the validity is of our data. Our first results hint at the possibility that the profile information that we provide, gives a relevant added value to the risk profile of insurers. […] Actually we know that the accuracy is there but it has to be certified by a third, independent, party.' (interview, Chief Product Officer and Founder, Sentiance, 2015-03-11)

While their software only works 'in the background' and they are solely a business-to-business (B2B) technology provider, Sentiance is listed in the communication of *Caro* as one of the partners. The involvement in this experiment, and being explicitly mentioned as an important partner of the *Caro* project, is important for Sentiance to 'demonstrate' (Muniesa & Callon, 2007) the know-how

[53] SDK is short for Software Development kit. (https://en.wikipedia.org/wiki/Software_development_kit) The actors involved in the *Caro* project make use of an SDK as the 'thing' that is provided by Sentiance for the *Caro* app. Insofar as I am able to understand what an SDK is, an SDK is not an end product but rather a tool to developing software.

they contribute to the project. This shows that while *Caro* is an experiment in the making of future insurance markets and products, it is at the same time an experiment to demonstrate the reliability of the employed data extraction technology. This is also important for the establishment of predictive actuarial evidence for the use of new types of data to set insurance premiums (Verbelen, Antonio, & Claeskens, 2017).

6.3.3. Drivolution: Transforming from 'in Person' Coaching to Coaching Through Device

The third partner involved in the *Caro* project is DrivOlution. DrivOlution is a company that helps professional fleets to reduce fuel use and accidents in a trajectory of sustainable change of driving behaviour. DrivOlution coaches drivers 'in person' towards a sustainable change of driving behaviour for corporate fleets, which is firstly focused on 'unteaching'[54] the bad habits. Sustainable change of driving behaviour can only be achieved by focusing on knowledge, skills and continuous follow up:

> 'We work mainly in the B2B sector, and an important part of our work is behavioural change in driving. But it is not that simple to obtain a sustainable behavioural change. We do not believe that is possible to change someone's behaviour by just letting him/her follow a course. Of course, you do that a bit for some little technique, by fine-tuning these techniques. […] but in order to really improve someone's driving behaviour, you cannot teach that to people at one single moment. So you have to look for other techniques to make sure that people are stimulated and stay stimulated. [..] If you want to change behaviour, it takes a really long time before it becomes a habit. That is our starting point. […] We accompany companies, large and small, in all sectors that are interested in starting such a process.' (interview, Managing Director 1, DrivOlution, 2016-04-25)

In one of the *Caro* advertorials, it is explained how the DrivOlution expertise is used to construct the *Caro*-app:

> 'The *Caro*-app, which was developed based on, among others, the experience of DrivOlution, makes use of the same techniques as the real-life coaches. The app measures how one breaks, accelerates, corners and if one holds a phone while driving. The app provides tips – to start with quite general tips, later on

[54] 'Driving is by definition an automatism. So first we have to unteach the bad mechanisms.' (interview, Managing Director 2, DrivOlution, 2016-05-12)

> tailored to ones driving behaviour – that can be integrated in the way one enters traffic.' (Corona Direct, 2016a)

DrivOlution had previously worked with corporate fleets and provides one-on-one in person coaching to get to know how people are driving, what their 'bad automatisms' are and how the coaches can trick the drivers to unlearn the bad habits and replace them by safe driving skills. The challenge for DrivOlution within *Caro* is translating their expertise in coaching in person to remote coaching through the *Caro* app interface (interview, Commercial Director, Corona Direct, 2016/3/31).

6.3.4. Data Analytics Team UGent and Kunstmaan

The communication that accompanied the launch of *Caro* – the press release, the website with introduction video and the advertorials in De Standaard – listed four involved partners. Kunstmaan, the company that develops the branding and communication strategy of Corona Direct, was not mentioned.

> 'GM: Why are you not mentioned in the communication of *Caro*?
> R: For an outsider we do not contribute anything to the product. All we want to say is: there is a national study conducted, Sentiance ensures the technical tracking, Corona is the insurance partner of course – otherwise there would be no study – , Ghent University is going to analyse the data, and Drivolution performs the coaching trajectory. What we do is just make sure that all this is communicated, but for the drivers and participants of the study we are completely irrelevant.' (interview, Partner and Founder, Kunstmaan, 2016-04-07)

According to Kunstmaan, mentioning the involved actors was needed to make of *Caro* something reliable, trustworthy and something insurance policyholders would be willing to provide data to. In this respect it was important to brand *Caro* as a scientific research project:

> 'Corona Direct was already in contact with apps who could detect drive styles and they had a preference for the smartphone technology. Their issue was to make a personalised insurance product from this technology so they asked us: 'how are we going to bring this to the market?' […] We started thinking on how we could market this. We could not yet make a link with a differential insurance premium because we have no data and we could not asses the risk and make claims on safe driving behaviour. To counter this problem, we proposed to promote this as a study. When you perform a study, you have to

> involve an independent research partner. Otherwise it is just a commercial story.' (interview, Partner and Founder, Kunstmaan, 2016-04-07)

This resulted in the Data Analytics team of UGent (The University of Ghent) being contacted as the fifth actor involved in the *Caro* Project. This data analytics team was involved to make sense of the generated data. This search for the link between drive style and loss risk is even presented as the 'holy grail':

> 'GM: You call *Caro* a study. I think this is interesting, because one could say that telematics has already 'proven' to work in other markets. So why do you still need a study?
> CD: Because we are looking for the holy grail. The technology exists, but the technology has to translate into knowledge. And what are we looking for? […] We are looking for the relation between loss and drive style. […] There is always a struggle between the actuaries, who want historical data to calculate premiums and the more commercially minded people in insurance companies who say: 'we have to sell our products!'. […] The question was how to make sense of all these data, once they are generated. […] That is why we involved the University of Ghent. And moreover, the opportunity to involve the university gives the project a nice touch, a nice 'packaging'. *It is, of course, not just a packaging, because they will also perform the analysis, but their involvement gives the project an almost a-commercial touch. And that is a nice side effect*.' (interview, Commercial Director, Corona Direct, 2016/3/31)

By introducing the different partners involved in the project, it becomes clear what is 'at stake' for the different partners, why they have an interest in being involved in the *Caro* project. Presenting all involved actors was also employed as a communication strategy, showing what the different actors contributed to the project and what the goals of the project are.

6.4. How *Caro* is Designed

In the following section, the way *Caro* was set up/designed is analysed. The eligibility conditions will be discussed (section 6.4.1.), as well as the data generation/extraction (section 6.4.2.), the drive style visualisation (section 6.4.3.), and the way in which the *Caro* application unfolded during the duration of the experiment (section 6.4.4.). This characterisation of how *Caro* is set up, shows the particularities of the project and shows what insurance future products enacting behaviour-based personalisation might look like.

6.4.1. Eligibility

Most experiments and experimental car insurance products in car UBI focus on younger drivers. The *Caro* project does not limit itself to this subgroup because the study pursues representativeness of the sample:

> 'It is one of the goals to get our [population of] 5,000 [participants] as representative as possible. So we want to recruit the participants as broadly as possible. And of course young drivers are welcome to join, but we do not want solely young drivers. Because then a very strange algorithm will be the result of our study.' (interview, Commercial Director, Corona Direct, 2016/3/31)

This means that drivers of all age categories are welcome to join the *Caro* project. The only requirement to participate is to obtain a Corona car insurance product or, if already insured by Corona, link your Corona policy to *Caro*. According to the Frequently Asked Questions (FAQ) page on the *Caro*/Corona website, having a corona car insurance policy is required to link the measured drive style to the risk of being involved in a car accident (https://drive.coronadirect.be/nl/auto/*Caro*/help/waarom-heb-ik-een-verzekering-nodig).
Participants are rewarded a 20% discount on the insurance premium:

> 'If you want to participate, you have obtain an insurance policy with us. [To reward you for] your willingness to participate, and only to participate, you receive a 20% discount on your car insurance as long as you are a client with us. Up till today, your insurance premium is fixed, the premium is in no way dependent on drive style!' (interview, Commercial Director, Corona Direct, 2016/3/31)

The *Caro* Rijstijlstudie is formally not part of any Corona insurance policy but participating in the study is rewarded with a 20% discount on the premium to be paid for the (obligatory) Corona insurance product and calculated in the 'business as usual' way. This feature is present in most enactments of behaviour-based personalisation in car insurance. This form of behaviour-based personalisation works 'on top' of the traditional insurance product in which a premium is set based on the classical risk categories. The personalisation takes place in the form of services to policyholders, in the case of *Caro* this is through coaching and the possibility to win fuel vouchers, and discounts on the premiums, *once* the premium is set and calculated by the traditional underwriting practices.

6.4.2. Data Generation

Once one has chosen to participate in the *Caro* project and has obtained a Corona car insurance product, the customer/participant can download the *Caro* app and a '*Caro*-link' is sent to the customer/participant by mail. The *Caro*-link is a beacon, a small device/beacon to be put into the insured car, that connects to the smartphone app of the customer through Bluetooth:

> 'We chose the smartphone sensor technology and wanted to be able to link the phone to a car. The beacon is just a tool to do so.' (interview, Partner and Founder, Kunstmaan, 2016-04-07)

> 'A car insurance policy is attributed to a car, and not to a person. […] so we needed to come up with a connection between the car and the [smartphone] tracker. So we said that the best piece of technology available at the moment – and available for both IOS and Android – are these beacons. […] A lot of these *usage based* [English in original, GM] things are dealing with persons. In our project it is really about the car. When the car is driven like crazy during the weekends, and safely during the week, one can assume that the son or daughter drives the car in the weekends. But that does not matter. The risk of the car insurance policy depends on how the car is driven.' (interview, Technology Director Kunstmaan, 2016-04-28)

The beacon, used to identify that the *Caro* user drives the car, activates the tracking software, delivered by Sentiance:

> 'What we provide to Corona is not our standard package of data extraction, which is continuously active in the background to track the full lifestyle profile of our users. For the *Caro* app, we limited the data extraction. It only tracks when the connection is made with the *Caro* link, the beacon.' (interview, VP smart mobility Sentiance, 2016-05-10)

As several commercial actors are involved in the *Caro* project, some privacy issues might arise. In the announcement video it is claimed that everything is functioning 'according to the rules of privacy' (Corona Direct, 2016a). According to a Managing Director at DrivOlution, only Corona Direct is able to link the generated data to policies and hence to the policyholders:

> 'The participant is not recognised. Yeah, he gets recognised in the data, but not by his name. Actually, it is Corona who closes a contract with let's call him John. Corona sends a beacon with the code A042 to John and sends the code A042 to Sentiance. The beacon is the *Caro*-Link. The A042 is installed

> in the app. So when the beacon and the app meet each other, the code A042 is recognised. It is only Corona who has access to the full information.' (interview, Managing Director 1, DrivOlution, 2016-04-25)

This ensured privacy 'does not count' for the partners developing the *Caro* app. When I conducted the first round of interviews on *Caro*, the trajectory of how *Caro* would unfold was not fully decided upon yet. The incremental implementation of the different functionalities of *Caro*, allowed for the involved actors to decide on further steps along the way. A team of developers of *Caro* were using a 'bèta-version' of the Caro-app that was ahead of the phase the actual *Caro*-users were in.[55] This allowed them to cope with bugs, test themselves how the app is experienced and design further properties of the app.

> 'We are all testing the application ourselves. Moreover, sometimes it is very useful to track and control very specific drives [which is not done with the customer's drives, GM]. We ask ourselves: what is really been tracked now? How do we experience this? How do we react? That's what we do with our own driving data: *our privacy does not count!* So for instance, when you are driving and you take your phone to leave the car after arriving, you get a warning of *phone usage* [English in Original, GM], which means that you use your phone while driving. This warning pops up because the SDK did not realize you stopped driving, but recorded that the phone was used. We have to cope with these problems and develop little tricks such as knowing in what cases we have to take the phone usage in consideration.' (interview, Technology Director, Kunstmaan, 2016-04-16)

6.4.3. Drive Style Visualisation

In the *Caro* app, and in contrast to other UBI tools (such as the Fairzekering policy, see chapter 7), participants cannot consult previous drives to see where they constituted what kind of 'event'.[56] Furthermore, no general score is provided, only an average of the 'events' for a certain variable over the last 100 km. This has to do with two elements of the data extraction technology. Firstly, since drive style tracking is very energy intensive, the smartphone sensors are not active continuously and secondly, as the smartphone tracking technology is less reliable than dongles and black boxes, *Caro* avoids showing 'wrong information' to its users, which would harm the trustworthiness of the application.

[55] Jim Dratwa (2017) speculated on the emergence of an 'open bèta society' through the development of new health technologies.
[56] An 'event' is constituted when for all the measured variables (acceleration, breaking, cornering, speed, and phone usage) a threshold is exceeded.

Since the smartphone of the users have a limited battery power, the Sentiance software has to be cautious of not demanding too much from the smartphone. GPS tracking, for instance, is a very energy intensive process, and dependent on many environmental conditions.[57]

> 'Sentiance provides reliable measurements. That does not mean that we have to measure every second of every trajectory but we provide reliable profiles. It is for instance hard to locate a device through GPS when dealing with tunnels and broad-leaved trees right after it rained.' (interview, VP Smart Mobility Sentiance, 2016-05-10)

In order to save energy, the location of the smartphone is tracked on an interval basis. The trajectory between the measured locations is simulated by routing software (interview, Technology Director, Kunstmaan, 2016-04-16). Several times a very concrete example was given of a measurement mistake around the railway station of Leuven (BE):

> 'Location tracking by the smartphone GPS function is very battery consuming and many measurement mistakes take place. For example, if you drive to the railway station of Leuven, typically a speeding violation is registered, because it [the tracking software] assumes you drive above ground. Suppose it measures your location right before you enter the tunnel, and you leave the tunnel only five seconds later [see figure 6.3.] the [software] tool assumes you drove all the way round [see figure 6.4.] and you finished a trajectory that normally takes five minutes in only five seconds. That makes a strong speeding violation. […] That was such a measurement mistake that we cannot make to punish people based on these things.' (interview, Partner and Founder Kunstmaan, 2016-04-07)

[57] For a beautiful account of the relevance of the difference in the rain of London and New York, and an elucidating analysis how the laws of (quantum) physics trump the laws of economics, see Mackenzie (2014).

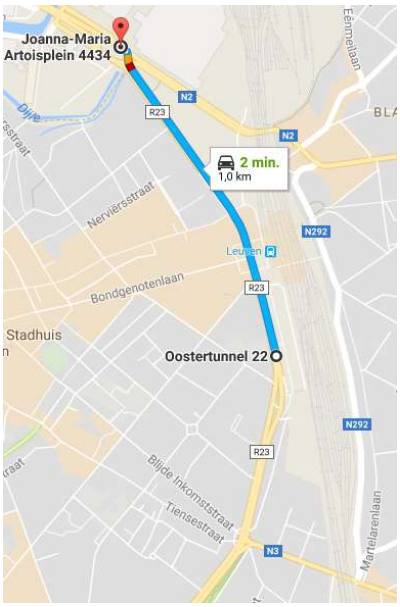

Figure 6.3. Route taken by using tunnel (actually driven)

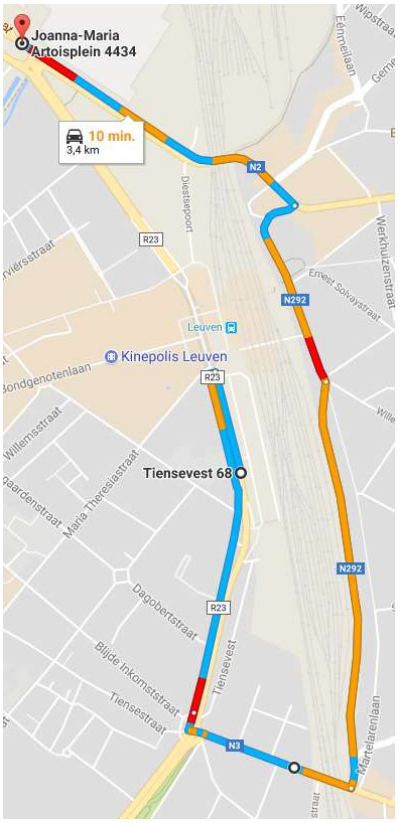

Figure 6.4. Route taken above ground (assumed by Caro routing algorithm*)*

Once these data are extracted and cleared by the Sentiance algorithms, these data are not translated into one personalised driving score. The 'events' are expressed as an average per 100 kilometres:

> 'In the *Caro* app events are measured and counted, but they are expressed as for instance the number of breaking events, or the number of acceleration events per 100 km. Things can go wrong but after a while these 'mistakes' will be 'averaged out' towards a correct measurement.' (interview, VP Smart Mobility, Sentiance, 2016-05-10)

Also, the 'events' that are taken into account cannot be consulted by the individual users through the app. This is one way of dealing with the uncertainty linked to the smartphone technology and a device to build trust, or at least to avoid distrust:

> 'Technically, we could build [a dashboard where events can be consulted, GM] but the problem is that because of the technology we use, we could be wrong in one out of ten cases. A colleague of mine in England chose to include such a dashboard and he was starting to get reactions claiming that the measurements were wrong: 'I was not there! I was in the parallel street!' There are always deviations from the technology. And as soon as you allow your users to rewind their own trajectories they will trace down measurement mistakes. *The whole reputation of your application will implode if things go wrong, ... and they will go wrong.* So we chose very explicitly to make it impossible for the client to consult past drives. This ensures that it stays reliable because if you have to admit that you are wrong in one case out of ten, your reliability drops immediately.' (interview, Commercial Director, Corona Direct, 2016-03-31)

Besides avoiding discussions on the reliability of the measurements, the impression of privacy invasion was countered by not allowing to check all drives.

> 'We do not want to give the *Big Brother* [English in original, GM] idea: 'they know what my destination is.' Because when this would be the case, people would start switching off the app when they go particular places, for whatever reason. […] Where you are, is not important. […] It is all linked to a car. So if you drive my car, should I then be able to see where you were? And think for a moment to family situations. Husband and wife, should they be able to see where the other drove while using the *Caro* app? […] *we wanted to stay*

> *out of these troubles, so we decided not to visualise individual drives*.' (interview, Technology Director Kunstmaan, 2016-04-16)

The way in which the drive style is visualised is designed in order to keep a confidence of the users in the correctness of the measurement process and a trust that *Caro* is not acting as a surveillance device.

6.4.4. Raising Awareness that the Driver Actually has a Drive Style

When customers start using the *Caro* app, they will not have access to all its functionalities from the start. *Caro* does not start 'in media res'. The functionalities of the *Caro* app unfold gradually over time. It avoids giving just one general numerical score, because this score tends to solidify and become too stable:

> 'If you buy a new car, one can observe fluctuations of average fuel use. Once you drove 20,000 kilometres fuel use becomes very stable. This stability of the average fuel use metric means you will stop consulting this metric. The same holds for driving behaviour. In the long run, your driving behaviour is very stable, which means that you are not interested in consulting this metric. Therefore we chose to visualise this metric over a shorter period, namely the last 100 kilometres. This metric can and will change.' (interview, Commercial Director, Corona Direct, 2016-03-31)

For all of the measured parameters – breaking, accelerating, cornering, and legal driving – a metric is calculated. They are however not all visible from the start, as most experiments or products in car UBI are:

> 'You could say on day one: 'dear client, or dear driver, read this information and everything will be fine.' But that is not how it works. We chose to first of all to get at ease with the drive style parameters.' (interview, Managing Director 2, DrivOlution, 2016-05-12)

During the first months of employing the *Caro*-app, the parameters become visible one by one, to keep the users attentive:

> 'MD 2: The big challenge in such a project […] is to keep the participant triggered, if you are going to monitor solely online. You have to keep the participant focused. We have tested all kind of things. If you are presented the same dashboard [English in original, GM] week after week, you are done. You say: 'ok, nice [English in original, GM], interesting… and I will look at it

> never again.' Never looking at it again implies no change in driving behaviour. So to keep the attention you have to build variation and you have to do it step by step. People are not capable of changing their driving behaviour overnight. Driving behaviour is too complex for that. […] For driving behaviour there are a lot of aspects to be taken into account step by step. Doing it at once is not smart because it would increase maybe the risk of accidents because people do not pay attention to the road.
> GM: Am I correct in saying that you are, during those first months, raising awareness to the driver that they actually have a drive style?
> MD 2: Yes indeed, that is well phrased. That is what we do. […] In the first phase you have to raise awareness to the people that they have a drive style, that it can be measured, and that it is relevant for their safety.' (interview, Managing Director 2, DrivOlution, 2016-05-12)

During the first three months of using the *Caro* app, the users are getting acquainted with the measured drive style parameters, one by one.

> 'In the first phase, we give the participants a taste of the technology. They have to get to know what the five parameters are: breaking, accelerating, cornering, legal driving and phone use. First, we want them to drive 200 kilometres or about three weeks so we can perform a base line measurement. Afterwards participants get every two weeks access to one of those parameters in addition to the parameters already visible. […].' (interview, Managing Director 1, DrivOlution, 2016-04-25)

During this first period, no coaching is performed. The reference scores are communicated and the score is not situated in relation to other users. People start to adapt their drive style already. This change in behaviour is called the 'mere-measurement effect' (interview, Managing Director 2, 2016-05-12, English in original). Once the participants got acquainted with all the parameters, a second period in the experiment starts, where the scores are visualised in relation to your peers. It is only after another round of getting acquainted with the functionalities of the drive style parameters in relation to a peer group that the coaching starts:

> 'Once trust is established to these new functionalities, we are going to set some goals. Then we start to expect some goals for the different subgroups. Then we are already in the last three months of the year. And during those last three months, we are going to actively coach the participants.' (interview, Managing Director 1, DrivOlution, 2016-04-25)

We see here that in order to keep the users interested in using *Caro*, and attentive to their drive style, a slow increase of the functionalities of *Caro* is enacted. This should on the one hand ensure the users are triggered the whole year long and on the other avoid that the users getting 'distracted' by too much stimuli.

6.4.5. Some Particularities of *Caro* Compared to other Belgian Car UBI Experiments

As shown in the general overview of the experiments of car UBI in Belgium from 2013 to 2016 (see section 5.5.), experiments in car UBI are mainly targeted to young drivers (who are seen as almost uninsurable *on average*). These experiments and smartphone applications provide driving scores which are formally detached from insurance products. They function 'on the side' of 'proper' insurance products. Some resemblances and differences can be observed in the *Caro* project.

Firstly, like most experiments with behaviour-based personalisation in car insurance, the personalisation is not enacted (yet?) in terms of price personalisation. Even more so, the personalisation takes place *alongside,* or *on top* of an insurance product, for which the premium is calculated by common crude statistical categories & self-declared data. If *Caro* customers have a 'kilometerverzekering'-policy, they get differentiated premiums based on how much they declare to drive (Pay-as-you-drive, PAYD), not on *how* customers drive (Pay-how-you-drive, PHYD). Furthermore, the discount of 20 % offered to customers is a compensation for their willingness to cooperate and independent of the process of setting the premium. Secondly, everyone is welcome to participate in the *Caro* project, as long as they keep or obtain a policy with Corona Direct. There is no specific focus on young drivers. Thirdly, by not providing a general score and not allowing users to wind back to check where drive style 'events' were measured, *Caro* differs from other experiments such as *Fairzekering* (cf. chapter 7). Finally, the coaching idea and the incremental unlocking of *Caro*-functionalities are worth mentioning. Insurers and other developers are struggling to make sure their users keep on using these apps and keep on adjusting their drive style or health behaviour. This holds both for car insurance as well as for Life & Health insurance. In 2015, Baloise insurance claimed, in cooperation with the Belgian Institute for Road Safety (BIVV, now Vias institute), that drive style apps are only working as long as users continue to consult their drive style profile (Baloise, 2015b). Also, for health wearable devices, it is difficult to 'attach' these devices to their users in a sustainable way (Olson, 2015) and keep them interested in using the devices (Callon, 1986b). The coaching trajectory set up in *Caro* is an attempt to keep the attention of its users. This enacted continuous attention of car drivers on their drive style might contribute to what David Lyon (2018) calls 'user-generated surveillance' and Deborah Lupton (2014) 'an inverted panopticon'.

6.5. Up to 5,000? *Caro* as an '(Un)happy' Experiment

The *Caro*-experiment aimed at tracking 5,000 policyholders during a one-year period. From the start, this was seen as an ambitious goal.

> 'We have the goal to convince 5,000 people to participate, so there are quite some people that have to change their insurance provider: this is very hard work. So we will need the whole year to get this job done. It is not the case that we have 5,000 participants right now. If you sign in tomorrow, you can download the app and start driving. But when someone does this in three months… .' (interview, Partner and Founder, Kunstmaan, 2016-04-07)

Yet, the goal of the 5,000 participants was not reached, despite all the efforts. It was in hindsight characterised as a 'mission impossible':

> 'Our original goal last year was to involve 5,000 people. That is not achieved, not at all. As of today we have 243 participants, so we cannot claim it is a great success. In hindsight, there are some logical commercial explanations. For example, how could we imagine to sell, with a new name, and knowing that we sold approximately 15,000 policies last year – all products included – one third of our total sales with this product? And we wanted to do it in only five months. Afterwards it is clear: that was *mission impossible* [English in original, GM].' (interview, Commercial Director, 2017-01-04)

Considering the small number of participants, the Data Analytics team of UGent was not activated to do their analyses.

> 'Considering that only 250 drivers are generating data, and given the small technical problems that we faced, the Data Analytics team was not asked to conduct their analyses. We wait a bit, until we have more data. What has been done, however, was that DrivOlution, the company that was doing the coaching, had a quick look at the data. They were very curious. And just recently, they showed us one or two graphs which showed that the driving behaviour of people using the *Caro*-app improved. I am not allowed to say that their behaviour improved significantly, but it improved. […] This is not validated, not *cross-checked* [English in original, GM], whatsoever. It is a very, very basic graph that would indicate that it [*Caro*] works, at least a little bit.' (interview, Commercial Director, 2017-01-04)

This small number of participants is problematic because 'massive amounts of data'[58] are needed to train the algorithms and to build reliable models based on the data generated through the project. Several reasons were given to explain the low number of participants, and the failure of the project.

> 'The reasons why it failed will be different according to the different partners. I think there are a number of reasons. We have – only once *Caro* was launched and we were from the start already a bit sceptical whether smartphone technology is really suitable for building such a product – consulted many American studies on the success of such a *Pay-How-You Drive* insurance [English in original, GM]. Apparently, it is a success nowhere at the moment because it is mostly marketed as a low price product, with no real added value with extra services. […]. And we had no extra services attached to *Caro*. Secondly, from the moment of the press release onwards, we deviated from our original marketing strategy. […] We would market it as a study, with all those different partners, with the university, and the day after the press release it became a commercial product. […] Take it, and you get a 20% discount, no extra added value…' (interview, Partner and Founder, Kunstmaan, 2017-03-17)

Is it to be concluded that the *Caro* experiment is by consequence a total failure? Because the data analytics team has not conducted its analyses, it is not possible to make 'validated, cross checked' truth statements on the effects of drive style coaching or on the holy grail of telematics: establishing the correct relationship between drive style and car accident risk. John Langshaw Austin (1962)

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[58] The need for the 'massive amount of data' was expressed to by the Technology Director of Kunstmaan. To provide insurantial and statistical 'evidence' and give objective proof to legitimate segmentation based on these kinds of data, 100,000 driving hours have to be measured:

> 'TD: One of the main purposes of the *Caro* study is to make a *usage based insurance* [English in original, GM] where the premium one pays is dependent on how one drives. Now, to make the insurantial link between all sorts of measurement values [variables, GM] and how many accidents occur, because that is what it is all about, they needed – and I don't know exactly anymore – to measure 100,000 driving hours to make a statistical link. How do you get to measure 100,000 driving hours before being actually be able to measure this as part of an insurance product? That is how we came up with the idea of a study, because everything before [the 100,000 measured driving hours] is guess work. Instead of starting with differential premiums [based on drive style] – where we have no [objective/actuarial] basis whatsoever – we provide some sorts of discounts for participating in the study, so we can collect these measured driving hours. […]
> GM: So you wanted to have your 5,000 drivers trace for 2,000 hours on average?
> TD: yeah, I do not really know. I know I said an amount of measured driving hours, but I do not know exactly how many hours it were. We need a lot of hours. […] It were the statistics guys that came up with the number…. I don't know any more if they meant 100,000 or 200,000 [measured driving hours]… is was a huge, huge number.' (interview, Technology Director, Kunstmaan, 2016-04-16)

made, during his William James lectures where he coined the performativity-concept, a distinction between happy and unhappy statements. He did this to go beyond the positivistic idea that statements can be only either true or false:

> 'These [performative utterances, GM] have on the face of them the look – or at least the grammatical make-up – of 'statements'; but nevertheless they are seen, when more closely inspected, to be, quite plainly, *not* utterances which could be 'true' or 'false'. Yet to be 'true' or 'false' is traditionally the characteristic mark of a statement. […] Besides the uttering of the words of the so-called performative, a good many other things have as general rule to be right and to go right if we are to be said to have happily brought off our action. What these are we may hope to discover by looking at and classifying types of cases in which something *goes wrong* and the act […] is therefore at least to some extent a failure: the utterance is then, we may say, not indeed false but in general *unhappy*.' (Austin, 1962, pp. 12-14, emphasis in original)

In the same way, one can ask the question whether economic experiments should be evaluated in the first place on their happiness or unhappiness, rather than whether an economic experiment is capable of producing truth statements on what was experimented on.[59]

Just like performative utterances, the success or failure of economic experiments is not limited to their capacity of producing truth statements. One has to ask: was *Caro* a happy or unhappy experiment? Given the disappointing number of participants and the deviation from the strategy to brand *Caro* as a study, it seems that a total failure was unavoidable. To answer the question whether all the invested money was wasted, and in an effort to rescue *Caro*, a Dutch Consultancy firm was hired:

> 'We hired an external consultant to conduct an innovation track. […] It is a Dutch consultancy firm with a strong Belgian branch. I am not a consultant-friendly person, I have to say. My motto is: 'What I do myself, I do better'. But this time – and they were not cheap – those guys did very well. They had very good methods, and they came to some results, together with us. Two tracks were explored: what can we do to position ourselves as innovative – in the broad sense of the word – in the coming years? And, how can we learn something from and do something with *Caro*?' (interview, Commercial Director, 2017-01-04)

[59] Latour (2012) would call this a 'category mistake'.

A first 'innovative idea' that resulted from the consultancy firm's innovation track was to 'not be afraid of younger drivers'. This is actually a very 'obvious' idea, according to the Commercial Director of Corona Direct:

> 'We arrived at the idea, very obvious – but most good ideas are obvious. The whole insurance industry is acting like an ostrich with regards to young people. If a car insurer talks about younger drivers, he [the insurance industry] puts his head in the ground. […] Everyone knows that young drivers – if they find an insurer that wants to cover them – pay very expensive premiums. No one does this, so how are they on the road? They are insured in the policy of their parents. This means that these younger drivers are in our risk portfolio, but all insurer say to young drivers: 'do not come to us'. Our idea is, let's turn this around. If we have to be different than others, let us shout; 'young people, come to us. No problem, you won't pay excessively'. There are some conditions, however. The parents have to come with you, these kinds of things. And we rename *Caro*, package it targeted to young drivers. But an insurance product which links the premium to driving behaviour… probably not.' (interview, Commercial Director, 2017-01-04)

The ambition was to build a UBI product with differential premiums based on drive style, so that the 'whole playing field' could be reached (and not only the drivers that drive less than average, for which the kilometerverzekering is advantageous). The idea of using behaviour-based personalisation is dropped. It is also interesting to see that, where Corona Direct did not have a particular focus on younger drivers for the Caro study as they wanted to conduct a representative study, a turn to younger drivers is made to 'save' the project.

Furthermore, two key ideas were a result of the innovation track which focus on the feasibility of future insurance products enacting behaviour-based personalisation. Firstly, new insurance products have to be 'easy as pie' (or in Dutch: 'poepsimpel'):

> 'The idea is, when you visit our site and you ask for a premium, we will do an offer to make use of our *Caro* app – fully free of charge. Using the app would have no further consequences whatsoever. I think quite a lot of people want to do this. […] But we have to learn from our *Caro* experience. Probably, we will get rid of the beacon [the *Caro*-link, GM] because we learned what is really important: usability. The smallest constraint imaginable is a large problem. So one has to make insurance products as 'easy as pie'/'poepsimpel'. And the beacon was 'easy as pie'/'poepsimpel'… But apparently not....' (interview, Commercial Director, 2017-01-04)

Secondly, the idea of linking drive style to premiums is abandoned, although it is not expected that large resistance could be expected against the idea.

> 'We learned some things. The consumer is not really kept awake at night by privacy concerns – except some illustrious, difficult guys – on the condition that he is not punished [for his behaviour, GM]. So, the only thing we can do is reward [good driving behaviour, GM]. So, we will probably build something where in one way or another only rewards are given. And to get rid of the tension of making a link between premium and behaviour, we will not hand out the reward as premium, but as something else so we can say: "you will never get punished because your premium will not be linked to your behaviour."' (interview, Commercial Director, Corona Direct, 2017-01-04)

Clients are ensured that they will not be punished by turning the premium calculation and the rewards into two different 'spheres of exchange' (Guyer, 2004).[60]

Some things seem to be learned from the *Caro* experiment, but aren't they 'quite obvious'? It is understandable that the partners were quite unhappy with how *Caro* unfolded. This does not mean, however, that *Caro* is a 'dead end' (cf. James, 1919):

> 'It failed last year, and then we didn't talk about it for almost a year. At the end of last year, an innovation track was set up. *Caro* was back on the table: what are we going to do with it? Do we drop it? Or are we continuing with it? In the end it will turn into *Corona Drive*. This will be a *topping* [English in original, GM] on the traditional insurance. Customers will get the choice to get it with an insurance policy and they will get some discounts or some *rewards* [English in original, GM]. In other words, there is no further ambition at all expressed. It is just, we have it, let's do something with it. […] It is not dead, we have the technology, we can do something with it.' (interview, Partner and Founder, Kunstmaan, 2017-03-17)

[60] The American anthropologist Jane I. Guyer (2004)analyses in her book *Marginal Gains. Monetary Transaction in Atlantic Africa.,* among others, Bohannan's work on the trade by the Nigarian Tiv-tribe. This tribe has different types of tradable goods, 'based on their moral value', that make up different spheres of exchange. Within these spheres, practices of conveyance take place: goods can be quite easily exchanged. Because of the different moral values attached to these goods, exchange between different spheres of exchange is harder. Practices of conversions have to take place to exchange goods between spheres of exchange and to overcome the barriers between them (Guyer, 2004). By keeping insurance premiums and behaviour-based rewards in two distinct 'spheres of exchange', the moral values attached to personalise insurance premiums are left (mostly) untouched. This practice also reminds of the work invested in economizing life as something that can be insured (Levy, 2012; McFall, 2015a; Zelizer, 1978), where values were dis- and re-entangled (Callon, 1998a) to different spheres of exchange.

Once again, the idea that expectations or economic experiments can be alive or dead is uttered during an interview (cf. chapter 3, see James (1919)). *Caro* seemed to be almost dead, as it was not taken into consideration as a real possibility anymore to build a product based on it, but was given new life through the innovation track by the consultancy firm, although it probably will just survive as a 'topping'. The *Caro* infrastructure could be used as an add-on to existing insurance products, which enables the continuation of data collection, stressing that a safe drive style is important to Corona Direct, and at the same time not being confronted with the difficulty – both technically and affectively – of linking drive style to premiums and loss statistics.

6.6. Conclusions

The *Caro* project was presented as a large research study, investigating what the relation is between drive style and losses in car insurance policies. Before insurers can establish this link, presented as the 'holy grail', enormous amounts of 'measured driving hours' have to be collected. For ten years, since Corona Direct launched its kilometerverzekering in 2006, expertise were built on the link between the number of kilometres driven and loss risk in car insurance. *Caro* was presented as a first visible step to experiment with personalisation based on drive style. At the same time, *Caro* was also a marketing initiative, offering a twenty percent discount to the car insurance premium for customers willing to participate in the study. Looking back on the project, some involved partners remarked that it was a pity that the marketing aspect of *Caro* dominated once the study was launched. *Caro* was *in the first place* a campaign trying to attract new customers with an attractive twenty percent premium discount, and it happened to be hard being a research study and a marketing campaign *at the same time*.[61] The multiple modes at work in *Caro* seemed to exclude each other according to the partners involved in the project.

Bruno Latour (2012) proposes a study of 'modes of existence' to properly be able to observe the multiplicity of 'stuff', which is easily overlooked by the modern 'account' (my translation of 'compte rendu') of describing reality.[62] Latour (2012) does not aim to present a 'final' overview over the modes of existence and their crossings. Yet, he invites to study new types of crossings in

[61] Annemarie Mol (1995) shows very nicely how the pathological anatomy is – for evident, practical reasons, as it expects the patient to be deceased – not the *first* truth statement on diseases like atherosclerosis, but very definitely has *the last say* on it (in Dutch: 'het heeft het laatste woord).

[62] For 'the moderns', society is made of different distinct domains, such as the domain of law, science, or economy. Firstly, not all things which make up a domain, Latour defends, 'belong' to that domain. For instance, the domain of law is not only made of juridical elements. Also, in 'the economy', juridical things such as contracts are paramount for the functioning of 'the economy'. Nevertheless, these instances are recognizable as 'of law'. They function in a particular way. To describe this 'particular way of functioning', Latour (2012) studies 'modes of existence'. Secondly, different modes are 'crossed' in particular situations. For instance, knowledge production [REP-REF] always reproduces (REP) and refers to (REF) the investigated reality. Or, economic practices [ATT-ORG] always bear forms of attachment (ATT) and organisation (ORG).

particular situations.[63] Not all crossings work, and they do not work all the time: success has to be seen as an achievement, not as something obvious (Ariztia, 2018). For instance, in the case of this chapter, the *Caro* research study could not work with an emphasis on the commercial discount-story, and the commercial marketing *Caro* campaign could not fully be exploited with a focus on the research project. The *Caro* project convinced 243 participants, which was not enough to obtain 'validated, cross-checked' findings.

The *Caro* experiment should not be solely evaluated on the absence of a scientifically valid result. Economic experiments cannot only be 'true' or 'false', but also 'happy' or 'unhappy', to paraphrase Austin on performative utterances (Austin, 1962). Economic experiments contribute to the enactment of (future) markets (Muniesa & Callon, 2007), they are practices of 'action of reflection'. In the case of *Caro*, the reflection on the experiment was conducted in the form of an 'innovation trajectory', for which a consultancy firm was hired. The failure at first sight of the experiment was turned into the rescue of *Caro* as a voluntary 'topping' to a traditional car insurance product. This way, the effort and money invested in the project did not result in a 'dead end'.

The case study of *Caro*, an economic experiment with behaviour-based personalisation, shows the importance of economic experiments for the construction of (future insurance) markets. Through the experiments, some potential features of behaviour-based personalisation in insurance came to the fore. Although the announced goal of the *Caro*-study was to establish an evidence base for the link between driving behaviour and car accident risk, it also provided an opportunity to test and experiment with ways of coaching drivers in order to encourage and 'nudge' (Thaler & Sunstein, 2009) them to drive more safely. By conducting these coaching practices through a device offered by an insurance providers, one might witness a change in the role of insurance providers. In 'insurance-as-we-know-it', insurance providers are often seen as 'financial' actors offering insurance products which constitute financial compensation in case of experienced losses. Insurance relationships constitute reconfigurations of responsibilities (Baker, 2002), yet these responsibilities and the effects on the behaviour of insureds are attributed to the incentive structure that differ between being insured or not (Arrow, 1963; Baker, 1996). What is observed in this chapter, is that through the *Caro*-app, participants to the study are actively encouraged to change their behaviour by helping participants acknowledge that they have driving habits in the first place, and later on by coaching them to (sustainably) change their driving behaviour. This way *Caro*, and Corona Direct, is *taking care* of its policyholders. As will be shown in the next two chapters, this caring for policyholders through the enactment of behaviour-based personalisation reconfigures the responsibilities of both insurers and insureds.

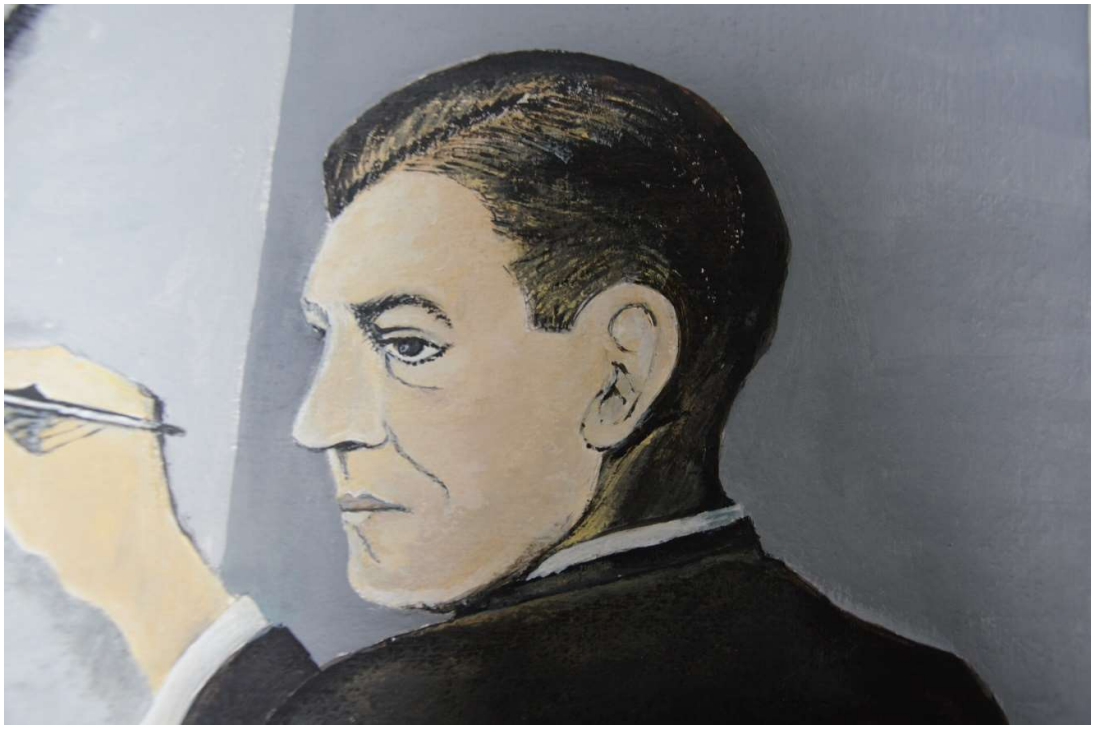
[63] For instance, research by Arianne (D'Hoop, 2018) shows that, in her study of the move of a psychiatric day care centre for adolescents from an old residential building to a newly built facility specifically designed for the purpose of taking care of the children, the transformative goals of mental health care [TRANS] was helped by the 'everyday life' aspects that were proper to the habits [HAB] developed in their previous building.

Concluding more generally, it can be stated that the experimental practices of behaviour-based personalisation, which are as of now still mainly 'detached' from the 'real' insurance products with their underwriting and pricing requirements, are a way to better get to know the insurance products they are trying to build. This search to know products contrasts to the traditional insurance strategies to employ market research which indicates properties of the market. The Caro-project did not produce knowledge about the insurance market. Rather, it contributed to producing a new, not-yet 'fully realised', insurance product enacting behaviour-based personalisation. This way, the experiment contributed to the 'construction of economic things':

> 'Experimental performativity is not exactly about transporting things outside the laboratory, but more about constructing different experimental sites that go beyond the pure laboratory conditions and that redefine (or even abolish) the boundaries between the "inside" and the "outside". This consideration opens ways of analysing the politics of experimental objects.' (Muniesa & Callon, 2007, p. 184)

It is not because the *Caro* experiment may 'only' be kept alive as a *topping* to traditional insurance policies, that the behaviour-based personalisation enacted in *Caro* has no political consequences. These consequences of behaviour-based personalisation in (car) insurance will be discussed in the next part of this dissertation: behaviour-based personalisation redefines what insurance is and what it should be, shifts the responsibilities of insurers and insureds, and urges one to reflect on the importance of fairness in/of insurance, as will be done in the next chapter.

Part III. Consequences



Detail from La Clairvoyance (René Magritte, 1936), reproduction by Pauline Swinnen (picture: Sven Peremans)

7. Enacting Actuarial Fairness in Insurance: From Fair Discrimination to Behaviour-based Fairness.

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> *'[O]ther peoples' bad luck, recklessness and carelessness determine how much you pay for your insurance. Even if you never cause any damage, you end up paying for people who do. At Fairzekering, we don't think that is fair. How badly or, more importantly, how well you drive should make a difference.' (Fairzekering, 2014, 00:01-00:24)*



Figure 7.1. 'Fairzekering EN' video still 4, 00:50, (https://vimeo.com/113089215)

7.1. Introduction

Fairzekering is a Dutch car insurance product that provides discounts for insurance policyholders who obtain a good driving score, which is measured through a small device plugged into the car to 'personalise' risk. Developments in Big Data analytics and wearable technologies are contributing to a growing interest in this sort of behavioural data and the possibilities of 'personalised' insurance

premiums and products (Swiss Re, 2016b; Topol, 2015). These developments contribute not only to an interest in personalised insurance premiums, as was the case with the proliferation of genetic knowledge in the 1990s (Van Hoyweghen, 2007), but moreover to an interest in governing the lifestyle and behaviour of individuals and policyholders (Lucivero & Prainsack, 2015; Prainsack, 2015). Here, the concept of behaviour-based personalisation is used to refer to a broader and growing interest in the personalisation of products and goods where markets and services are increasingly focused on the behaviour and lifestyle of actors, particularly in insurance markets.

The advent of behaviour-based personalisation gives rise to vivid debates on the role of insurance in the future (see for instance, Ernst & Young, 2016; IA|BE, 2015). In these debates, commentators increasingly stress the idea that insurance products should above all be fair to the policyholders (Baker, 2011; Landes, 2015). These developments in behaviour-based personalisation and claims concerning the 'fairness' of insurance products give rise to the following questions: How has the insurance industry enacted actuarial fairness? How is this related to economic assumptions about insurance policyholders? What are the consequences of changing enactments of actuarial fairness in behavioural-based personalisation?

In this chapter, an important shift in the enactment of 'actuarial fairness' through contemporary developments of behaviour-based personalisation in insurance is documented. By studying a case of behaviour-based car insurance, it is analysed how a shift in the meaning of fairness is enacted and how this reconfigures the economic assumptions about insurance policyholders, thereby contributing to a redefinition of insurance in an age of behaviour-based personalisation. After describing the chapter's approach and methods, the empirical analysis starts by looking at the way actuarial fairness was and is theorised in neoclassical microeconomics, and how this reflects economic assumptions about *homo economicus*. This is followed by an analysis of how actuarial fairness has been enacted in insurance practice since the 1980s in order to defend the fairness of its actuarial risk technologies. Finally, a case of behaviour-based personalisation ('*Fairzekering*') is presented to demonstrate a contemporary shift in the enactment of actuarial fairness. The chapter concluded by reflecting on how this contemporary enactment of behaviour-based fairness simultaneously implies a shift in the enactment of the economic actors involved in insurance.

7.2. Theoretical Approach

To study the ways in which actuarial fairness is enacted in insurance, the sociology of insurance literature is built upon. This literature, which is influenced by Foucauldian governmentality studies as well as Science and Technology Studies (STS), has emphasised a set of important observations about insurance as a technology for governing society. Insurance is a technology that transforms uncertainty into 'calculable risk' (Ewald, 1991; Lehtonen & Van Hoyweghen, 2014), and arose in

the 19th century along with probabilistic thinking, statistics, and nation-states (Hacking, 1990). Through insurance relationships, a redistribution of responsibility between insurers and insureds can take place (Baker, 2002; Ewald, 2002). These insurance relationships are constituted through calculative technologies used to asses risk and select policyholders (McFall, 2015a; Van Hoyweghen, 2014). The selection of risk based on risk group characteristics, also called 'underwriting', is a way in which insurers deal with the (perceived) risk of 'adverse selection', the phenomenon whereby high risk individuals are more prone to buy insurance policies than low risk individuals, which creates an imbalance in the insurance portfolio (Siegelman, 2004).

These properties of insurance markets, goods, and actors are not stabilised once and for all; the role of insurance and the distribution of responsibilities is renegotiated over time, as is demonstrated by the instructive genealogy of 'moral hazard' in insurance by Foucauldian law scholar Tom Baker. Baker (1996, 2000) made an extensive genealogical analysis of the phenomenon of moral hazard in insurance to show how historical changes in the definitions of, and economic assumptions about, moral hazard change what this moral hazard is and the dynamics at work in insurance. Moral hazard was used in 19th century fire insurance guidelines to refer to a temptation present in the character of an individual to submit fraudulent claims or impose higher loss. This idea of moral hazard was explicitly moral and drew a distinction between different kinds of people, viz. honest and dishonest. Baker (1996, 2000) observed a shift in the definition of moral hazard from the original insurers' practices to later neoclassical economic theory (Arrow, 1963), where the concept of moral hazard is still used but in a different, more 'technical' way.

Neoclassical economics, a branch of microeconomics which became dominant after the second World War, starts from classical assumptions about the economic actors – *homo economicus* – as rational utility maximisers and makes use of mathematical models as its main method. Since the characteristics of economic actors in neoclassical economics are stabilized in the economic assumptions about these actors (e.g., as *homo economicus*), differences in character cannot be invoked to define nor describe the phenomenon of moral hazard (Arrow, 1963; Baker, 2000). Instead, properties of the insurance contract and the incentives these contracts generate are used to explain moral hazard. When *homo economicus* is, for instance, insured for medical expenses, it is predicted that s/he will use medical services.

Theorising the way economic actors react to incentives and situations has been at the core of the discipline of economics (Laffont & Martimort, 2002), and especially in the emergence of behavioural economics. Since the 1970s, behavioural economics has been used to investigate *actual* decision-making situations without imposing expectations about the rationality of behaviour (Thaler, 2015). This line of economics research has been recognised and institutionalised since the early 2000s, with bestselling books like Thaler and Sunstein's *Nudge* (2008) and Ariely's *Predictably Irrational* (2008), and by awarding the Nobel memorial prize in economics to Daniel Kahneman (2002) and, more recently, Richard H. Thaler (2017). According to behavioural

economics, environmental properties are ignored by neoclassical microeconomic models, by 'holding all other things equal' (Buchanan, 1958), and due to the specific assumptions about *homo economicus*. Properties that do not fit in these microeconomic models are portrayed as 'supposedly irrelevant factors' (Thaler, 2015).

These factors are taken into consideration in behavioural economics to better understand decision making processes with the assumption that 'real' people, consumers, and insurance policyholders are 'predictably irrational' (Ariely, 2009). The re-articulation of assumptions about the capability of economic actors to make individually rational choices is the main focus of developments in behavioural economics (Yeung, 2016). Human actors are no longer assumed to be capable of making rational decisions due to constraints present in the *real* world of decision making (Frerichs, 2011). Although actions cannot be predicted through assumptions about the rationality of actors, behavioural economics assumes that actors can be *made capable* of acting as rational decision makers, 'when placed in the right environment' (Thaler, 2015). Actors can be 'nudged' towards the 'right' direction by cleverly designed 'choice architectures' (Thaler & Sunstein, 2009).

The Foucauldian genealogical take on moral hazard is instructive to show how economic concepts carry a history, are often – and certainly in insurance – linked to a morality, and come with a set of assumptions about economic actors. However, as Leaver (2015) has argued, in looking for 'decisive' moments through a unidirectional genealogy of a concept, caution is needed in assuming that economic concepts used in insurance practices always have 'precise meanings' (Leaver, 2015). This observation makes us critical of previous scholarly attention paid to actuarial fairness in insurance, which has been situated in the disciplines of law, political philosophy and ethics (Clifford & Iuculano, 1987; Daniels, 1990; Landes, 2015; Thiery & Van Schoubroeck, 2006). In these studies, a definite, 'precise' (Leaver, 2015) meaning is often attributed to the concept of actuarial fairness, shaping subsequent interpretations of the concept.

However, as has been demonstrated in STS, and especially in Actor-Network Theory (ANT) (e.g., Callon, 2007b; Latour, 2005; Law, 2004; Mol, 2002), social scientists should avoid ascribing a definite meaning to a concept and retracing its 'original' meaning since this obscures the different meanings and assumptions attached to different uses of 'one' concept (Latour, 1987). It is for this reason that we employ the concept of 'enactment' in this paper as a way to refer to the continuous and multiple work that has to be invested in making and keeping a concept, object or subject 'into being' (Law, 2004). For example, Mol (2002, pp. 32-33) claims that:

> 'It is possible to say that in practice objects are *enacted*. This suggests that activities take place – but leave the actors vague. It also suggests that in the act, and only then and there, something *is* – being enacted.' (emphasis in original)

The concept of 'enactment' in ANT proposed by Mol (2002) contrasts with terms like 'construction' or 'performance', two concepts which seem to presuppose a pre-existing plan that is 'executed' or a script that is 'played' (Callon, 2007b; Law, 2004). Rather, concepts, objects and subjects are the result of the continuous enactment in and through practice: 'If an object is real this is because it is part of a practice. It is a reality *enacted'* (Mol, 2002, p. 44, emphasis in original).

In line with the concept of enactment, which focuses on how realities are constituted in and through practices, the performativity thesis has been introduced in STS (Callon, 1998a, 1998b, 2007b; Mackenzie, 2008; MacKenzie et al., 2007a) to study the enactment of markets. As Callon (2007b) and other scholars argue, economics is not merely a form of knowledge that represents an already existing state of affairs; it is, rather, a set of instruments and practices that contribute to the enactment of economic markets and their actors. From this, Callon (2007a) makes the argument, often provocative for economists, that 'the market' and '*homo economicus'* are no longer ideas that exist simply in economic text books but that they are continuously enacted as economic markets.

The performativity approach allows to analyse how the situated enactment of markets comes with a set of assumptions about, and the enactment of, its actors (Callon, 1998c). This enactment of actors and their agency is constituted through socio-technical 'agencements' (Callon, 2007b), the heterogeneous material arrangements that produce agency:

> 'Emphasizing the role of materialities – or of what I call sociotechnical *agencements* – leads to the notion of performation. Statements and their world are caught in a process of coevolution. […] We can agree to call *performation* the process whereby sociotechnical arrangements are enacted.' (Callon, 2007b, pp. 329-330, emphasis in original)

These sociotechnical agencements come with particular assumptions about realities (e.g., concepts, objects, subjects), and demand for a 'political ontology' (Law, 2004) that pays attention to the consequences of particular enactments of realities ('performation'). If markets are the result of socio-technical agencements, then multiple market configurations are possible (depending on the specific devices and principles set in motion).

Using the performativity approach allows to articulate research questions about actuarial fairness that go beyond 'the representation' vs. 'the real' of actuarial fairness. In order to avoid attributing a definite and real meaning to actuarial fairness, the performativity thesis is taken as a starting point in this chapter to investigate different enactments of actuarial fairness in insurance, moving to the question: How is actuarial fairness helping to *do* realities in insurance? So to claim that actuarial fairness is performative is to argue that it *does* things, rather than simply describing an external reality. In this chapter, these ideas on the enactment of economic concepts and realities are taken to heart by studying how actuarial fairness is enacted in specific insurance practices and

how the notion constitutes specific economic assumptions about, and enactments of, insurance policyholders.

7.3. Methods

To empirically study the shifts in the enactments of actuarial fairness in insurance and the changing economic assumptions about insurance policyholders, I used different qualitative research methods to show where and how actuarial fairness is *at work* in insurance in three different settings. The material presented here is illustrative of the broader issues at stake concerning actuarial fairness in insurance, and is part of a wider-ranging research project on the ways in which re/insurers use new digital technologies to enact behaviour-based personalisation in insurance.

First, to investigate actuarial fairness in microeconomics I performed a close reading of the seminal 1963 paper by Kenneth J. Arrow on 'uncertainty and the welfare economics of medical care', where the concept of actuarial fairness was originally coined. This paper is recognised as being a canonical contribution to the economics of insurance (Finkelstein, 2015). Moreover, Arrow's work is especially relevant as a starting point of our analysis of actuarial fairness in insurance economics since we build on Baker's (1996, 2000) work, which provides a genealogy of moral hazard from the 19th century until the microeconomics of Arrow. This close reading of Arrow's work was enriched with a literature review of academic sources reflecting on the importance of Arrow's 1963-paper for the domains of insurance economics and health care economics (e.g., Arrow, 1974, 1984; Finkelstein, 2015; Pauly, 1968; Stiglitz, 2015).

I also analysed 31 insurance and economics handbooks and textbooks were in order to investigate the scientific 'stabilisation' (Latour, 1987) of the concept of actuarial fairness. The consulted handbooks were published in English between 1937 and 2014 by major academic and textbook publishers (e.g., Oxford University Press, Cambridge University Press, Springer, John Wiley). I looked for references to the notions 'actuarial fairness', 'fairness', 'fair', 'Arrow', notions containing 'fair' or 'fairness' and other notions in the index that seemed to be potentially of interest (such as 'pure premium', 'net premium', 'equitable rate') to analyse the ways in which the fairness of insurance premiums was defined. In accordance with Leaver's (2015) approach, I also investigated the citation history of Arrow's 1963 paper in the databases *EconLit* and *Web of Science*, and performed frequency counts of 'actuarial fairness' and 'actuarially fair' usage in these databases.

Second, to study the shifts and ways in which the insurance industry has employed the notion of actuarial fairness in its practices, I performed a document analysis of official publications by insurers, reinsurers and other industry expert actors to study positions on the necessity and desirability of risk selection, in the context of anti-discrimination legislation. Against this

background, I present here an illustrative series of publications by Swiss Re, one of the largest and most influential reinsurance companies, explicitly dealing with actuarial fairness and anti-discrimination legislation. I analysed these sources in order to demonstrate how actuarial fairness was invoked as a principle to defend the established insurance practices of risk selection.

Third, to study how actuarial fairness is enacted in contemporary insurance markets, I present here elements of a broader research project on the ways in which the insurance industry deals with developments in behaviour-based personalisation by formulating expectations about digital technologies and Big Data and by performing experiments on the personalisation of risk. Against this background, I selected the Dutch telematics car insurance product *Fairzekering* as a paradigmatic case (Flyvbjerg, 2011) for understanding the changing assumptions about insurance policyholders in an era of behaviour-based personalisation. I have selected the case study *Fairzekering* because it explicitly makes reference to 'fairness', which means we are not obliged to elaborate on implicit definitions of and references to something *like* fairness. I performed a content analysis of the *Fairzekering*'s product website and its advertisement video. Further, I conducted 7 semi-structured interviews with (re-)insurance professionals on behaviour-based personalisation in insurance in general and the *Fairzekering* product in particular.

The presented research methods, suited to the different empirical settings documented below, allow for an analysis of the different enactments of actuarial fairness in insurance. In the next section the analysis is started by first demonstrating how actuarial fairness was coined in neoclassical microeconomics and how this is related to assumptions about *homo economicus*.

7.4. Actuarial Fairness in Arrow's Microeconomics

Insurers have resorted to a wide range of medico-actuarial science and knowledge to enact an 'actuarial basis' in insurance. To calculate insurance risk premiums, medico-actuarial science and technologies have been developed to distinguish between different risk groups through risk classification (Haberman & Sibbet, 1995; Porter, 2000). The main goal was to identify observable differences based on actuarial insurance technologies in order to appreciate correctly the 'quality of the risk' and propose equal premiums to people with an 'equality in risk' (Martinéz, Teira, & Pradier, 2016).

Martinéz et al. (2016) demonstrate how the principle of 'equality in risk' stabilised in the 17th century in actuarial science as what made insurance premiums 'just', 'equitable' or 'fair'. While there was consensus in actuarial science about the principle of 'equality of risk' (Martinéz et al., 2016), no single concept was employed to discuss the issues related to this principle. Instead, various concepts like 'pure premiums', 'just premiums', 'equitable rates', 'net premiums' and so on were simultaneously in use (Haberman & Sibbet, 1995). The concept as such of actuarial fairness

was not present in insurance practice. For instance, in 1865 the actuary James Meikle used the concept of 'pure premiums' in a paper read before the Actuarial Society of Edinburgh (Meikle, 1865, p. 62).

Along with the stabilisation of risk classification in insurance practices, debates about the need vs. desirability of risk selection were increasingly prevalent in the early 20th century (Horstman, 2001). For the insurance industry, the position that risk selection was both needed and desirable was dominant with insurers arguing that risk selection was needed to ensure the solvency of insurance companies. Again here, the discussion of these issues was not yet conducted *in terms of* actuarial fairness. For example, in the second 1937-edition of his *Insurance: Its theory and Practice in the United States*, the actuary Albert Henry Mowbray (1937) discussed 'equitability' as a major principle for insurance rates.

The concept of actuarial fairness was coined by Kenneth J. Arrow (1921-2017),[64] the Nobel prize-winning economist who contributed strongly to the development of neoclassical microeconomics (Finkelstein, 2015). In his famous paper 'Uncertainty and the Welfare Economics of Medical Care'[65] he explained how health care situations are interesting from an economic point of view since these are inherently situations of 'information asymmetries'. The most important dynamics in insurance markets, such as adverse selection and moral hazard, result from this information asymmetry. The first problem in insurance Arrow addressed was moral hazard:

> 'One of the limits which has been much stressed in insurance literature is the effect of insurance on incentives. What is desired in the case of insurance is

[64] During the review process of this paper, one reviewer doubted if it could be stated that Arrow coined the concept. This response was given: 'Referee #2 was curious as to whether or not others apart from Arrow could have coined the concept of actuarial fairness and asked for support for our claim concerning Arrow. We have consulted additional secondary literature and performed additional research to support this claim. Martinéz et al. (2016) localise the emergence of actuarial fairness as 'equality in risk' in the 17th century. 'Equality in risk' is seen as a property which makes premiums 'just', 'equitable' or 'fair'. In insurance handbooks and historical actuarial texts (we consulted among others the 'history of actuarial science' by Haberman and Sibbet (1995), a ten band anthology of historical actuarial texts and, a monograph on the history of British actuarial thought (Turnbull, 2017)), concepts that resemble actuarial fairness are used: pure premiums, just premiums, equitable rates, net premiums. In 1865, when referring to something comparable to Arrow's 'actuarially fair premium', the actuary James Meikle, for instance, used the concept of 'pure premiums' in a paper read before the actuarial society of Edinburgh (Meikle, 1865, p. 62). Thus, we are reasonably comfortable in claiming that 'actuarial fairness' as such was not used as a concept before Arrow's 1963 paper.'

[65] The paper was part of a theme issue on health economics in the American Economic Review. The editor invited Kenneth Arrow, who had not previously written on health economics, as a 'theorist' in economics to write his reflections on the topic of health (Arrow, 2015). Arrow was, however, well informed on insurance practice as he followed courses to become an actuary while graduating:

> 'Much of the material to be learned was extremely detailed algebra, but I did encounter some interesting concepts such as *moral hazard* and *adverse selection*. They came to my mind again in the study of medical economics, and I began to see a more general pattern applicable elsewhere in economic behaviour.' (Arrow, 1984, pp. 77-78)

> that the event against which insurance is taken be out of the control of the individual.' (Arrow, 1963, p. 961)

Since the event against which insurance is taken is (partly) under the control of the individual and this individual is confronted with lower expected costs of this event because s/he is insured, the insurance contract thereby influences the incentives with which the individual is confronted. These incentives are framed as moral hazard. When defined through the lens of Arrow's neoclassical economics, moral hazard is no longer a temptation proper to the character of some insured individuals (Baker, 2000), but rather an incentive built into the insurance contract.

The individual's character is neutralised in neoclassical economics through assumptions about *homo economicus,* with *homo economicus* assumed to be a rational, risk-averse utility maximiser (Arrow, 1963). Rationality entails an assumption that *homo economicus* will make no 'flawed' decisions; risk aversion entails an assumptions that *homo economicus* is an actor who prefers a certain future over an uncertain one; and utility maximisation entails an assumption that there is a proper 'direction' underpinning rational decisions. Moreover, the environment in which *homo economicus* makes decisions is stabilised by excluding/ignoring all factors that are supposed to be irrelevant or not suitable within the model, deploying the analytical device of *'ceteris paribus'* – 'all other things held equal' (Buchanan, 1958). These economic assumptions from neoclassical microeconomics imply that moral hazard cannot be attributed to persons but only to situations.

As mentioned, the concept of actuarial fairness was coined in Arrow's 1963-paper. The subsection entitled 'The theory of ideal insurance' defined a property which makes an insurance premium 'fair' and which ensures that *homo economicus* would be willing to obtain an insurance policy with full coverage:

> 'Suppose therefore, an agency, a large insurance company plan, or the government, stands ready to offer insurance against medical costs on an actuarially fair basis; that is, if the costs of medical care are a random variable with mean *m*, the company will charge a premium *m*, and agree to indemnify the individual for all medical costs. Under these circumstances, the individual will certainly prefer to take out a policy and will have a welfare gain thereby.' (Arrow, 1963, p. 960)

Since the insurance policyholder is assumed to be a rational and risk-averse utility maximiser (i.e. *homo economicus*), then they are assumed to obtain full insurance coverage when offered 'actuarially fair premiums' (i.e. premiums in accordance with the expected losses of the insured risk). Actuarial fairness functions here as a neutral, technical concept since it is used to characterise conditions of premiums in *ideal* insurance markets under which *homo economicus* is predicted to obtain full coverage.

The publication of Arrow's 1963-paper did not immediately provide a broad implementation of the term actuarial fairness in the discipline of economics and beyond. Instead, the paper was increasingly cited over time (see figure 7.2.).

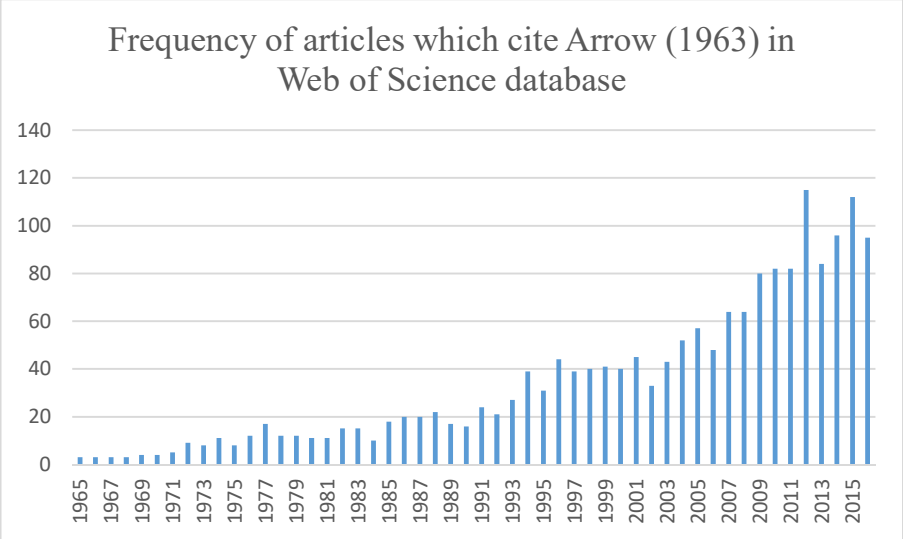


Figure 7.2. Frequency of articles which cite Arrow (1963) (source: Web of Science database)

When querying "('actuarial fairness') OR ('actuarially fair')" in the academic databases EconLit and Web of Science, one can see that there were, respectively, 202 and 172 results between 1955 and 2016. Most of these papers deal with actuarial fairness in pension funds and social security. These queries concerning 'actuarial fairness' or 'actuarially fair', however, only highlights citations after 1986 (see figure 7.3.).

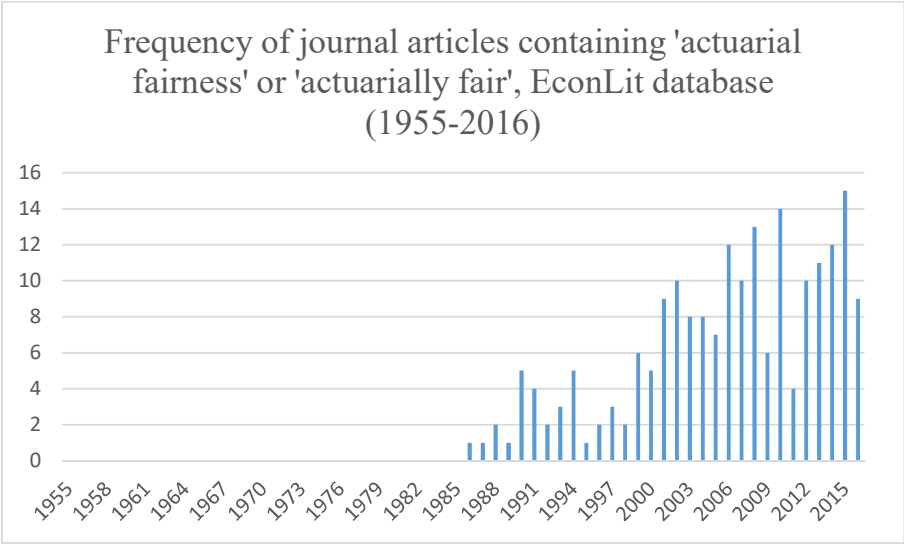


Figure 7.3. Frequency of journal articles containing 'actuarial fairness' or 'actuarially fair' 1955-2016 (source: EconLit database)

This 'absence' of actuarial fairness in academic literature before the late 1980s, however, does not imply that Kenneth Arrow did not play a key role in defining actuarial fairness, nor does it undermine the importance of the assumptions used to enact actuarial fairness as a technical concept in microeconomics. On the contrary, as the following quote from a paper on 'the economics of crop hail insurance' shows, Arrow (1963) and his definition of actuarial fairness were indeed considered as the 'standard theory of insurance':

> 'Result 1: For the case of non-stochastic hail-free crop revenues and non-stochastic hail damage, *it is optimal for farmers to purchase full coverage* (i.e., $\lambda^* = 71$-) *when the insurance is actuarially fair* (i.e. $\gamma = 1$) and to purchase less than full coverage (i.e. $\lambda^* < \pi$) when the price of insurance is greater than the actuarial fair value (i.e. $\gamma > 1$). [...] *Result 1* is *not surprising and is certainly consistent with the standard theory of insurance (e.g., Arrow, 1963)*.' (Vercammen & Pannell, 1996, pp. 3-4, emphasis added)

In a similar vein, handbooks on insurance and the economics of insurance introduced Arrow's definition of actuarially fair premiums as a technical concept that does not require any further elaboration, as this selection of handbook excerpts shows:

> 'In economics the expected value of random prospects with monetary payments is frequently called the fair or actuarial value of the prospect' (Bowers, Gerber, Hickman, Jones, & Nessbitt, 1986, p. 3, 'Actuarial Mathematics')

> 'A fairly priced insurance policy is one in which the insurance premium is equal to the expected value of the promised insurance payment.' (Besanko & Braeutigam, 2011, pp. 620-621, 'Microeconomics. Fourth Edition')

> 'It [the basic model of insurance demand, GM] predicts the choice of full coverage if the potential purchaser of insurance is charged the so-called fair premium, i.e. a premium that just covers the expected value of the loss insured.' (Zweifel & Eisen, 2012, p. 71, 'Insurance Economics')

As such, the technical concept of actuarial fairness has been employed as non-problematic, rendering it almost invisible in insurance handbooks (Latour, 1987). It is not deemed necessary to elaborate on the concept, and the linkage with Arrow (1963) is most of the time absent.[66] The success of the concept can be found in its simplicity: 'a premium in accordance to its expected cost'

[66] Some handbooks do not even mention the name of the concept while explaining it (see for instance Mankiw and Taylor, 2014, 542-544).

(Arrow, 1963). In the economics of insurance world, this is everywhere and nowhere specifically applicable and it incorporates everything and nothing in particular. It is as if actuarial fairness is enacted 'without a doubt'.

7.5. 'Fair vs Unfair' Discrimination: Legitimising Actuarial Insurance Technology in an Era of Antidiscrimination Legislation

The non-problematic use of the term in insurance and economics handbooks, and its apparent absence in insurance economics, makes actuarial fairness as it is enacted in socio-technical 'agencements' – to use Callon's (2007b) term – of insurance practices highly relevant. Since the 1980s, the insurance industry has been the subject of public controversy in relation to medical risk selection and discrimination in insurance, with reference to issues like the HIV epidemic (Clifford & Iuculano, 1987; Daniels, 1990; Stone, 1993), the use of genetic testing (Van Hoyweghen, 2007) and more recently gender (Rebert & Van Hoyweghen, 2015). What is striking here is that actuarial fairness is now explicitly enacted as a principle in insurance practices, employed to counter public concern with discrimination by insurers. As can be seen in figure 7.3., the increased use of actuarial fairness and actuarially fair in economic literature coincided with academic debates on the actuarial fairness of discrimination based on HIV status (Clifford & Iuculano, 1987; Daniels, 1990; Stone, 1993).

In the past 20 years, many countries have enacted legislation which prohibits insurance discrimination on the basis of group characteristics, such as racial origin, disability or sexual orientation. In 2012, the so-called Test-Achat ruling, which restricts the use of gender for insurance underwriting purposes, came into force in the European Union (Rebert & Van Hoyweghen, 2015). Insurers, in their turn, argue that they need to know people's medical risks in advance, in order to make the business work. To explain this, they explicitly invoke the principle of actuarial fairness. An example illustrating this defensive approach in deploying the principle of actuarial fairness can be found in an ongoing series of publications by the reinsurance company Swiss Re (2007-2017). This publication series was designed to establish the principles of 'fair underwriting', in order to respond to societal concerns about discrimination while ensuring the insurer's 'right to underwrite':

> 'Insurers cannot ignore the concerns of society. […] Europe already has a very social model for its private insurance solutions. This system focuses only on differentiating between the more extreme risk differences. However, in the current debate, governments must recognise that there is a difference between unfair discrimination and insurers differentiating prices according to risk.' (Swiss Re, 2015, p. 6)

Societal concerns about insurance discrimination are, according to Swiss Re, based on a misconception about why 'discrimination' is necessary for their workings. According to insurers, discrimination is a technically neutral concept:

> 'The word *discrimination* is normally associated with a negative bias (when people hear the word they tend to hear *unfair discrimination*). However, discrimination in the true sense of the word is neutral. Discrimination can equally be fair.' (Swiss Re, 2011a, p. 13, emphasis in original)

Starting from this unbiased and neutral take on discrimination, Swiss Re stated that actuarial fairness is endangered by anti-discrimination legislation, which in turn endangers the financial viability of the industry:

> 'Challenges to actuarial fairness are evidenced, for example, by pressure not to apply additional ratings for medical expenses insurance, and by the willingness on the part of legistlators to deny insurers access to genetic or other medical information. In such circumstances, the law effectively leads insurers to cross-subsidise between groups of policyholders and to put themselves at risk of anti-selection, which can lead to price increases and, ultimately, to the potential withdrawal of certain products.' (Swiss Re, 2011a, p. 13)

The insurance industry views these developments with great concern, claiming that the proliferation of anti-discrimination legislation challenges the insurer's right to underwrite. It does so by establishing a distinction between 'fair' and 'unfair' forms of discrimination:

> 'In the ongoing debate on the ability to underwrite, Swiss Re, whilst opposing unfair discrimination, supports the use of objective, relevant and reliable data for insurance rating purposes. The actuarial and data-driven basis behind differentiated prices offered to consumers ensurers fairness and competitive prices. […] Without doubt, demonstrating that long-established risk selection practices are fair is a priority for the industry.' (Swiss Re, 2011a, p. 3)

If the business is to carry on, Swiss Re claims, it should be made clear that it needs the 'long-established risk selection practices' and that these are 'actuarially fair'. In other words, the principle of actuarial fairness is put forward to defend insurance actuarial technology, which is based on making distinctions between risk groups:

> 'The ultimate aim is to set a 'just and fair premium for each insured person. This means that, taking into account the economic efficient and possible risk factors, no group would be systematically placed either at a disadvantage or given preferential treatment. All groups should be treated equally and should not be subsidizing one another.' (Thiery & Van Schoubroeck, 2006, p. 196)

Actuarial fairness is enacted here by insurers as the main principle to defend the risk selection process. However, a shift can be detected in the way the concept is enacted by insurance professionals as compared to its place in Arrow's insurance economics. First, actuarial fairness has moved from being a technical concept used to analyse *ideal* insurance markets to a principle upheld to defend discrimination and the right to underwrite, which is now even established as the responsibility of insurers themselves. Moreover, in enacting actuarial fairness as a principle ensuring the viability of the industry, the concept differs from Arrow's economics of insurance where actuarial fairness is used to describe premiums that ensure the willingness of *homo economicus* to obtain insurance policies. This is a shift in the assumptions about the behaviour of *homo economicus* and her/his demand for insurance to assumptions about adverse selection as an insurance market dynamic and the ability of insurers to supply insurance products. The risk of adverse selection is now the result of the action of a population of rational individual potential policyholders.

7.6. 'Fair, isn't it?': Insurance Products in the Era of Behaviour-based Personalisation

Developments in wearable technologies and predictive data modelling contribute to a growing interest in behaviour-based personalisation. These developments go beyond the insurance business's interest to refine their actuarially based risk categorisation. Rather, they are part of a broader interest in the personalisation of products and goods where services are increasingly focused on the behaviour and lifestyle of actors (Lucivero & Prainsack, 2015). Moreover, in insurance, they can be seen as an anticipation to further legislative action, supported by consumer interest groups, restricting the differentiation of risk group categories for which individuals are considered to have 'no control' (Rebert & Van Hoyweghen, 2015):

> 'It [The interest of insurers in tracking policyholders' behaviour, GM] comes from the background that ultimately, in the long run, insurers will be blocked from using things that people have no influence over. For example, we are not allowed to use genetic testing because you are born like that. You have no say

> in it. No matter what you eat, you have no influence at all on your genetics. So in the long run the regulator and consumer interest groups will probably shut down us using things that people have no control over. Now, the one thing people have clear control over, is their behaviour. And that is a very easy discussion to have with people to say: "You know you are doing wrong. Yes I do. Why don't you change it? I don't feel like it." Then you say: "You understand, I cannot actually reward you for that or accept you as a client. There is not much you can argue because all you have to do is act in a positive way and that solves the problem." It is something they have full control over.' (Interview, Innovation Manager, Swiss Re, Zürich, 2015-09-09)

This anticipation to further legislative restrictions to differentiate based on risk factors 'individuals do not control' is most prominent in car insurance. In this section we highlight a shift in the notion of 'fairness' in developments towards behaviour-based personalisation in insurance through a case study of a Dutch telematics car insurance product, *Fairzekering*. This product is offered by Chipin, which is a Dutch telematics technology-company that provides 'technology that can measure driving behaviour, for vehicles up to 3500 kg.' (Chipin, 2015). Although Chipin does not intend to be(come) an insurer, they developed the insurance product *Fairzekering* to prove that their technology 'works', as a showcase to convince insurers to obtain their business-to-business solutions (cf. the involvement of 'Sentiance in the *Caro*-project as a way to showcase their tracking expertise, section 6.3.2.).

The Dutch word for insurance is 'verzekering'. By putting 'fair' in *Fairzekering's* name, which resembles 'verzekering' phonetically, the notion of fairness is anchored as a defining characteristic of the insurance product. *Fairzekering* wants to make clear in its name that they 'care' about fairness. This is done so in the advertisement video for *Fairzekering* which can be found on the company's website. The advertisement, where filmed images are accompanied by animated cartoons, starts with the following statement (see figure 7.4.):



Figure 7.4.'Fairzekering EN', 00:11 (source: https://vimeo.com/113089215, reproduced with permissions from CHIPIN)

> '[O]ther peoples' bad luck, recklessness and carelessness determine how much you pay for your insurance. Even if you never cause any damage, you end up paying for people who do. At *Fairzekering*, we don't think that is fair. How badly or, more importantly, how well you drive should make a difference.' (Fairzekering, 2014, 00:01-00:24)

With this opening statement, the risk of having a car accident is 'personalised'. It is not assumed that the risk of having a car accident is derived from just 'being on the road', nor from belonging to a statistical risk group category. Other people's behaviour is what makes a car insurance premium too expensive for those who 'never cause any damage'. The fact that this is considered to be 'unfair' can be legitimised by a particular enactment of actuarial fairness. The strategy adopted by traditional insurers to define actuarial fairness by showing its opposite (i.e. 'fair vs unfair discrimination') is only partially adopted here, while at the same time an important shift is taking place. Where the traditional insurance logic still refers to discrimination between risk group categories as part of the main duty to treat every policyholder fairly, *Fairzekering* appeals to *responsible individuals* and distinguishes them from *irresponsible reckless ones.*

At the same time, the video is also used to attract 'good responsible' drivers who *deserve* a fair premium. Insurers have always tried to alter the dynamics of adverse selection, which predicts that people who are expecting to suffer more losses are more prone to obtain insurance products, into forms of self-selection that are more advantageous for insurers (McFall, 2015a). When the advertisement says they do not want to insure reckless drivers (see figure 7.5., 00:47-00:51), the

company is actually hoping that reckless drivers – who are hard to identify for insurers before any tracking has started – are themselves not interested in being insured through *Fairzekering*.[67] This process of self-selection can be seen as an opportunity for insurers to obtain a 'good quality' risk portfolio. This is done by appealing to certain values that good drivers are expected to have, or by saying that *Fairzekering* is not interested in insuring reckless drivers. This recklessness is formulated in the advertisement video as the result of an *individual choice* (see figure 7.5.):



Figure 7.5. 'Fairzekering EN', 00:50, (source: https://vimeo.com/113089215, reproduced with permission from CHIPIN)

> 'But if *you decide you want to be reckless* we are not interested in insuring you.' (Fairzekering, 2014, 00:47-00:51, emphasis added)

This way, driving behaviour is enacted as a choice, which makes drivers fully and individually responsible for the kind of driver they *want* to be. This enactment of driving behaviour as being subject to the control of the driver is important in making the fairness-claim. Without driving behaviour being enacted as being controllable, it cannot be claimed that good drivers *deserve* good premiums and discounts. This claim of 'controllability' by the insured is not present in the neoclassical microeconomics' enactment of actuarial fairness nor in the insurance industry's

[67] In a similar way, self-selection is being employed by insurers to attract women as a mechanism to avoid risk classification based on gender, which has been prohibited in the European Union since 2012 (Rebert & Van Hoyweghen, 2015). Insurance policies like *Drive like a Girl* in the UK and *Zij Rijdt beter* in the Netherlands, the latter using the same technology of Chipin, market towards women by adopting a 'feminine' lay-out. Men are also welcome in the policy: 'To "drive like a girl" refers to a safer, smoother driving style. This is why we want everyone to be proud to "drive like a girl".' (Drive Like A Girl, 2017)

enactment of fair discrimination, where the fairness of a premium is dependent on its accordance with the expected costs for insured risks.

Interested potential policyholders, then, who think of themselves as responsible drivers[68], can choose to obtain a *Fairzekering* policy. Once the *Fairzekering* policy is bought, telematics comes to the fore to distinguish between good, mediocre and bad drivers.

> 'As soon as the first monthly premium is paid, we send this thing [see figure 7.6., GM] to the policyholder, who can install it all by himself. It is extraordinary simple. […]. This thing will send data every minute such as the location of the vehicle, time, speed, the G-forces the car experiences and what the notifications are from the motor-management. All these data are sent every minute via the cell phone network to a database where all this stuff gets analysed. This analysis is done through algorithms and results finally in a driving score. […] These data are sent every minute and in the case of an 'incident', such as a speed violation, a hard breaking or a hard acceleration.' (interview, Fairzekering Manager, 2015-06-03, Antwerp, translated from Dutch)



Figure 7.6. Picture of Chipin-plug (Taken during interview, Fairzekering Manager, 2015-06-03, Gert Meyers)

On the basis of these longitudinal 'real-time' data, measured by the 'Chipin plug', a monthly personal driving score is calculated. There are three driving score categories: those who obtain a score between 70% and 100% are 'green', those scoring between 55% and 70% are 'orange', and those below 55% are 'red' (see figure 7.8.).[69] This personalised driving behaviour score can be consulted by the driver on the 'dashboard', where tips and tricks to improve the driving score can be consulted and 'incidents' from previous rides can be analysed. Advice on fuel use can also be

[68] A trope popular among insurers on the opportunities of telematics is that most of the drivers consider themselves as 'better than average' (e.g., Karp, 2012).

[69] Although drivers are addressed as individuals who each pose a personalised risk by the driving behaviour they control, the results are clustered again and visualised in three broad scoring ranges, which makes one cannot speak of a completely 'personalised' differentiation. Therefore, it would not be entirely accurate to oppose fair discrimination, which takes place between risk groups, to behaviour-based personalisation, specifically as a distinction between group-based and individual-based fairness.

found on the dashboard (see figure 7.9.). If drivers can choose to be reckless, they also can choose to do better by consulting their personalised driving scores and changing their behaviour accordingly. *Fairzekering* is not only concerned with fair prices for careful drivers, they also want to *encourage* people to drive in an environmentally friendly way, to save money by reducing fuel use, and to achieve feedback effects (see figure 7.7.) to make responsible drivers a 'truer version of themselves' (Thaler & Sunstein, 2009).



Figure 7.7.'Fairzekering EN', 00:36 (source: https://vimeo.com/113089215, reproduced with permission from CHIPIN)

Doing good and doing better is further encouraged by giving discounts to those obtaining a green or an orange score. Orange drivers are rewarded with a 10% discount but are at the same time encouraged to strive for a green score which unlocks a 35% premium discount (see figure 7.8.). Red drivers are penalised, however, by not being awarded any discounts. This is how fairness is imposed with a very specific meaning in these products, as 'behaviour-based fairness', and becomes an essential feature of the *Fairzekering* policy:

> 'By being a safe driver, you can recover 35% of your monthly premium. That's fair, isn't it?' (Fairzekering, 2014, 00:38-00:45)



Figure 7.8. Three types of drivers (source:https://fairzekering.nl/hoe-werkt-het/?_ga=1.123561868.6249601.1488803758#dashboard, reproduced with permission from CHIPIN)

Redistribution based on personalised risk scores, however, is not the only redistribution mechanism at work in the *Fairzekering* product; it works 'on top' of the traditional principles of risk classification. The premium to be paid is still dependent on the risk category to which the policyholder belongs and is set by the insurance company 'Nationale Nederlanden' (NN), the risk carrier of the *Fairzekering* insurance policies. This means that the group of *Fairzekering* policyholders makes up a very small part of the NN car insurance risk pool, which constitutes traditional forms of insurance actuarial technologies by means of redistribution between those who experience losses and those who do not.[70] The discounts granted within the *Fairzekering* risk pool to the good and mediocre drivers are financed by the difference in average losses between the *Fairzekering* risk subgroup and the broader NN car insurance risk pool. *Fairzekering* policyholders experience fewer losses than comparable policyholders with Nationale Nederlanden. This difference is the outcome of the process of self-selection (that discourages reckless drivers from taking out a *Fairzekering* policy), and the incentives that are given through the discounts to *Fairzekering* policyholders to drive more safely and achieve a better monthly score.

[70] See sections 6.4.1. and 6.5. for the ways in which the behaviour-based personalisation in *Caro* also works 'on top' of traditional insurance products.

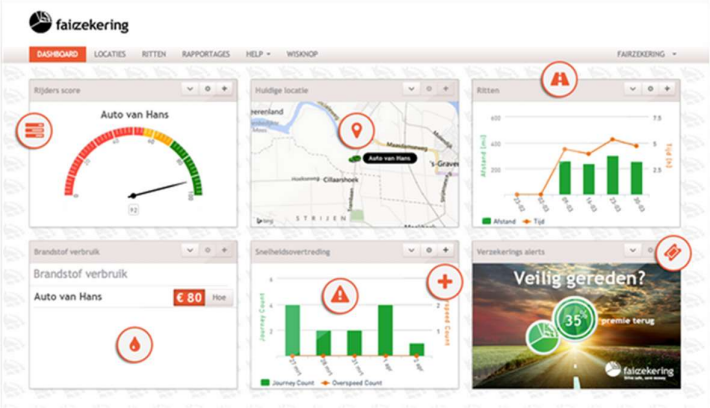


Figure 7.9. Dashboard (source: https://fairzekering.nl/hoe-werkt-het/?_ga=1.123561868.6249601.1488803758#dashboard, reproduced with permission from CHIPIN)

The awarded personalised *Fairzekering* discounts demonstrate a shift in the enactment of actuarial fairness in insurance. Behaviour-based fairness differs from the economic concept of actuarial fairness and earlier enactments of the concept in the insurance industry in that it is detached from classical ideas of 'risk'. The actors are considered to be responsible individuals who can choose and are encouraged – if needed – to act in a particular way and not people belonging to a risk category once and for all. The previous forms of risk categorisations that were legitimated with actuarial fairness, both in microeconomics as well as in insurance practices of risk selection, were based on a logic of risk and expected losses that were correlated with risk 'group' categories. In the logic of behaviour-based personalisation, fairness is founded on an explicitly moral and interactive underpinning of 'taking responsibility'. Individual drivers in *Fairzekering* are rewarded for the responsibility they take versus the recklessness of others in a continuous movement of measurement and feedback, and not for the actuarially measured risk group they belong to in the first place.

Furthermore, this logic differs from actuarial risk differentiation in that it is not enacted at the moment of obtaining an insurance product, when policyholders are classified according to the risk group they statically belong to. Rather, the *Fairzekering* fairness is enacted dynamically and continuously once the insurance policy is already obtained on the basis of the behaviour the policyholder (chooses to) display(s). While it is explicitly stated that drivers *choose* whether to drive safely or recklessly, the *Fairzekering* insurance policy has, moreover, built an incentive infrastructure, with its discounts system giving opportunities to its policyholders to permanently 'learn' on the basis of the feedback provided by the dashboard. This infrastructure enacts a specific agency of the *Fairzekering* policyholder as enabling her/him to act responsibly.

The character of individuals returns to the fore in the economic assumptions about insurance policyholders linked to the fairness enacted in behaviour-based personalisation. In our case study of *Fairzekering*, it is observed, however, that the character of policyholders is no longer enacted as being stable and neutral. When individuals are enacted to choose whether to be responsible or

reckless, and different people are assumed to act differently in comparable situations, the former set of assumptions about the economic actor, used in microeconomics, can no longer be used to predict economic action; *ceteris paribus* – 'all other things held equal' (Buchanan, 1958) – does not hold anymore. This does not mean, however, that the introduction of behaviour-based insurance products heralds a return to the role of character as understood in the 19th century fire insurance guidelines, since the character of insureds, 'honest' or 'dishonest', was attributed to different *kinds* of people (Baker, 1996, 2000).

Callon (2007a) argued that the further proliferation of interactive techno-economic networks, such as in health care and insurance markets, introduces a shift from *homo economicus version 1.0*, for which the norms are heteronomously set by others in a disciplinary environment, to *homo economicus version 2.0*, who is enacted to be autonomous, take initiative and be accountable in an interactive agencement:

> 'With the interactive model […] *Homo economicus* opens up and becomes autonomous (Barry 2001). Whether he is a producer or a consumer, he is prompted to develop projects, to take initiatives, to interact with his environments in order to reorient his actions, and to play strategic games. Finally, he is accountable for what he does.' (Callon, 2007a, p. 151)

In closely studying the *Fairzekering* case, it is demonstrated that through the device of the Chipin-plug, employing an incentive infrastructure, a 'deserving' form of fairness is enacted where the policyholder is expected to take initiative and interact with feedback. Moreover, the policyholder is assumed to be accountable for their behaviour, which is assumed to be the result of personal choice rather than the result of being a (dis)honest *kind* of person.

7.7. Conclusions

This chapter analysed two ways in which actuarial fairness, a descriptive neoclassical economic concept, is enacted in insurance practices and how these enactments are linked with changing assumptions about economic actors. First, actuarial fairness has been enacted by insurance professionals as a principle to defend the insurance technology of actuarial risk discrimination in an era of anti-discrimination legislation. Second, in contemporary behaviour-based insurance practices of personalisation, fairness is enacted as an essential feature of the insurance product, and comes with the enactment of policyholders as responsible actors in an incentivising discount-infrastructure.

Using insights from STS and its take on the performativity of economic markets allowed to study these enactments of actuarial fairness in insurance. The concept of 'enactment' was employed

in this chapter as a way to refer to the continuous and multiple work that has to be invested in making and keeping a concept, object or subject 'into being' (Law, 2004). This approach allowed to study different enactments of actuarial fairness in insurance and how these different enactments constitute different economic assumptions about, and implications for, insurance actors, without imposing one 'real' interpretation of actuarial fairness to the multiple instances where actuarial fairness is at work.

In neoclassical microeconomics, actuarial fairness is a technical concept to denote an insurance premium that is in accordance with the expected costs of the insured risk. Kenneth Arrow (1963) defines the concept in a discussion of ideal insurance markets, in the absence of moral hazard which contributes to the premium's loading. Under these circumstances, *homo economicus* – the rational utility maximiser whose main properties are stabilised – is predicted to obtain full coverage when a policy is offered with an 'actuarially fair' premium. In microeconomics, the fairness of actuarial fairness is, therefore, not related to individual expected losses nor to the control exercised by the policyholder over the insured risk, but rather to the expected costs for the insured risk.

Faced with anti-discrimination legislation, the insurance industry has, since the 1980s, invoked the principle of actuarial fairness to legitimise their actuarial insurance technologies and risk selection, by drawing a distinction between 'fair' and 'unfair' forms of discrimination. Moreover, actuarial fairness is enacted here as an essential property of what insurance does, while assumptions about the dynamics of adverse selection cause the insurance industry to claim that without of actuarially fair premiums the industry cannot function. It is stated that insurers have a responsibility to treat every individual policyholder fairly, or actuarially fairly, something which can be ensured when actuarial evidence can be provided to demonstrate that people belong to different risk group categories. Actuarial fairness moves here from being a property of insurance premiums in microeconomics under which *homo economicus* would obtain full coverage, to a necessary condition for insurance market practices to function. Fair discrimination is needed to avoid the mechanism of adverse selection, which is the result of rational behaviour by potential insurance policyholders. In recent developments involving 'behaviour-based' personalisation, which is anticipating further restrictive anti-discrimination legislation, fairness is enacted once again.

With the paradigmatic case of a Dutch car insurance product, *Fairzekering*, it was demonstrated how this new insurance product enacts behaviour-based fairness by presenting drive style as the result of a choice by the driver, who is considered to be capable of choosing to do better. The study at hand highlights a shift in the ways in which the fairness of insurance is enacted in the economic assumptions about insurance policyholders that accompany the different enactments of actuarial fairness. Where traditional insurance products assess the future policyholders' risk, they stat(ist)ically attribute them to a risk group category based on actuarial calculations. This form of actuarial risk classification and segmentation can 'stick' to people (Prainsack, 2015), in the sense that is difficult, if not impossible, to leave this category. Actuarial fairness is enacted by the

insurance industry as the need for actuarial evidence to discriminate or segment policyholders in insurance.

The recent move towards behaviour-based fairness as enacted by providing discounts on the basis of driving or lifestyle, is however performed as less 'sticky'; individuals can *choose* to do better – they are enacted as 'autonomous actors' (Callon, 2007a) – and in this way they can get rid of crude group categorizations – if they choose to act accordingly. The fairness of these products is determined by the risky behaviour the individual policyholders pose (and not by the risk of the group category they stati(sti)cally belong to).

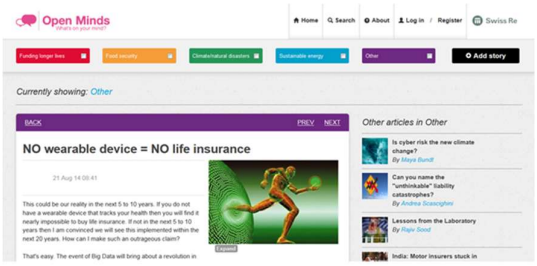
Moreover, behaviour-based personalisation in insurance products re-articulates the responsibility of the different actors involved in the insurance relationship (Baker, 2002). 'Insurance-as-we-know-it' enacts actuarial fairness by offering each policyholder a premium according to his/her group's risk and by making use of actuarially relevant data to do so; once the insurance product is obtained, chance redistributes between those who experience loss, and those who have *good luck*.

The responsibility of insurers that offer insurance products enacting behaviour-based personalisation does not stop, however, at the point of purchase. Insurers have an obligation to reward those who act responsibly in a fair way. Moreover, they have to act as a principal to incentivise all policyholders to 'take their responsibility'. Insurance policyholders, in their turn, experience increased individual responsibilities; since they are assumed to choose their behaviour, they are considered to be responsible to pose the right drive style or lifestyle. A redistribution of responsibility still takes place between the insurer and the insureds, but no longer solely based on the experience of loss (estimated for risk groups based on actuarial calculations) but based on the behaviour individuals choose to pose as well.

As being demonstrated in this chapter, the insurance practices of behaviour-based personalisation have a similar focus on the continuous management of the insured risk through a focus on the insurance policyholders' behaviour. Insurers experiment here with 'socio-technical agencements' (Callon, 2007b) by enacting 'choice architectures' in which policyholders are most likely to act responsibly. Under these circumstances, it is considered to be 'only fair' when responsible behaviour is rewarded accordingly. Behaviour-based fairness expresses new economic assumptions about actors in general and insurance policyholders in particular. The enactment of these incentivising 'agencements' in behaviour-based insurance practices might in turn have effects on new economic theories that do not assume once and for all stabilised properties of economic actors.

8. Concluding Remarks





In the introduction, I employed two images. On the one hand, I showed a blogpost written by an Innovation Manager where it was claimed that 'in the next five to ten years' it would become difficult – if not impossible – to obtain a life insurance product without accepting to be tracked through a wearable device. On the other hand, I discussed *La Clairvoyance*, a painting by René Magritte. This canvas portrays an artist painting a bird by taking an egg as model. On *La Clairvoyance* two not-yet birds can be found, namely the imagined bird-to-we (a first not-yet bird) and the egg (a second not-yet bird). The imaginative and performance labour of the artist is, in a way, comparable to the making of not-yet markets on the future of insurance and the role of Big Data therein. Yet, this labour of making future insurance markets is a tuff and uncertain labour, where social scientists investigating these developments are not able to be *clairvoyant* like Magritte's painter is.

The innovation manager of the reinsurance company Swiss Re was expecting that the 'event of Big Data' will bring a revolution to the insurance industry, and – as a consequence – it is easy to make big and even 'provocative' claims as to the future of the insurance industry. This could give the impression that studying Big Data in insurance would be a 'walk in the park'. When one is certain that and how Big Data will fundamentally change the insurance industry, it is easy to 'jump to conclusions'. For the supporters/believers in Big Data, who in general believe that Big Data is a 'revolution that will transform how we live, work and think' (Mayer-Schönberger & Cukier, 2013), this will lead to 'risk adjusted premiums' in insurance and the possibility of policyholders to adjust their risk and health behaviour guided by the right technological tools. Critical scholars remark that, indeed, Big Data will revolutionise how we live, work and think – as suggested by Mayer-Schönberger and Cukier (2013) – but they assess this not as a desirable revolution because it is expected that Big Data will increase inequality, lead to unaffordable insurance premiums, enforce practices of surveillance, and decrease the solidarity which characterises insurance (Lemke, 2013; Liukko, 2010; Lupton, 2012; Lyon, 2002, 2018; O'Neil, 2016; Peppet, 2011). The innovation manager seems to claim a clairvoyance as to the future of insurance markets, like the painter in

Magritte's work who was able to paint a bird-to-be by taking an egg as model. I do not have these clairvoyant powers as to the future of insurance. Yet, I investigate the making of different not-yet markets of future insurance practices.

I did not want to 'jump to conclusions', yet here I am. This concluding chapter does not aim to conclude and close academic and societal discussions on the importance of Big Data in insurance. It avoids 'jumping to conclusions', yet some fundamental concluding remarks are outlined here. The empirical results discussed in this dissertation need further elaboration. This chapter formulates some provocative 'take home ideas' to inspire further academic research on not-yet markets, expectation generation devices, and experiments in insurance markets, and to foster societal debates on solidarity, fairness and behaviour-based personalisation in insurance. I first go back to my pragmatist approach, and explain how this approach helped me studying the not-yet markets of Big Data and behaviour-based personalisation in insurance. Subsequently, I discuss the contribution of this research to the sociology of markets literature. I end by reflecting on how behaviour-based personalisation differs from 'insurance-as-we-know-it' and how this might introduce a different 'vision' of insurance. These conclusions are followed by 13 'take home idea' from this PhD dissertation, 13 uncontained provocations.

8.1. Investigating Not-yet Markets by Adopting a Pragmatist Approach

This dissertation displayed a sociology of the not-yet market of behaviour-based personalisation in insurance. It is a not-yet market in different ways, staging different not-yet markets and making the concluding/closing of discussions impossible. The different not-yet markets are comparable to the different birds in Magritte's paintings: Magritte is able to paint a bird-to-be (a first not-yet bird) by looking at an egg (a second not-yet bird). Likewise, in the world of future making, expectations and ongoing experimental practices constitute not-yet markets. Firstly, as Big Data gives rise to large expectations, both hopes and fears, these expectation have a not-yet character. The expectations circulating in the insurance industry, present fictional images of possible and uncertain futures which are not realised. Nevertheless, the chances of becoming real are deemed high. This upcoming future, presented in expectations, is not just any form of fictional imaginary: it is a not-yet reality. This not-yet reality of expectations as to Big Data in insurance is not self-evidently 'just out there', but has to be generated by expectation generation devices. A second major element which contributes to the not-yet status of behaviour-based personalisation in insurance, is that what behaviour-based personalisation in insurance will look like is not (yet?) stabilised. Behaviour-based personalisation is the subject of experimental practices in the insurance industry. It is not yet clear if or how behaviour-based personalisation in insurance will 'mature' into one of the main ideas of what an insurance product looks like.

In order to investigate this not-yet-market of behaviour-based personalisation in health insurance, a pragmatist approach was adopted in this research. It allows one to formulate conclusions that are not a kind of 'verdict' regarding the direction in which Big Data in insurance will develop. It is not possible to simply answer the question *whether or not* behaviour-based personalisation in insurance will lead to more or less solidarity, more or less inequality, or more or less freedom. Formulating the issue of impact of Big Data for insurance as a question of more or less solidarity, assumes that insurance in itself will stay more or less the same. My observations and conclusions are not claiming to formulate *predictions* on how insurance is going to fundamentally change. Yet, my observations are not less fundamental. They are fundamental because they show how behaviour-based personalisation offers a new way to think of 'what insurance is', 'what insurance should be', and 'how the responsibilities of insurers, policyholders, and other actors are redistributed'. Furthermore, the pragmatist approach allows for an investigation of how a not-yet insurance market is built around behaviour-based personalisation.

Throughout the three empirical parts of this dissertation – focusing on expectations as to, experiments with, and consequences of behaviour-based personalisation in insurance – the pragmatist approach enabled the observation of developments in the insurance industry which may seem to be at first a bit superfluous, but may reconfigure what to focus on in the future investigation of insurance practices. It is important to look for sites and devices where not everything is stabilised (yet?). This requires one to shift/move the attention away from the most obvious places where Big Data and expectations as to Big Data are expected to be, towards 'surprising' (Tavory & Timmermans, 2014) sites of investigation, such as blogpost platforms and business conferences, and follow an experimental detour to practices of behaviour-based personalisation in car insurance. this enables to observe, through the investigation of not-yet markets, how particularities of future (insurance) markets come into being.

Through the adopted pragmatist approach, it is possible to observe specificities of behaviour-based personalisation in insurance that go beyond 'essentialist'/conservative conceptions of what insurance products are and should be. Investigating experimental practices of behaviour-based personalisation in car insurance, offered a glimpse of future insurance markets, and shows future insurance markets 'in-the-making', taking into consideration that success is not assured. Keeping an eye on not-yet markets is crucial to better understand shifts in the ways we understand what insurance is all about. Or, as the 'Futurist' David Smith, CEO of GFF[71] formulated it during the 2016 *Internet of Insurance Conference*: 'First we do things differently, then we do different things' (field notes, *Internet of Insurance* conference, London, June 13, 2016). It is important to investigate

[71] GFF, which stands for 'Global Futures and Foresight' is a consultancy firm focusing on developing 'views of the future to help clients embrace change with more certainty, thereby releasing the full power of their creativity and innovation'. (https://www.thegff.com/Groups/37150/Global_Futures_and/About_Us/About_Us.aspx).

where and how insurance is not only done (slightly) different, but becomes something ('entirely'?) different.

In this light, chapter 3 presented an 'expectation generation device' to show that in order to make the not-yet reality of expectation on the future of insurance markets 'live', a lot of devising work has to be done. In chapter 4, the way in which the expectations as to the not-yet status of Big Data and behaviour-based personalisation in insurance were capitalised through the business of business conferences, was analysed. Behaviour-based personalisation in insurance is not yet there, but 'definitely arriving', it is claimed. Therefore, the problematisation continues, it is paramount to 'act now', before it is too late and insurers are not disrupting the market but are being disrupted by it. 'Acting now' and learning what to do can be done by attending business conferences and getting in touch with the right insurance professionals which are to be found at these business conferences, according to the business conference organisations. It is important to continue investigating the expectations as to not-yet markets, in insurance and beyond, precisely because it is not clear (yet?) where, when and how these markets will be stabilised.

The detour towards behaviour-based personalisation in car UBI, made by the insurance industry itself, was followed. Following this detour was made possible through my pragmatist approach. Car insurance is considered to be a safer and less sensitive site of experimentation than health insurance. Therefore, it allows to test and experiment with some forms of behaviour-based personalisation in insurance. The experimentation practices can be seen as a search for new ways of 'knowing markets'. Chapters 5, 6, and 7 delved into the experimental practices of behaviour-based personalisation in car insurance products. In chapter 6, the 'drive style study', an experiment which provided a coaching system towards a safer drive style, making use of smartphone technology, was analysed. Chapter 7 showed, based on the case study of *Fairzekering*, how the idea of 'fairness' is anchored on behaviour-based personalisation in insurance and how this enactment of behaviour-based personalisation in insurance as fair constitutes a shift in what the fairness of insurance is.

If I would not have adopted a pragmatist approach, and formulated a research question asking whether or not behaviour-based personalisation is to be found in contemporary health insurance practices, I would have responded with a disappointing 'Not in Belgium'. The strength of the pragmatist approach in these case studies is the refusal to strongly impose research questions or concepts to the empirical field. I followed the experimental detour towards car insurance, I investigated the *Caro* rijstijlstudie to investigate the collaboration between partners (even when the experiment was not 'successful' in terms of delivering 'technical proof'), and I investigated how different forms of fairness are enacted in behaviour-based personalisation.

It is wrong to assume that as long as behaviour-based personalisation in health insurance has a not-yet status, nothing is 'really' going on. The expectations as to, and experiments with, behaviour-based personalisation in insurance create a discursive space in which future insurance

markets come into being. It is important to investigate, through the study of not-yet markets, the emergence of a discursive space of possibilities. The possible future directions of insurance markets expressed in expectations as to the future of insurance markets or enacted in experimental practices of behaviour-based personalisation trigger the sociological imagination (Mills, 1959). It is shown that other worlds/markets are possible, while it is clear from the start that not every possible future can 'work' (Foucault, 1971). One is confronted with neither radical innovation nor business-as-usual. Not every not-yet market is imagined, not every not-yet market is invested in through practices of experimentation, not every not-yet market is realised.

8.2. Contribution to the Sociology of Markets Literature

Throughout this PhD research, the pragmatist economic sociology (McFall, 2009) was mobilised to investigate the not-yet market of behaviour-based personalisation in (health) insurance. During the last two decades – roughly since the publication of Callon's edited volume *The Laws of the market* in 1998 – this pragmatist sociology of economic markets has focused on the constructedness of markets (Garcia-Parpet, 2007), the heterogeneity of markets (Callon, 1998b), the performativity of economic knowledge production and market (research) practices (Callon, 2007b; Lezaun, 2007; Mackenzie, 2006; Muniesa, 2014; Muniesa & Callon, 2007), the contribution of devices and devising in the constitution of markets (McFall, 2015a; Muniesa et al., 2007), the importance of expectations as to the future of markets (Beckert, 2016; Borup et al., 2006; Esposito, 2011; Pollock & Williams, 2010), and the constitution of economic actors through market(ing) practices (Callon, 2007a, 2007b). This PhD research contributes to this literature(s) in several ways.

Firstly, this PhD research combined the sociology of market devices (Muniesa et al., 2007) with the sociology of expectations (Borup et al., 2006), and more particularly the work of Jens Beckert (2013, 2016). Expectations as to the future of (insurance) markets have an important performative role in the enactment of these markets (Beckert, 2016; Esposito, 2007, 2013). Yet, these expectations do not come out of nowhere, they have to be generated (Latour, 1987). Expectations as to the future of (insurance) markets are generated by what I call 'expectation generation devices'. This concept was coined because it allows to study how the devising of the generation of expectations as to the future of (insurance) markets, contributes to the enactment of future (insurance) markets, *as well as* contributes to the enactment of markets of future making as could be seen in chapter 4 on the business of business conferences. Moreover, expectation generation devices also contribute to making expectations 'live' rather than dead. Expectations have to be made and have to be made 'live'. In his essay *The Will to believe* William James characterizes hypotheses as either live or dead. A hypothesis can be said to be alive when it 'appeal[s] as a *real possibility* to him to whom it is proposed' (James, 1919, p. 2, emphasis added). In short, a

hypothesis is alive when it is taken into account. Likewise, expectations as to the future of (insurance) markets are not all considered equally 'true', 'relevant', 'powerful'. By employing the concept of expectation generation devices it is possible to observe the devising work that is needed before expectations as to the future of markets come to be, become 'live' and have effects on contemporary decisions. Some expectations circulate heavily within and beyond expectation generation devices, while others do not 'move'.

This brings me to my second contribution to the research literature. Expectations as to the future are 'ontologically fictional' (Beckert, 2016) because the future is uncertain. In economic markets, several 'instruments of imagination' (Beckert, 2016) are employed to produce actionable expectations as to the future of (insurance) markets, such as forecasting and scenario building. Most research into 'instruments of imagination' focuses on the ways in which expectations as to the future, while being ontologically fictional, are *made to appear non-fictional* to gain credibility and seriousness (Beckert, 2013, 2016; Soneryd & Amelung, 2016; Urry, 2016). Likewise, previous scholarship on market devices has focused mainly on technologies of calculation which construct credibility, seriousness, and 'objectivity' (Callon & Muniesa, 2005; Mackenzie, 2006, 2008, 2014; Roscoe, 2016; Van Hoyweghen, 2014).[72] The concept of objectivity is associated with 'a view from nowhere', impartiality, certainty, and matters of fact not affected by distraction like emotions (Daston & Galison, 2010; Jasanoff, 2017; Porter, 1995). My research on sites and devices of expectation generation has shown that expectations circulating as to the future of insurance markets and the role of new digital technologies therein are also often *explicitly fictional*. The importance of 'stories' is widely recognised because they inspire actors to act and prepare for the future. Stories 'move' their audience, to employ Latour's characterisation of the mode of fiction (Latour, 2012). In some situations, fictional expectations as to the future of insurance contribute to the enactment of future insurance markets *insofar as* they have the capacity of 'moving' relevant actors by being *explicitly* fictional, rather than *despite* expectations being ontologically fictional.

Thirdly, this PhD research contributed to the sociology of insurance by combining the sociology of economic markets with the governmentality approach in the sociology of insurance. This allowed the conceptualisation of insurance products beyond prices and pricing. The governmentality approach in the sociology of insurance literature (Baker, 1996, 2000, 2002, 2011; Ewald, 1986, 1991, 2002, 2012b; O'Malley, 2008; O'Malley & Roberts, 2014) draws attention to ways in which insurance relationships reconfigure responsibilities and enact actors. Research on the consequences of personalisation in insurance practices as a result of employing new types of information, and new technologies, has focused on the personalisation of prices and practices of underwriting and the pricing of risk (McFall, 2015b; Van Hoyweghen & Horstman, 2009). Pricing

[72] The risk of overemphasizing the importance of technologies of calculation has already been addressed by McFall (2011, 2015a) by showing the 'limits of statistics'. Also, the morality in insurance advertising is nicely shown in the research of Lehtonen (2014, 2017a); Lehtonen and Liukko (2010).

practices are, indeed, the first place where the consequences of Big Data in insurance are to be expected. This is due to the very particular dominant conception of what an insurance product 'in essence' is, namely a price paid for the promise of financial compensation in case the policyholder experiences a loss linked to the insured risk.[73] By employing the sociology of markets as well as the Foucauldian sociology of insurance literatures, I was able to observe a reconfiguration of what insurance is (considered to be), through the adoption of behaviour-based personalisation, which is not *primarily* focused on prices and pricing. With the enactment of behaviour-based personalisation in insurance comes the enactment of new responsibilities and moralities, as can be found in behaviour-based personalisation with its idea of behaviour-based fairness. This point will be further elaborated in the next section.

Finally, studying the generation and role of expectations is specifically relevant in the insurance industry. Although the insurance industry traditionally makes use of historic data to assess uncertainty and turn it into calculable risk that can be prized, it has a deep interest in properties of future insurance markets. Insurance companies hire 'foresight officers' to map the risk landscape of tomorrow, try to observe the impact of emerging technologies (Lehtonen, 2017c; Swiss Re, 2013a), have a growing interest in predictive and personalising technologies, whether these are genetic or lifestyle technologies, and are both afraid of and excited towards new players in the insurance industry. In building expectations of future insurance markets and preparing for future insurance markets, insurers are envisioning and producing 'not-yet markets'. This makes the analysis of not-yet markets especially relevant/revealing because the insurance industry deals with the future more explicitly.

8.3. Behaviour-based personalisation and the emergence of a 'different' vision of insurance

The struggles in the making of behaviour-based personalisation in insurance point out that insurance products are not just like any other commodity. Insurance is a technology, relying ever since on big volumes of data, and at the same time attached to strong sensitivities.[74] Insurance products are the result of an 'orchestration of technologies and sentiment':

[73] This idea is prototypically present in Scott Peppet (2011) in his analysis of the unraveling of privacy (see section 1.2.3.).

[74] Insurance coverage is considered to be an 'entitlement' in markets traditionally characterised by extensive social insurance coverage (Swiss Re, 2011a). Also, for private life insurance markets to become possible, the idea that it should be allowed to turn the risk of dying into something 'economical' should be accepted first. In the 19th century, life insurance was considered to be a gamble against death (McFall, 2015a; Zelizer, 1978). Life and the risk of dying is economised here (Çaliskan & Callon, 2009, 2010), and hereby disentangled (Callon, 1998b) from the moral sphere of 'what money can't buy'. At the same time, research by Lehtonen

> 'The trick is all in the orchestration of technique and sentiment; in the way sentiment is put into relation with products and the way relations are transformed into sentiment for products. In the move from saving for death and borrowing bare subsistence in the nineteenth century to saving for life and borrowing for just about anything in the late twentieth century, it was these relations between people and things that were continually reworked and reconfigured.' (McFall, 2015a, p. 7)

The emergence of Big Data and behaviour-based personalisation in insurance sets the stage for a new orchestration of technologies and sentiment, shifting what insurance products are (considered to be), and *to what end* they are enacted.

8.3.1. Behaviour-based Personalisation and the Control/no-control Logic

Insurance products enacting behaviour-based personalisation are developed in a discursive space in which certain forms of personalisation are considered to be legitimate, while others are absolutely considered to be 'not done'. These sensitivities contributed to the 'experimental detour' that was made by the insurance industry to enact behaviour-based personalisation in car insurance products before moving to the more delicate health insurance products. This section reflects on how behaviour-based personalisation starts and departs from the control/no-control logic which is paramount in the legitimation, and enactment of forms of personalisation/differentiation in insurance. This logic considers it to be legitimate to differentiate between individuals when the differentiation is enacted on the basis of risk factors 'under the control' of individuals (see section 5.2.)

Behaviour-based personalisation in insurance differs from insurance-as-we-know-it in different ways: its locus and moment depart from prices and pricing, its object shifts from belonging to a risk group to posing risky behaviour, and, through the growing of behavioural economics, the dominance of the neoclassical homo economicus is challenged. Most research on the ways in which individuals are categorised into risk groups has been conducted to better understand the link between being categorised in a risk group and the premium that has to be paid for an insurance policy (Abraham, 1985; Bowker & Star, 2000; Fourcade & Healy, 2013; Joly et al., 2013; Liukko, 2010). This shows that in insurance-as-we-know-it both the locus and the moment of categorisation/personalisation is to be found in the price and pricing of insurance policies. The pricing mechanisms and paying the premium are gateways to insurance coverage *before* the insurance contract goes into force and individuals become policyholders belonging to a risk group.

shows that the buying of private health insurance for children was heavily presented as a 'moral responsibility' in Finland (lehtonen, 2017a; Lehtonen & Liukko, 2010).

The instances of behaviour-based personalisation investigated in this dissertation show that behaviour-based personalisation is mostly enacted as discounts and services detached from price and pricing. It is detached from insurance premiums for several reasons. It is, for instance, currently impossible to provide enough actuarial evidence to link measured behaviour to differential risks (Case et al., 2015), and insurers are figuring out how to make sure 'no one is punished' through personalisation (see section 6.4.). This means that the discounts and services linked to forms of behaviour-based personalisation are officially not linked to insurance premiums. Furthermore, behaviour-based personalisation is enacted once policyholders have been priced. The visualisation of behaviour takes place once an insurance policy is obtained, as has been made clear in chapter 6 and 7. This differs strongly from insurance-as-we-know-it where the process of (risk) differentiation coincides with the process of obtaining an insurance policy and an associated insurance premium. Although safe driving scores mean customers save on driving through discounts, these are mostly enacted *besides* the official premium. Behaviour-based personalisation is currently not replacing traditional insurance products, but it is mainly enacted as a *topping* to insurance products, pricings and prices. These observations do not imply that behaviour-based personalisation will stay, in future insurance markets, 'only' a topping of more traditional insurance product. What I want to highlight here is that behaviour-based personalisation is not about prices and pricing *in the first place*. This coincides with the changing object of insurance, which shifts from the risk a policyholder 'belongs' to, to the behaviour 'posed' by a policyholder.

A second observed difference between the instances of behaviour-based personalisation and insurance-as-we-know-it, is the logic employed to enact it. The classification practices in insurance-as-we-know-it are focused on attributing people to risk groups 'they belong to'. People 'belong' to risk groups based on some characteristics they (or the risk they want to insure, cf. car, house,…) bear. The logic of risk assumes that individuals belong to a risk group and that this bearing of a risk – which is unknown at the individual level but known at the group level – and the 'epistemological veil of ignorance' that comes with it constitutes a basis for redistribution through chance solidarity. People belong to a risk group category, and this risk 'sticks' to people (Prainsack, 2015). This holds certainly for the 'special' group of categories protected by anti-discrimination legislation, such as race, genetics, and gender.

The practices of behaviour-based personalisation in insurance enact a logic that differs from the logic of risk (Ewald, 1991). They have a different 'object' of personalisation, viz. the behaviour policyholders pose. This means that the recent move towards behaviour-based personalisation as enacted by providing discounts on the basis of drive style or health behaviour, is however performed as less 'sticky'; individuals can *choose* to do better – they are enacted as 'autonomous actors' (Callon, 2007a) – and in this way they can get rid of crude group categorisations – if they choose to act accordingly.

So far the control/no-control logic starts from assumptions as to 'strong', rational, economic actors. In his reading of Gary Becker's work, Michel Foucault characterises this strong economic actor, 'homo economicus', as the one who accepts reality and is capable of systematically taking into account changes in his/her environment:

> 'L'*homo oeconomicus*, c'est celui qui accepte la réalité. La conduite rationnelle, c'est toute conduite qui est sensible à des modifications dans les variables du milieu et qui y répond de façon non aléatoire, de façon donc systématique, et l'économie va donc pouvoir se définir comme la science de la systématicité des réponses aux variable du milieu.' (Foucault, 2004a, p. 273, emphasis in original)

Yet, in the enactment of behaviour-based personalisation, a different actor is enacted, which has to be 'helped helping himself' (Tritch, 2007). The economic actor enacted by behaviour-based personalisation is 'governable' (Foucault, 2004a),[75] and has strong similarities with the actor described in behavioural economics. Behavioural economics is the economic sub-discipline that, since the 1970s, has been investigating actual decision-making situations without imposing expectations as to the rationality of behaviour (Thaler, 2015). According to behavioural economics, environmental properties are ignored by neoclassical microeconomic models, by 'holding all other things equal' (Buchanan, 1958) and due to the specific assumptions on homo economicus. Properties that do not fit in these microeconomic models are portrayed as 'supposedly irrelevant factors', or SIFs (Thaler, 2015).

These SIFs are taken into consideration in behavioural economics to better understand decision making processes and to enable acting upon the ways in which 'real' people, consumers, and insurance policyholders are 'predictably irrational' (Ariely, 2009). The re-articulation of assumptions on the capability of economic actors to make individually rational choices is the main focus of developments in behavioural economics (Yeung, 2012, 2016). Human actors are no longer assumed to be capable of making rational decisions due to constraints present in the real world of decision making (Berndt, 2015; Frerichs, 2011). Although actions cannot be predicted through assumptions on the rationality of actors, behavioural economics ensures that actors can be made capable of acting as rational decision makers, 'when placed in the right environment' (Thaler, 2015; Thaler & Sunstein, 2009). Actors can be 'nudged' towards the 'right' direction by cleverly designed 'choice architectures' (Thaler & Sunstein, 2009). Behaviour-based personalisation is nudging

[75] Foucault remarks that the strong, rational homo economicus is 'governable'. The homo economicus of neoclassical economics can be governed through incentives, whereas the actor in behavioural economics can *also* be governed through nudges (which, according to neoclassical economics do not 'really' change the financial incentives of a certain situation (Thaler & Sunstein, 2009)).

policyholders towards the right behaviour by placing them in (cleverly designed) choice architectures.

The introduction/enactment of the actor of behavioural economics into behaviour-based personalisation slightly departs from the control/no-control logic. Behaviour-based personalisation in insurance is focused on the behaviour posed by policyholders, and consists of personalisation in the form of services and discounts not primarily linked to insurance premiums, while aiming at guiding policyholders towards the right behaviour. This has consequences for the redevising of responsibility in insurance products. Insurance-as-we-know-it is portrayed as a responsibility transfer from insurance customers, individuals who are confronted with uncertainty, to insurance providers, who are confronted with manageable risk through 'aggregation' (Baker, 2002). From the moment the insurance contract starts, the insured is freed from the financial consequences of bad luck and the insurer has the responsibility to bare these financial consequences. Moral hazard is considered to be a 'bug' of the insurance contract. When behaviour-based personalisation and the possibilities of coaching individuals towards good and healthy behaviour are adopted, the insured is still encouraged to behave responsibly while the insurer not only has a financial responsibility but also the responsibility of steering and coaching its insureds towards the right behaviour. This way, insurance becomes more than a 'financial' instrument/intermediary. It becomes a service that takes *care* of its policyholders.

Individuals are not made fully responsible for their behaviour, as was the case in the 'binary' control/no-control logic. This is done through elements of behavioural economics. Behavioural economics focuses on the 'weaknesses' of economic actors. These are 'weaknesses' because they make that the behaviour of 'humans' deviates from the behaviour of *Homo economicus*, which is still considered to be posing the 'right' behaviour (Thaler, 2015). Individuals are not acting like *homo economicus*, the rational utility-maximiser central in neoclassical micro-economics. Economic actors are 'humans, not econs' (Sunstein, 2015; Thaler, 2015). At first sight, this could be considered an argument *against* behaviour-based personalisation because individuals are not so much in control over their behaviour. Yet, behavioural economics contends that individuals can be made to behave rationally (which can be read as 'healthy' and 'safe'), when 'placed in the right environment'. This implies that individuals such as insurance policyholders can be steered in the right – low risk – direction'. Behaviour-based personalisation enacts through nudges, discounts, drive style tips, step count goals, etc., responsible agents. Through the enactment of behaviour-based personalisation, the actor central in behavioural economics is performed as well. The tools/insights of behavioural economics allow insurance providers to 'take care' of their policyholders, while at the same time making them more responsible. Through smart 'choice architectures', the 'human' behaviour of policyholders can be turned into responsible 'econ' actions.

The emergence of behaviour-based personalisation has also performative effects on the discipline of behavioural economics. Behavioural economics has chosen to study first and foremost situations in which ordinary people, 'humans', have difficulties making the right decisions and nudges might be helpful. Humans have most difficulties making rational choices when the benefits and costs of a choice are separated over time, when choices are technically difficult, when choices are to be made infrequently, and when no direct feedback is given on choices. (Thaler & Sunstein, 2009). These situations lead to 'fraught choices', easily recognizable in insurance:

> 'Notice first that many insurance products have all of the fraught features that we have sketched. The benefits from holding the insurance are delayed, the probability of having a claim is hard to analyse, consumers do not get useful feedback on whether they are getting a good return on their insurance purchases, and the mapping from what they are buying to what they are getting can be ambiguous.' (Thaler & Sunstein, 2009, p. 84)

The original interest from behavioural economics in insurance was mainly focused on the obtaining of insurance as a 'fraught choice'. Buying insurance is a difficult, infrequent choice where benefits and costs are separated over time with less opportunity to learn from feedback (Thaler & Sunstein, 2009). Through the enactment of behaviour-based personalisation, insurance providers make use of behavioural economics principles to turn insurance into something continuous, well designed, and full of feedback mechanisms which urges the discipline of behavioural economics to adjust its work on insurance.

8.3.2. The End of Solidarity and the Ends of Insurance?

Insurance-as-we-know-it is based on the technology of risk and the paradigm of solidarity (Ewald, 1991, 2002). The openness to elements of risk that are 'in our control', yet nudgeable, might lead to a change in the paradigm of insurance. Ewald (2002) speculated that, at the rise of the 21st century, the emergence of a new paradigm based on 'the precaution principle', could be witnessed:

> 'We may be in the midst of a paradigm change concerning society's obligations for the physical security of its members and our shared political philosophy of security. The nineteenth century saw the dominance of a paradigm of responsibility. In the twentieth century this was fundamentally transformed: the prevailing paradigm was one of solidarity. Perhaps, at the beginnings of a new century, we are seeing the birth of a new paradigm, on that has not yet found its true name, but is presaged by various signs.' (Ewald, 2002, p. 273)

The precaution principle, which Ewald developed in 2002, can be seen as a strict and negative obligation to take all preventative actions imaginable in order not to be confronted with the disadvantageous side of a risk.[76] Ten years later he saw a renewed, but 'positive', opportunity for such change of insurantial paradigm:

> 'La thèse que nous voudrions défendre est que la notion de « donnée » au sens de Data ou Big Data désigne elle aussi une forme de rapport savoir-pouvoir. La technologie des « données » articule un mode de production de savoir (dont nous avons qu'il se distingue de celui de du risque) sur des relations de pouvoir (qui ne sont pas non plus de l'ordre des mutualisations assurancielles). Je voudrais défendre la thèse que la « donnée » est, dans le monde qui vient, une sorte d'analogue à ce qu'a été le « risque » dans le monde précédent. La thèse n'est donc pas, ou pas seulement, que le monde des données viendrait renforcer le monde du risque, en compléter les lacunes, le rendre plus sûr et plus performant, mais plutôt qu'il s'agit de deux mondes hétérogènes qui seraient moins dans des relations de complétement que de contestation et de subsitution.' (Ewald, 2012a, p. 75)

It might be expected that in insurance a 'window of opportunity' can be observed regarding the adoption of behaviour-based personalisation. Firstly because there is a 'technological' opportunity. And secondly, there is, in the 'insurantial imaginary', an openness towards further forms of personalisation based on the behaviour of policyholders, which is assumed to be in their control. This has also consequences for the importance of insurance solidarity.

One of the returning threats attributed to Big Data and personalisation in insurance was that it would endanger the fundament of insurance: solidarity. This was also expressed on *Open Minds*, the blogpost platform discussed in chapter 4.

> 'Remember the rather noble thought behind insurance: You pay to a collective pool of money. A few get compensated from this pool. Essentially, you don't hope it is you (since it means you will have suffered a loss). Hold that thought. The many pay to the unfortunate few....' (Global head of costing model and tool validation, Swiss Re, *Open Minds* story n° 58, 2013-04-18)

The author of the blog continues by expressing the fear that premiums that are too individualised, enabled by Big Data technologies, might endanger 'the rather noble thought behind insurance' and decrease insurance solidarity. Yet, should new practices in insurance, the shifts of the role of

[76] The emergence of such precautionary logic was further discussed and developed by, among others, Louise Amoore (2013) who observes a possibilistic stance towards risk which goes beyond probability.

insurance, and the roles and responsibilities of insurers and insureds be *evaluated* based on the 'noble thought behind insurance'? Doing this holds the risk of essentialising what insurance is and should be. As stated before, formulating the issue of the impact of Big Data for insurance as a question of more or less solidarity assumes that insurance in itself will stay more or less the same. This attitude is not very helpful in investigating the developments of Big Data in insurance. A shift can be observed in the importance of solidarity and the emergence of fairness as a guiding principle for defining what insurance is and should be. Instead of asking whether or not Big Data will lead to *the end of* insurance solidarity, the question should be reformulated and it should be asked *to what end* insurance is considered to be important.

It is very important to first remark here that – just because behaviour-based personalisation is enacted in insurance – the era of solidarity in insurance is not over just yet. Ewald observes that the institution of insurance has a viscosity:

> 'Les systèmes de protection assuranciels, en raison de leur fonction d'intermédiation entre les différents niveaux (économique, politique, social, scientifique, idéologique, moral) de l'organisation social évoluent selon un style très particulier. D'un côté, *ils ont une très forte viscosité*. Comme on dit, ils one fonction « stabilisatrice », ils amortissent les chocs, lissent les événements dans le temps, empêchent les ruptures et les révolutions. Mais d'un autre côté, et pour les mêmes raisons, on constate des transformations permanentes.' (Ewald, 2012a, p. 21, emphasis added)

This viscosity contributes to the fact that 'the event of Big Data' will not disrupt 'insurance-as-we-know-it' all at once. Moreover, like Foucault (1975) observes on the emergence of disciplinary power versus sovereign power, and Hardt and Negri (2000) claim on the importance of post-fordist versus fordist labour, the (potential) emergence of a new 'insurance paradigm' will not fully *replace* existing insurance practices. First of all, as has been demonstrated in chapters 6 and 7, the investigated forms of behaviour-based personalisation work 'on top' of more traditional insurance products of which the premiums are calculated according to the established underwriting practices of attributing individuals to risk groups. This makes that risk based redistribution through (chance and subsidising risk) solidarity stays at work in insurance policies, while behaviour-based personalisation is enacted 'as a topping'.

Insurance-as-we-know-it generates different forms of solidarity (Lehtonen & Liukko, 2011, 2015; Liukko, 2010). These forms of solidarity do not exclude each other and are at work concomitantly and are dependent on the knowledge available on a risk and a 'decision' on what differences should make a difference. First of all, there is chance solidarity, taking place *within* risk groups. Chance solidarity takes place when, as a result of the chance related to an insured risk,

policyholders who experience a loss related to the insured risk will receive pay-outs that are financed by the premiums of those policyholders who do not experience a loss related to the insured risk. According to some, this form of solidarity is the purest form of insurance solidarity (Landes, 2015). The second major form of insurance solidarity is subsidising solidarity, taking place *between* risk groups. Here, one *distinguishable* group subsidises (parts of) the costs of another group. This form of solidarity can be constituted between risk groups (subsidising risk solidarity) or between income groups (subsidising income solidarity – mostly in social insurance and mutuals). In chapter 7, the discount infrastructure of *Fairzekering* was discussed. Through this discount infrastructure based on drive style score (the behaviour policyholders pose), a new redistribution mechanism is constituted on top of the traditional redistribution of risk-based solidarity. New communities are constituted based on the behaviour posed by policyholders, assuming a different logic. In risk-based insurance, redistribution takes place from the moment the risk is 'expressed' through the experience of loss-events (such as car accidents, doctor's visits, surgeries, etc.). Behaviour-based personalisation constitutes redistribution independent of losses taking place. Even in a period where people do not experience losses for the experienced risk, redistribution based on the behaviour posed by policyholders takes place. Hence, while behaviour-based personalisation enacted does not 'get rid' of risk based solidarity, it does constitute new forms of redistribution, and new (behavioural) communities, yet to a different *end*.

The developments in behaviour-based personalisation contribute to a shift as to 'to what end' insurance should be functioning, namely a very particular form of fairness. Fairness is a hard to investigate concept as it is elusive and used by multiple societal actors and scientific disciplines in multiple ways.[77] Even in the field of insurance, different conceptions/enactments of (actuarial) fairness can be found.

In the field of Critical Data Studies, the concept of algorithmic fairness is developed to point at forms of unfairness and injustice when algorithms reproduce existing forms of unfairness due to the data that are fed into the algorithm (O'Neil, 2016, 2017; Veale & Binns, 2017):

> 'Algorithmic fairness is an interdisciplinary research field concerned with the various ways that algorithms may perpetuate or reinforce unfair legacies of our history, and how we might modify the algorithms or systems they are used in to prevent this.' (Loftus, 2018)

[77] Fairness is one of the trickiest concepts in political philosophy, seriously affected by John Rawls' Rawls (1972) definition of 'justice as fairness'. 'Fairness' does not even have a full Wikipedia page. A 'fairness'-query on Wikipedia only leads to a 'disambiguation'-page – mainly making suggestions towards justice-linked keywords. This disambiguation makes it only all the more fuzzy, and means attributing a fixed meaning to 'fairness' is sheer hopeless.

This conception of algorithmic fairness is employed to focus on the problem of unobserved confounders, variables that both influence the independent and dependent variables. As has been showed in chapter 5, insurance professionals mentioned that the Gender Directive – preventing gender characteristics to be used of differentiating premiums in insurance – led to an openness for car telematics:

> 'The gender directive gave telematics insurance products an added push. Since insurers are no longer able to differentiate by gender in their rating – and previously gender had quite an influence on the premium charged – telematics offers the opportunity to see how someone really drives. *Hence, you get products now that are designed to reward better drivers, regardless of their gender. The likelihood is that, certainly at the younger end, more of the better drivers will be female*.' (Mike Arrey in: Munich Re, 2015, p. 29, emphasis added)

This issue urges for serious reflections on the *ends* of insurance: what is it and what should it be? To what end is insurance there? The discourse on algorithmic fairness focuses on the causal structure of the world as a basis for the constitution of fairness:

> 'Any definition of fairness that does not incorporate the causal structure of the world may break down and possibly increase the amount of unfairness rather than decrease it.' (Loftus, 2018)

The emerging literature on algorithmic fairness focuses on the ways in which algorithms are learning from datasets that are wrong and therefore unfair. As has been showed in chapter 7, the enactment of behaviour-based personalisation also comes with a conception of behaviour-based fairness. This conception of behaviour-based fairness can be used to reflect on the ends of insurance in an era of Big Data technologies and behaviour-based personalisation in insurance: to what end should insurance markets be installed if they would not exist? Behaviour-based fairness is employed to define what insurance 'is all about' and departs from the risk-based solidarity paradigm. Offering group-based insurance products is seen as 'unfair' to those posing good, healthy, low-risk behaviour. This makes clear that the goal of insurance should be to treat policyholders fairly by offering them insurance products and services adjusted to the behaviour they pose, and indemnify policyholders when they face bad luck. How this enactment of fairness will unfold in future practices of behaviour-based personalisation in health insurance, is an issue for further investigation.

8.4. When life gives you lemons…

Before moving to the 'take home ideas' of this PhD research, I want to draw the attention to a job position at an insurance industry 'disrupter'. The start-up insurance provider Lemonade[78] has hired the renowned behavioural economist Dan Ariely as 'Chief Behavioural Officer' (CBO) to regain trust in insurance by designing insurance products that do not have the 'conflicts of interest' that are built in 'old insurance':

> 'Imagine you wanted to create a system that would get the worst out of people. What would you do? You would start by getting people to give you their money, and then you would promise to give them things back later, when bad things happen to them, but when something bad happens, you would start fighting them. Plus, you will show them that you don't trust them, and you will have extra small print, and you would say we don't cover this and we don't cover this and we don't cover that. … Sadly, this is where the insurance industry is at right now. Lemonade is one, I think very promising, way to solve that problem.' (Ariely, 2016)

Lemonade is a start-up company offering renters and home insurance coverage, and has designed insurance products 'without the conflicts of interest' proper to 'insurance-as-we-know-it'. To get rid of the conflicts of interest, Lemonade has adopted the 'give-back principle'. In 'insurance-as-we-know-it', every sum not paid out in claims, is, according to Lemonade (2016), less profit for the insurance provider. Lemonade takes a flat fee of 20% for covering the costs and profits of the company. The remaining 80% are reserved for paying out claims. If there are leftovers from this reserve, the money goes to non-profit organisations selected by the policyholders. By employing this 'give-back principle', policyholders are less inclined to commit 'fraud' and claim too easily insurance money, according to the behavioural economic expertise of CBO Dan Ariely (2009, p. 223).[79] If the 80% of the premium reserved for the paying of claims does not suffice, Lemonade's reinsurer Lloyd's of London jumps in, which makes that Lemonade has no incentive whatsoever not to pay out claims. 'Instant everything, Killer Prices. Big Heart.' This tagline is used to summarize Lemonade's promotalk. They even urge to 'forget everything you know about insurance' (see figure 8.1.)

[78] The name 'Lemonade' makes insurance scholars think of George Akerlof's article 'the market for "lemons"' on the role of information asymmetries in insurance markets (Akerlof, 1970).
[79] A comparable design is adopted by the German peer-to-peer insurance provider 'Friendsurance', which gives a part of the premium money not paid out in claims, back to its customers (Friendsurance, 2015).



Figure 8.1. https://www.lemonade.com/#

This PhD research has shown that it is very important not to forget everything you know about insurance because radical *disruptive* innovation cannot take place 'in vacuo' (James, 1919, p. 190). Even Lemonade is reinsured by Lloyd's of London – one of the oldest and renowned traditional insurance players – and is eager to assure they abide to all the quality standards of the insurance industry (Lemonade, 2016). Yet, this does not mean one has to cling strongly to 'insurance-as-we-know-it'. Insurance products employing new technologies and enacting behaviour-based personalisation are continuously reconfiguring the roles and responsibilities of insureds and insurers, especially when they are 'not-yet' fully realised.

Take Home Ideas: 13 Uncontained Provocations

1. Not-yet markets are interesting to investigate because the offer a glimpse of not-yet-stabilised properties of (potential) future markets, products, and services. (Chapter 1)
2. A critique of Big Data in insurance should go beyond the defence of established insurance practice. Nostalgia to insurance-as-we-know-it is not a good foundation for the critique of 'new' insurance practices. (Chapter 1)
3. The pragmatist approach is a revealing tool to investigate technologies or 'societal developments' heralded as 'the next big thing'. (Chapter 2)
4. Being explicit about the *reformulation* of research questions while conducting the research, based on encounters with the field of investigation, does not diminish the scientific quality of the research. Rather, it strengthens the accountability of the qualitative research approach, because the reformulation of research questions contributes to the production of knowledge. (Chapter 2)
5. The investigation of *Expectation Generation Devices* exemplifies that expectations as to the future are not just 'out there', but have to generated actively and explicitly. (Chapter 3)
6. In some situations, *fictional expectations* as to the future of insurance markets contribute to the enactment of them *insofar as* they have the capacity of 'moving' relevant actors by being *explicitly* fictional, rather than *despite* expectations being ontologically fictional. (Chapter 3)
7. Business conferences as to not-yet markets contribute to the making of future markets by establishing networking opportunities under the guise of knowledge communication. (Chapter 4)
8. 'Take home ideas' are an alibi to take home business cards. (Chapter 4)
9. The insurance industry makes an experimental detour towards behaviour-based personalisation in car insurance, which is a safe space to test and enact what behaviour-based personalisation in life & health insurance could look like. (Chapter 5)
10. Saving on driving by safe driving, is enacted in experimental car insurance projects *on top* of more traditional insurance policies, which shows that Behaviour-based personalisation is not about pricing *in the first place*. (Chapter 6)
11. Behaviour-based personalisation might introduce a new 'insurance paradigm' focused on the behaviour policyholders pose rather than the risk group they belong to. Yet, this does not mean that behaviour-based personalisation *replaces* insurance-as-we-know-it. (Chapter 7)
12. When the issue of the impact of Big Data on insurance is phrased as an issue of *more or less* solidarity, it is assumed that insurance in itself will stay *more or less* the same. (Chapter 8)
13. Sociologists should never claim clairvoyance on the future (of insurance markets). Yet they have a privileged position to investigate the making of these futures. (Chapter 8)

Glossary

Actuarial Fairness	Concept employed to characterise what insurance should define, enacted in multiple ways; see chapter 7
Adverse Selection	Dynamic in insurance economics; 'people with higher risk will tend to buy more insurance'; for nuance see Siegelman (2004)
B2B	Business-to-business, economic activities between companies, and without end-customers
Behaviour	Conduct; susceptible to nudges
Behaviour-based Personalisation	The broader and growing interest in, and practices of, the personalisation of products and goods where markets and services are increasingly focused on the behaviour, drive style, and/or lifestyle of actors, particularly in insurance markets
Behavioural Economics	Sub-discipline in economics; studies actual behaviour, rather than the modelled behaviour of homo economicus
Big Data	Umbrella concept; assembling heterogeneous new and emerging technologies of data generation and analysis, such as Internet of Things (IoT), Machine Learning, Artificial Intelligence, Blockchain,…
Black Box	Tool in the discipline of psychology to become 'scientific'; something to be opened (Latour, 1987); device built in the bonnet of a car to generate drive style data
Chance solidarity	Redistribution *within* risk groups, based on chance
Choice Architecture	Concept in behavioural economics; space/environment/dispositive in which (economic) choices are made; place were nudge can be installed/built in
Clairvoyance	Ability to see the future by observing potentiality
Critical Sociologist	Social scientist with a (too quick) judgment (κριτής) on what a 'societal development' is leading to or what a technology is capable of
Disambiguation Page	Web-page which generates fuzzyness
Disruption	Changing an established yet conservative practice radically; cutting the crap

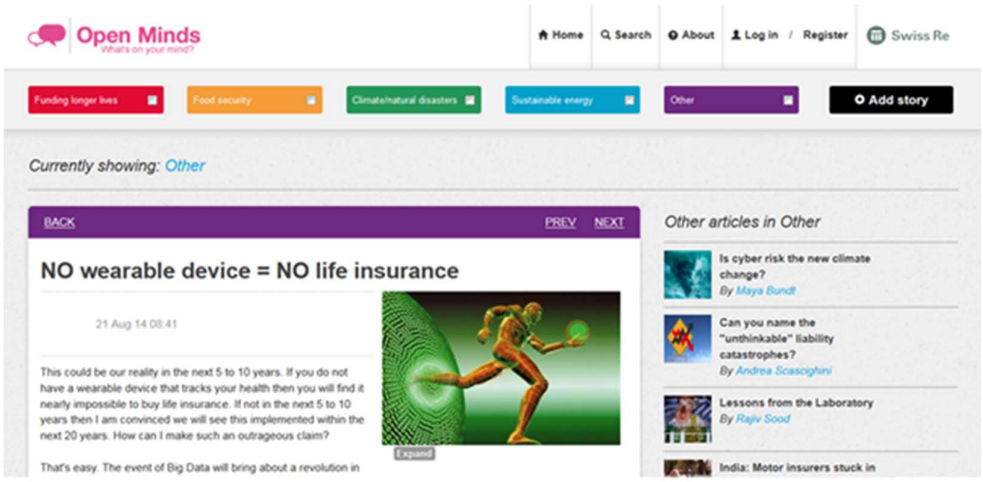
Drive Style	Aggregate of different variables, such as accelerating, breaking, cornering, speed and legal driving; measured by smartphone, dongle, or black box
Economics	Discipline in social sciences investigating economic decisions by economic actors; assumes economic actors to be rational/homo economicus (see neoclassical economics); observes economic actors to be predictably irrational/human (see behavioural economics); contributes to the enactment of markets (see performativity)
Economy	Socio-technical arrangement; result of market devices, devising,…
Enactment	The stuff involved in doing, performing, constructing stuff
Enrolment	Moment of translation; problematised actors accepting their role; result of successful interessement; see Callon (1986b)
Epistemology	The way things are known, stabilised in paradigms
Expectation Generation Device	Economic device which contributes to the generation of expectations, which are not self-evidently 'just there'; see chapter 3
Expectation	Ontologically fictional; see fictional expectation
Experiment	Economical knowledge practices providing 'action and reflection' (Muniesa & Callon, 2007)
Expertise mediator	Company that makes a business out of the expectations generated by expectation generation devices without necessarily generating expectations oneself; see chapter 4
Fairness	Concept in political philosophy without a proper Wikipedia-page; has a Wikipedia disambiguation page; discursive chameleon used to define what insurance is and should be; concept polluted by 'justice as fairness' framing by John Rawls (1972); see chapter 7
Fiction	What has the capacity of moving; see Latour (2012)
Fictional Expectation	Imagined vision of the future which influences today's decisions (Beckert, 2016)
Future	Not-yet

Fuzzy Knowledge	Non-precise knowledge; see Leaver (2015)
Grey Literature	Texts of a non-formal/non-official kind that circulate in a community; see Kelty (2012)
Health	Absence of disease; something like insurance: you cannot have too much of it (Lehtonen, 2017b)
Homo Economicus	Economic actor 'who takes circumstances systematically into account' according to Foucault (Foucault, 2004b); methodological construct according to neoclassical economists (Watson, 2016); non-existing actor (econ) according to behavioural economists (Thaler & Sunstein, 2009), enacted actor in real economies, according to (Callon, 2007b)
Human	Not econ; predictably irrational economic actor; study object of behavioural economics
Incentive	Benefit for economic actor attached to an economic decision; internalised by homo economicus; highlighted in nudge
Incumbent	Traditional insurance company; threatened with disruption
Individualisation	Tendency towards 'what can no longer be divided' (until it is in-dividual); not to be confused with personalisation
Insurance	Established practice of risk management, where financial losses are compensated after paying a premium has ensured coverage; currently 'under disruption'; something like health: you cannot have too much of it (Lehtonen, 2017b)
Insurtech	Technology companies promising/threatening to disrupt insurance-as-we-know-it
Interessement	Moment of translation; locking problematised actors into place; success leads to enrolment; see Callon (1986b)
Internet of Things (IoT)	The growing number of devices that are connected to the internet, referring to health wearables, car telematics, smart trash bins, refrigerators, etc.
Justice	Concept in political philosophy with a proper Wikipedia page and a disambiguation page

Lifestyle	The way one lives; expressed in terms of dandyish clothing (cf. Oscar Wild) or health behaviour (cf. Oscar Hi)
Market Device	What contributes to the enactment of markets; see Muniesa et al. (2007)
Mobilization	Moment of translation; 'to speak for others is to first silence those in whose name we speak.'; see Callon (1986b)
Moral Hazard	Dynamic in insurance economics; 'people will act differently once insured'; change in incentives attached to the insured behaviour; for nuance, see Baker (1996, 2000); for controversy, see Leaver (2015)
Neoclassical Economics	Stream in economics characterised by mathematic modelling and assumptions on homo economicus
Not-yet market	Future market that is enacted and discussed 'now'
Nudge	Concept in behavioural economics; a 'small push' built in a choice architecture which makes humans more probable to react to existing incentives
Obligatory Passage Point (OPP)	Element of problematisation; moment of translation; **'**go to site'/actor that is needed to pass by in order to obtain a problematized goal; see Callon (1986b)
Paradigm	Dominant epistemology; see Kuhn (1970)
Pay as you live (PAYL)	Vision of future insurance which focuses on personalising insurance products and services based on lifestyle/behaviour, concept coined by Ernst & Young (Ernst & Young, 2016)
Performation	'The process whereby sociotechnical arrangements are enacted' (Callon, 2007b, p. 330)
Performativity	Doing this with words (Austin, 1962) or knowledge practices (Mackenzie, 2008) (see performation, enactment)
Personalisation	Tying products and services to 'persons'; not to be confused with individualisation
Policyholder	Client of an insurance product, the one who is covered by an insurance policy

Pragmatism	Analytical approach to investigate practices and their consequences, rather than essentialist first principles; critical of Critical Sociology
Precise Knowledge	When a concept has one clear meaning; non-fuzzy knowledge; see Leaver (2015)
Premium	Price payed for an insurance product
Problematisation	Moment of translation; 'double movement'; rendering oneself an Obligatory Point of Passage (OPP) by problematizing other actors' interests; see Callon (1986b)
Risk Group	Group with comparable risks, considering epistemological, juridical and other constraints
Solidarity	Concept in sociology and political philosophy with a proper Wikipedia page and a disambiguation page; result of insurance practices; takes different forms, such as chance solidarity and subsidizing solidarity
Solution	Or tech solution; tool to solve an a posteriori framed problem; see Morozov (2013)
Sticky Category	Category a person cannot get rid of easily; categories such as gender, race, genetic risk etc; see Prainsack (2015) and Duster (2015)
Subsidising solidarity	Redistribution *between* risk groups
Telematics	Wearables for cars
Translation	Aligning other actor's interests in one's own interests; consists of (at least) problematisation, interessement, enrolment, and mobilization; see chapter 4, see Callon (1986b)
Underwriting	Insurance practice which attributes persons to risk groups
Wearables	Telematics for people
Wikipedia	Source of grey literature while conducting research

Nederlandstalige Samenvatting



'NO Wearable device = NO life insurance' blogpost bijdrage (https://openminds.swissre.com/stories/688/)

'This could be our reality in the next five to ten years.' Een 'innovatiemanager' drukt in 2014 zijn verwachting uit dat het in de toekomst weleens onmogelijk zou zijn om een levensverzekering te krijgen, wanneer klanten weigeren om hun gedrag te laten opvolgen door middel van 'health wearables'. Hij doet dit met de slagzin: *'NO wearable = NO life Insurance. This could be our reality in the next five to ten years.'* De komst van Big Data in verzekeringen wordt in de nabije toekomst verwacht, al is het nog onzeker hoe die toekomst er zal uitzien en wanneer precies het zo ver is. In dit doctoraatsonderzoek ga ik na hoe verzekeraars omgaan met de komst van Big Data en hoe ze nieuwe verzekeringsmarkten maken.

De onzekerheid met betrekking tot toekomstige verzekeringsmarkten wordt niet altijd in acht genomen in het maatschappelijke discours, noch in sociaalwetenschappelijke analyses over de impact van Big Data in toekomstige verzekeringsmarkten. Analyses in nieuwsmedia, op gespecialiseerde blogfora, en in de sociaalwetenschappelijke literatuur, gaan er vaak van uit dat het eenvoudig is om het potentieel en de gevaren van Big Data in verzekeringen te doorzien. Er worden aan Big Data enkele essentiële kenmerken toegeschreven en men laat uitschijnen dat (de gevolgen van) Big Data reeds doorgedrongen zijn in de verzekeringspraktijk.

Deze zogenaamd 'heldere blik' op de toekomst van verzekeringen hebben de meeste analyses gemeen met de schilder in Magritte's werk *La Clairvoyance* ('De helderziendheid'), die in staat is een volgroeide vogel te schilderen met als model slechts een ei. In deze Nederlandstalige samenvatting stip ik, aan de hand van Magritte's schilderij, kort enkele bevindingen uit mijn doctoraatsonderzoek aan. Omdat de toekomst onzeker is en de verwachtingen rond Big Data in verzekeringen 'nog niet' gerealiseerd zijn, noem ik mijn onderzoek een 'sociologie van nog-niet markten'.



La Clairvoyance (René Magritte, 1936), reproductie door Pauline Swinnen (foto: Sven Peremans)

Doorheen mijn doctoraatsonderzoek claim ik zelf nooit enige 'helderziendheid'. Om dit te vermijden, hanteer ik een 'pragmatistische' onderzoeksaanpak en volg ik de principes van abductieve analyse, door aandacht te vestigen op hoe dingen tot stand komen en wat de gevolgen hiervan zijn. Ik laat me hiervoor leiden door 'verrassende observaties'. Om te begrijpen wat Big Data 'doet' met verzekeringen en wat verzekeraars doen met Big Data, bestudeer ik hoe verwachtingen over Big Data tot stand komen, hoe experimenten met het op gedrag gebaseerd personaliseren van verzekeringsproducten gevoerd worden, en wat de gevolgen van deze praktijken zijn voor hoe verzekeringen (horen te) functioneren. De verwachtingen over en experimenten met nieuwe technologieën in verzekeringen die ik onderzoek, zijn 'nog-niet markten' die 'tot stand gebracht' (*enactment*) moeten worden.

Een eerste nog-niet markt die aan bod komt in deze doctoraatsdissertatie, is de markt van verwachtingen over Big Data in verzekeringen. Deze verwachtingen zijn vergelijkbaar met de geschilderde vogel op het doek in Magritte's schilderij. Verwachtingen over de toekomst zijn belangrijk in het functioneren van markten omdat ze richting geven aan beslissingen in het heden. In dit onderzoek vestig ik de aandacht op de omstandigheden waarin en de instrumenten (*devices*) waarmee verwachtingen over toekomstige verzekeringsmarkten en de rol van Big Data hierin worden gegenereerd, en hoe er rond deze verwachtingen zakenconferenties opgezet worden. Zo onderzoek ik een blogpost platform als een *'expectation generation device'* (Meyers & Van Hoyweghen, 2018). Vooraleer verwachtingen over toekomstige verzekeringsmarkten beslissingen in het heden kunnen beïnvloeden, moeten ze eerst tot stand komen en 'levend' gemaakt worden. Dit vergt veel *'devising work'*, en creëert een ruimte van 'openheid'. Ook analyseer ik hoe zakenconferenties over nieuwe technologieën in de verzekeringssector tot stand komen. Dit doe ik

aan de hand van Michel Callon's werk over translatie. In het opzetten van zakenconferenties investeren zakenconferentie-organisaties (*business conference organisations*) zeer veel moeite in het overtuigen van verzekeringsprofessionals om de conferenties bij te wonen, en sponsors om ervoor te kiezen om zich uitgerekend op hún zakenconferentie in de kijker te werken. Ook tijdens de conferenties wordt er van alles in het werk gesteld opdat de verschillende aanwezige actoren met elkaar netwerken en zo bijdragen aan het maken van toekomstige verzekeringsmarkten.

De tweede nog-niet markt die aan bod komt in dit onderzoek, is de markt van experimentele praktijken van 'op gedrag gebaseerd personaliseren' (*behaviour-based personalisation*, zie Meyers en Van Hoyweghen (2017)) in autoverzekeringen. Net als het ei in Magritte's schilderij bezitten nieuwe technologieën veel potentieel, al is het nooit zeker hoe het verder zal ontwikkelen. Experimentele praktijken onderzoeken waar nieuwe technologieën toe in staat zijn en geven richting aan wat mogelijk geacht wordt met deze technologieën in verzekeringsproducten. De verzekeringsindustrie maakt een experimentele 'omweg' richting op gedrag gebaseerde personaliseren in autoverzekering, onder andere omdat het veld van autoverzekeringen heel wat minder gevoelig ligt en rijgedrag makkelijker in kaart te brengen is dan gezondheidsgedrag. Meer in detail onderzocht ik de 'Caro rijstijlstudie', waar vier partners samenwerken om te onderzoeken wat de link is tussen rijgedrag en schadestatistieken. Caro meet rijgedrag via smartphone sensoren en biedt coaching aan aan gebruikers van de applicatie, die in ruil voor hun deelname 20% korting krijgen op hun verzekeringspremie. Doorheen deze casestudie wordt duidelijk dat, door op gedrag gebaseerde personaliseren, de verzekeraar zich een bredere rol toebedeelt dan we kennen in traditionele verzekeringspraktijken. De verzekeraar fungeert namelijk niet alleen als een financiële actor, maar gaat ook 'zorg' (*care*) dragen en trachten het gedrag van de verzekerden te verbeteren.

In een tweede casestudie naar experimentele praktijken van op gedrag gebaseerd personaliseren ga ik na hoe deze nieuwe rol van de verzekeraar gelegitimeerd wordt, en hoe ze zich verhoudt tot andere opvattingen over de rol van verzekeringen. Aan de hand van een analyse van het begrip '*fairness'* in de economie/actuariële wetenschap (als '*actuarial fairness'*), in discussies rond anti-discriminatiewetgeving, en doorheen de casestudie 'Fairzekering', betoog ik dat verschillende invullingen van het *fairness*-begrip samengaan met veranderende veronderstellingen over de economische actoren actief in verzekeringsovereenkomsten. Er is een verschuiving te bemerken van assumpties over de rationele, risico-averse en 'sterke' *homo economicus* uit de neoklassieke economie naar veronderstellingen over actoren zoals te vinden in de gedragseconomie: het gedrag van verzekeringsklanten is beïnvloedbaar door goede 'keuze omgevingen' (*choice architectures*) te creëren (Thaler & Sunstein, 2009).

Ik beëindig mijn dissertatie met een beschouwing over de wijze waarin op gedrag gebaseerde personaliseren verschilt van traditionele verzekeringspraktijken, en hoe de ontwikkeling van nieuwe verzekeringsproducten en 'nog-niet markten' te onderzoeken. Het is belangrijk om verzekeringsproducten te onderzoeken 'voorbij' hun prijs en praktijken die de prijs van een

verzekeringsproduct bepalen. Bij op gedrag gebaseerde personaliseren wordt een verzekeringsproduct meer dan een financiële terugbetaling in geval van nood. Verzekeringspraktijk die personaliseren op basis van gedrag produceren – net als in andere vormen van personaliseren – veranderende veronderstellingen over wat een verzekering, een verzekerde en een verzekeraar is of zou moeten zijn. Daarom moet er ook steeds nagedacht worden over het doel waartoe (‘*to what end’*) verzekeringen belangrijk geacht worden. Veel analyses over de rol van Big Data in verzekeringen vragen zich af of nieuwe technologieën zullen leiden tot *meer of minder* solidariteit. Hiermee gaat men er echter van uit dat verzekeringen in essentie *min of meer* hetzelfde blijven. Om het veranderende belang en de verschuivende betekenis van verzekeringssolidariteit ten gronde te begrijpen, moet grondig onderzoek gevoerd worden naar wat een verzekeringsproduct is en geacht wordt te zijn.

Attachment 1: pseudonymized list of contacts

	JOB FUNCTION	COMPANY
1	Local Insurance Broker	DVV
2	Manager Tactical & Commercial Marketing	DVV
3	Generic email address	Trackm8
4	Head of Group Insurance research	Generali
5	Generic email address	Sabre
6	Generic email address	Wunelli
7	Group head Business development and Innovation	Generali
8	National spokesperson	AXA
9	CEO and Founder	Sentiance
10	CEO	Motosmarty
11	Co-founder & CDO	Chipin/Fairzekering
12	Head L&H Underwriting continental Europe	Swiss Re
13	Head Business Development	Swiss Re
14	'John'	Internet of Business
15	Innovation Manager	Swiss Re
16	Head Big Data & Analytics center	Swiss Re
17	Senior Data Scientist	Swiss Re
18	Big Data & Smart Analytics Lead Americas - VP	Swiss Re
19	Generic email address	Social Intelligence
20	Generic email address	Friendsurance
21	Press email address	Oscar HI
22	Spokesperson	Baloise
23	Director consumer protection & economic regulation	Belgian Government
24	Advisor consumer protection & economic regulation	Belgian Government
25	Spokesperson	Nationale Nederlanden Belgium
26	Market Analyst	Test-Aankoop
27	Manager Market Development Retail	Baloise
28	Director Information Technology	Swiss Re
29	Head Market Development Business	AG Insurance
30	Managing Director	EDRI
31	Head of L&H Australia and NZ	Swiss Re
32	Head R&D Big Data & L&H	Swiss Re

33	VP, Big Data & Smart Analytics Center	Swiss Re
34	Head Dynamic underwriting and pricing	AXA
35	Foresight Officer	AXA
36	Director product undrwriting, L&H R&D	Gen Re
37	CEO	Attrecto
38	Partner	CRtp
39	Senior Consultant, partner development	GfK
40	Manager, CEO	Fintricity
41	Data Scientists life solutions group	Partner Re
42	Head of Analytics	1st Central
43	Non-life Pricing & Business Analytics Manager	Ageas Portugal
44	Sales Director and Business Consultant Financial Services and Insurance Solutions	Datalytyx
45	Head Data Analytics team	AG Insurance
46	Head of Market & Product Development Health Care	AG Insurance
47	Commercial Director	Corona Direct
48	Managing Director 1	DrivOlution
49	Managing Director 2	DrivOlution
50	CEO	Sentiance
51	VP Mobility	Sentiance
52	Partner/Creative Director	Kunstmaan
53	Professor Data Mining	Ugent
54	VP, New and Social Media	Swiss Re
55	Chief Customer Officer	Swiss Re Life Capital
56	'Ben'	IQPC
57	Technology Director	Kunstmaan
58	Actuarial Responsible Telematics	AXA
59	Head Big Data Innovation	AXA
60	Global head Life Guide	Swiss Re
61	Chief Medical Officer	Swiss Re
62	Medical Consultant	Swiss Re
63	Head of Brussels Representative Office	Munich Re
64	Medical expert	Independent medical advisor
65	Head of CoC Medical Research & Consulting	Munich Re
66	Chief Medical Officer	Partner Re

67	Life Acceptance Underwriting Manager	QBE Re
68	Co-founder & CEO	Fitsense
69	Junior Propositions Mangaer	Swiss Re
70	Senior Risk Consultant Marine	Allianz
71	President & CEO	Dacadoo
72	Product Manager	ProtectYour Bubble
73	Innovation Business Developper	MJV Innovation
74	Co-founder & CEO	Quantifile
75	Editor	Internet of Business
76	CEO	CoverBox
77	Head of Health Analytics Consulting	Munich Re (Munich Health)
78	Delegate Acquisition Manager	Internet of Business
79	Business Development Manager	IQPC
80	CEO	Boundlss
81	Junior Research Analyst	AXA
82	Non-life Actuary	Belfius
83	Strategy	Belfius
84	Chair of the 2017 Internet of Business conference	Independent expert
85	Telematics Data Analyst	Admiral
86	Keynote Speaker	JigSaw
87	Sales Director Europe	Dacadoo
88	Business Development Manager	Internet of Business
89	Director of Global Sales	Sigma Designs
90	Director	TourmalineLabs
91	Associate Director	SEIB insurance brokers
92	Senior Delegate Acquisition Manager	Internet of Business

Attachment 2: List of official reports

	INSTITUTION	YEAR	TITLE DOCUMENT	SERIES' TITLE
1	Accenture	2015	Satisfy the Craving for Insurance Personalization. Delivering Highly relevant, omni-channel customer experiences	
2	AIG	2017	The Data Sharing Economy: Quantifying Tradeofss that Power New Business Models	
3	Duncan Minty Consultancy	2016	Ethics and Big Data: 11 principles for Insurance Firms	
4	Ernst & Young	2015	The future of health insurance. A road map through change	
5		2015	Usage Based Insurance. The New Normal?	
6		2016	PAYL - wearable trends: How will real-time client activity and health data change your insurance business?	
7		2016	Introducing 'Pay As You Live' (PAYL) Insurance. Insurance that rewards a healthier lifestyle.	
8	Geneva Association	2016	Harnessing Technology to Narrow the Insurance Protection Gap	
9	Gen Re	2012	Big Data	
10		2013	Big Data - Better Life Insurance.	Topics
11		2013	Big Data - Big Opportunities	The Bulletin
12		2014	Smartwatches, Fitness-Tracker und andere tragbare Technologie - ein Trend auch für die Versicherungswirtschaft?	Netletter
13		2014	Wearable technology - how can this help insurers?	Risk insights
14		2015	Digital health - the revolution in health management	Risk insights
15		2015	Reviewing disability income experience	Risk insights
16		2016	Disruptive innovation - coming to life insurance near you	Risk insights

17		2017	Big Data Big Insight - Is Knowledge Still Power in a Digital World	Risk insights
18		2017	Behavioural Economics - Is It Just Another Fad?	Claims focus
19	Global Futures & Foresight	2014	Insurance Innovation. Products, Offer and Model	with FINEOS
20	Hannover Re	2015	Tales of Innovation, high jump and insurance	
21		2016	Change is Coming	
22	IBM	2012	Analytics: The real-world use of big data. How innovative enterprises extract value from uncertain data	
23	Insurance Europe	2017	Big data analytics: An insurance (r)evolution	Insight briefing
24	IOB	2017	Internet of Insurance market brief	
25	IRGC	2010	The Emergence of Risks: contributing factors	later published by Swiss Re
26	Life.SREDA	2016	Money of the Future	
27	McKinsey Global Institute	2012	Big data: The next frontier for innovation, competition, and productivity	
28		2013	Disruptive technologies: Advances that will transform life, business, and the global economy	
29		2017	The Age of innovation	
30	Munich Re	2013	Getting Ready for Pole Position	
31		2015	Big Data - An immense challenge	Topics
32		2016	Munich Re using big data to develop new coverage and services	Press Release
33	PwC	2014	Health wearables: early days	
34	Raconteur	2016	Future of Insurance	
35	Strategy Meets Action	2014	Big Data in Insurance: Beyond Experimentation to Innovation	
36	Swiss re	2004	Too big to ignore: the impact of obesity on mortality trends	

37	2007	Life risk selection at a fair price: reinforcing the actuarial basis	
38	2007	To your health: diagnosing the state of healthcare and the global private medical insuarnce industry	Sigma
39	2008	Insurance in the emerging markets: overview and prospects for Islamic insurance	Sigma
40	2011	Fair Risk Assesment in Health & Life insurance	
41	2011	Product Innovation in non-life insurance markets. Where little "i" meets big "I"	Sigma
42	2011	State involvement in insurance markets	Sigma
43	2012	Understanding profitability in life insurance.	Sigma
44	2013	Life Insurance: focusing on the consumer	Sigma
45	2013	Emerging Risk Insights	Sonar
46	2013	The Essential Guide to Reinsurance	
47	2013	Getting the balance right: Private insurance for social needs. 4-5 March 2013	
48	2014	Digital Distribution in Insurance: a Quiet Revolution	Sigma
49	2014	New Emerging Risk Insights	Sonar
50	2014	Living in a Hyperconnected World- Implications for the Casualty Re/Insurance Industry	
51	2014	Healthcare revolution: Big data and smart analytics. Conference report	
52	2014	We're smarter together: Swiss Re's 150th anniversary	
53	2014	An examination of trends and legal theories against the food and beverage industry and its impact on insurance coverage.	
54	2015	New Emerging Risk Insights	Sonar

55		2015	Swiss Re to work with IBM Waton to harness the power of Big Data for Reinsurance	Press Release
56		2015	Life insurance risk selection: Required differentation or unfair discrimination	
57		2015	Life Insurance in the digital age: fundamental transformation ahead	Sigma
58		2016	Swiss Re SONAR. New Emerging Risk Insights	Sonar
59		2016	2015 Annual report	
60		2016	Getting the balance right - legitimate concerns and the need for fair risk assesment are two sides of the same coin	
61		2016	Wearables: new technology - new risks	Trend Spotlight
62		2016	Mutual insurance in the 21st century: back to the future?	Sigma
63		2017	Wearable Technology - Does it work?	
64		2017	Unveiling the full potential of telematics. How connected insurance brings value to insurers and consumers: an Italian case study	
65		2017	Swiss Re SONAR. New Emerging Risk Insights	Sonar
66	WEF	2010	Rethinking Risk Managament in Financial Services. Practices from other domains	
67		2011	Personal Data: The Emergence of a New Asset Class	
68	Willis Tower Watson	2016	Insurance Big Data - float like a butterfly, sting like a bee	

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