Chapter 3
The Impact of IR4 on Corporate Governance of Listed Companies

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ABSTRACT

The digital revolution transforms business models and presents new privacy issues and ethical dilemmas. Research by MIT Sloan CISR reports that U.S. listed companies that have a digitally savvy board show substantially better financial performance. What is a digitally savvy board? What are the differences between the old and the new world? What are the new ethical dilemmas and how do you prevent making the same mistakes as big tech? Why does innovation fail so often within the existing structures of established companies? Why does the three lines of defense model for risk management have an inhibitory effect on innovation in practice? The author discusses these questions and provides suggestions for improvement of corporate governance of established companies. In the next chapter, the author provides rules of the road for how established companies can monetize their data including some pitfalls for established companies and discusses a number of ethical dilemmas that companies encounter in practice when implementing new digital technologies and services.

INTRODUCTION

Friend and foe agree that our society is undergoing a digital revolution that will lead to a transformation of our society as we know it (Moerel, 2014, p. 4). In addition to all economic and social progress and prosperity, every technological revolution also brings along disruption and friction (Brynjolfsson & McAfee, 2014). It is now clear that new digital technologies (and, in particular, *artificial intelligence*, AI) enable many new services that can substantially disrupt existing business models. These new business models, in turn present new privacy issues and ethical dilemmas (Moerel & Prins, 2016, pp. 9-13) (van den Hoven, Miller, & Pegge, 2017, p. 5), and social resistance to the excesses of the new data economy is becoming increasingly visible and urgent. It is a challenge for established companies, to say the least, to both drastically innovate in order to remain future-proof and, at the same time, take social responsibility.[1]

The question that now arises is whether our current *corporate governance* regulation requires adjustment in order to be able to navigate these times of transformation. This is not a strange question, as corporate governance is now transcending the boundaries of the roles and interaction between the traditional decision-making bodies of the company (board of directors and general meeting of shareholders) and is increasingly spilling over into compliance, risk management and responsible entrepreneurship (Raaijmakers & Buma, 2019). Note that in this chapter, I do not distinguish between the *one-tier* and *two-tier* board models, but refer to the board as the interaction between non-executive directors and executive directors, whether they formally form one board (*one-tier* system, such as in the UK) or two separate boards (*two-tier* system, such as in The Netherlands), whereby next to the board of directors there is a seperate supervisory board.

Relevant here is that under both Dutch and UK corporate governance rules, the board is expected to lead a process of change where it is necessary to bring about a change in corporate culture for *long-term value creation* (Raaijmakers & Buma, 2019, p. 69) (van de Loo & Winter, 2016). Part of the culture of a company is the increasing attention to ethics and to why people act the way they do. To that end, the board must identify good and bad practices and dilemmas that employees encounter in the company, so that they can be trained to strengthen the corporate culture (Raaijmakers & Buma, 2019, p. 69).

In concrete terms, I see that digitisation leads to the following practical questions: Why does innovation at established companies often better succeed if placed outside existing structures? What needs to change in governance to enable innovation within the existing structure? If innovation is better achieved in small and *agile* teams, how does this fit into the *command and control* structure of compliance-driven organisations, in particular in regulated sectors, such as our financial institutions?

How do we find time and attention in the company for innovation if we already have enough trouble in upgrading or replacing existing IT systems (*legacy systems*)? How do we balance the ever-greater investments in digitisation and developing digital services, potentially undermining our own business model, with our short-term (financial) KPIs and reporting? How do we recognise new privacy issues and ethical dilemmas that new digital products and services present, and how do we safeguard an open culture for discussing and addressing these? How do we ensure that the board has have sufficient knowledge and experience with new technologies and disruption through new business models? Is it sufficient that one of the directors has this expertise, or do more or even all directors have to *re- en upskill*, as it is called today? Does the board need to set up a *technology committee*? In these times of rapid transformation, shouldn't the board have much more frequent and in-depth discussions about strategy? And ultimately, is a one-tier board model better equipped to deal with digital disruption that a two-tier board model?

Companies with digital savvy boards show 34% higher ROA, 38% higher revenue growth, 34% higher three-year market cap growth and 17% higher profit margin. (MIT Sloan CISR 2019)

All of these very relevant questions, especially where recent research by MIT Sloan CISR (Weill, Apel, Woerner, & Banner, 2019a) (Weill, Apel, Woerner, & Banner, 2019b) reports that U.S. listed companies that have a *digital savvy board* (boards with at least three *digital savvy* board members) show substantially better financial performance (above three the added value was small). Only 24% of the boards qualified as *digital savvy,* whereby certain sectors are lagging behind, while being susceptible to disruption (such as transport and construction). The results are striking, although you can argue that the results reported in this research are *correlations* only (and that, therefore, no causal relationship is demonstrated). For example, it is conceivable that companies with a more open culture would sooner admit diverse board members and that this open culture is the real underlying cause of the better financial performance.

BACKGROUND

Angle of Approach

Let me state first and foremost that my academic work focuses on how to best regulate the friction that new technologies cause in society. Furthermore, my work mainly consists of assisting (mostly U.S.) tech companies with the implementation of

(mostly AI-driven) digital services based on *privacy-by-design* and *ethics-by-design*. The digital services of these newcomers often result in the disruption of existing business models (and they are usually aimed at this). Drawing on my experience with these newcomers – and also the bumps in the road they subsequently encounter and the mistakes they make – I also advise boards of established multinationals on their digital strategy. It is clear that newcomers are often managed differently than established companies, where innovation is achieved in *agile* teams, failures are celebrated – if acknowledged early (*fail fast*) – and growth in *user base* is initially a more important KPI for success than generated revenues. Non-executive directors on boards of newcomers are furthermore more recruited based on how well they can help the company to scale-up (supporting the executive directors with advice and introducing them in their network), more than for their supervisory qualities. This is often the other way around for established companies. The purpose of this publication is to share some of my observations based on working with newcomers that are relevant to boards of established companies.

No Common Language for Discussion Yet

My most important initial observation is that we are still at the beginning of thinking about a new corporate governance that would fit the realities of the new digital world. We are in the transition phase to a new ordering, and, for the time being, we have not yet developed *the language* to have a meaningful discussion in board meetings about the strategic issues that new technologies and the disruption of existing business models entail. In my experience, conversations between board members about the impact of the digital revolution often get *lost in translation*. In philosophical terms, we are still in *Plato's cave*[2] and need *Wittgenstein's ladder* to get out.The ladder metaphor of Wittgenstein symbolises the phase we are now in, where language is used from the perspective of the old logical order to describe a new logical system.

My propositions serve as elucidations in the following way: anyone who understands me eventually recognizes them as nonsensical, when he has used them – as steps – to climb beyond them. (He must, so to speak, throw away the ladder after he has climbed up it.) He must transcend these propositions, and then he will see the world aright. (Wittgenstein, 1922)

There is a broad consensus that the digital revolution involves a paradigm shift, whereby the principles of and belief in the existing logical order shift to a new set of principles and belief in a fundamentally different logical system. According to Wittgenstein, all language rules have a social aspect, as a result of which the meaning

of language depends on the social context in which it is used (Wittgenstein calls this *Lebensform*). Language only has meaning within a certain logical structure. People from two different systems may both *use* the same language (for example, English), but do not necessarily *speak* the same language (in the sense that they understand each other). In order to understand each other and have a relevant discussion, they will first have to agree on the meaning of certain concepts, the principles that they both deem *true* and the logic that they both find valid to reach conclusions. You can sometimes hear someone very well, yet you cannot understand them at all (in the words of Wittgenstein: *The world is my world*). Humor is an excellent example of this (in the words of Wittgenstein: *Humor is not a mood but a way of looking at the world*).

As long as we have not yet developed the new language for *discussing* (let alone agree on the correctness of) the new principles for the new digital world ordering, we cannot yet reflect on a new governance for *controlling* the new logical system. We are still on the first step of Wittgenstein's ladder. As a consequence, the most I can do here is try to interpret the new developments with concepts from the old order to hopefully arrive at a number of new *common true* starting points for the new system. In a few years' time, we will experience this language – in the terms of Wittgenstein – as nonsensical and hopefully will be able to view and interpret the world with new eyes.

The most feasible approach for now is to see whether there are any bottlenecks in our *current* corporate governance in order to conduct discussions about the new digital reality in boards and initiate change management. That is already a sizeable task. Even without a digital transformation, there is a dominant discourse in boards, whereby the performance of the company is assessed primarily from a financial and control lens, making it difficult to discuss *culture*-related issues in boards due to a lack of *conceptual understanding and language* (van de Loo & Winter, 2017). This lack of conceptual understanding and language will apply *a fortiori* to the discussion of a drastic digital transformation.

When assessing performance based on financial indicators that always cover a preceding period, boards primarily assess the performance of a company from the rear-view mirror. In order for the digital transformation to be successful, boards will first and foremost have to look forward, which is only possible if they delve deeper into strategic issues and get closer to the business than before. The result thereof is that the roles of executive and non-executive directors will have to recalibrate a new mutual relationship, which could initially lead to confrontation, irritation and friction (Winter 2018a, pp. 1-3). I will not discuss the structural issues in current board dynamics that can lead to friction here (Winter 2018a, pp. 1-3). I will limit myself to a number of initial observations where I see that discussions *on digital disruption* in boards often get *lost in translation*. In order not to let these observations

hang in the air, I will further briefly list a number of differences between the old and new worlds that should be part of the conversation in boards. I will not give an overview of the new digital developments and how the negative effects can best be regulated. This I have attempted in a different context, to which I here refer (Moerel, 2014, pp. 9-13) (Moerel & Prins, 2016).

Below I will give many examples by way of illustration, which are often from the financial sector. The reason is that this is a highly regulated sector that has been IT-driven for a long time (which means there are many, often decades-old, *legacy systems*), while, at the same time, all the elements for potential disruption are present. Now that everyone uses financial services themselves (we all have bank accounts, loans, mortgages, insurance and a pension), the examples will stay close to home so everyone is able to relate to them. If this choice comes across as *bank bashing*, then that is not the intention.

MAIN FOCUS OF THE CHAPTER: OBSERVATIONS

Status Quo Bias

In regulated sectors in particular, I observe that established companies are often so entrenched in their compliance-driven institutionalised processes and existing IT systems (*status quo bias*) that it is difficult for them to imagine that, with new technologies, these processes and systems could be substantially organised in a different manner, including with regard to compliance (Boden, 2019). The result is that discussions in boards about the implementation of new technologies are often conducted from a risk perspective, whereas in the new digital age, project risks must primarily be viewed from the following perspective: What is the risk for our business model if we do *not* do this? Specifically in the financial sector, the risk perspective appears to be reinforced by the toolkit developed by the financial supervisory authorities as a result of the previous financial crisis, whereby supervision is mainly focused on problems from the past rather than what will be needed in the future. For example, the transition to new IT systems required for digital innovations is sometimes hampered by the focus of supervisors on *operational resilience* during migration, while I am more concerned about the continuity of these banks if the legacy systems are not phased out swiftly. The *three lines of defense* model for risk management and internal control insisted on by supervisors also has an inhibitory effect on innovation in practice. I elaborate on this below, in section 'Division Of Duties Hinders Innovation'. All in all, I see that boards sometimes have the idea that far-reaching compliance requirements are a barrier for newcomers, while my observation is that compliance requirements will ultimately not be a barrier for

newcomers, but rather will be the subject of innovation and disruption themselves. I also elaborate on this further in section 'Division Of Duties Hinders Innovation'.

Digital savvy directors change the risk conversation from evaluating the project risk of particular initiatives to the business model risk of not doing something new. (MIT Sloan CISR 2019)

Product Centric

The focus of established companies is primarily on what they can imagine, and that involves digitizing their existing services and sales and communication channels (Moerel, 2019a, pp. 2.2-2.5). This provides efficiency benefits and usually better customer experiences, but this does not result in new business models and (therefore) also does not protect against disruption by newcomers. Disruption mainly comes from new providers taking the end user as the starting point (*user-centric*). They think of what the end user wants and then offer this as a service (usually for free). If it catches on (and a substantial user base is generated), they come up with a revenue model. Earning models are often indirect, whereby the service is free and revenues are earned from advertisements (*advertising model*). Established parties mainly think from their own products and services (*product-centric*) and then try to be customer-oriented. This is genuinely something else.

It is important to say that disruption of the centuries-old banking model involves much more than just digitizing existing services. As with each of the disruptors that have gone before, it requires an entirely new way of thinking. (Boden, 2019, p. 30)

Example: The Leasing Company

A leasing company offers companies leased cars for their employees and really tries to provide the best services, not only to the companies, but also to employees of those companies (e.g., by providing a handy app to organize fast maintenance services and breakdown assistance). However, the younger generation of employees does not want a leased car at all. They mainly want mobility (how do I get from A to B, both for work and in my private time). They want the freedom to take the train one time (maybe combined with a bike ride) and another time the car is the best option. The traditional lease model is therefore susceptible to disruption if other providers offer employers a combination of all these mobility services. The availability of (shared) cars then becomes part of the total service offering. If the leasing company succeeds in offering this combination service itself, it suddenly does not have just the companies as customers, but in fact has the many individual

employees as customers as well. As a result, many of the existing B2B (*Business to Business*) business models become B2C (*Business to Consumer*). This example can be translated to any sector.

Example: The Pension Sector

In the pension sector, the current focus is primarily on offering pension products, but, depending on the circumstances, it is not a given that this is the right solution for every participant. A *user-centric* model is based on *individual* financial life course guidance, whereby the question is whether a pension product is then part of the mix for each participant. The pension product then becomes one of the potential products in an integrated financial life course plan. The question, therefore, is whether the pension sector is becoming a provider of a component of integrated services provided by others, or if the sector itself is trying to be that integrator? A more correct name here would be C2B (*Consumer to Business*), where the consumers themselves shop for their ideal combination (Accenture, 2019, p. 1 & 22).

If *user-centric* thinking (including about consumer *concerns*) is taken even further for pension products, the following applies. Consumers are concerned about lack of insight into their finances when they retire. The trend of *fintech* is to make this transparent, so that consumers gain more control over their pensions. For example, there are various apps that offer a real-time integrated overview of all pension rights via an online dashboard (instead of consumers having to add up all annual overviews), provide insight into how much should be invested monthly based on current income and age to arrive at the desired pension at the desired retirement age (with different levels being offered), and automatically transfer monthly payments (or receive a prompt to make those payments with a few clicks). Examples of retirement apps are: *Retirement Countdown, Retire Logix, PensionBee, Nutmeg and Moneyfarm.*

Non-Transparent Bundling of Services and Cross-Subsidisation Between Services

Business models that are based on *solidarity* between customers or on *cross-subsidisation* between products and services are vulnerable to disruption. Digitisation entails *unbundling*. Insurance is an example of a business model based on solidarity. In principle, everyone pays the same premium for a life insurance policy, and the premium is calculated on the basis of the common denominator. By giving people fitness bands, a person's movement frequency can be measured (Khouri, 2015). This makes it possible to offer a so-called *pay-as-you-live* insurance policy, whereby people with better movement frequency pay less for their insurance. Personalization allows new providers to make cheaper offers to better customers (those who exercise

more). That's how they are able to cherry-pick customers. Those who exercise less will stay with their existing provider. The consequence may be that expensive customers will remain with existing providers.

The online media are an example of disruption due to cross-subsidisation between services (Moerel, 2014, p. 16). Many new online news services are free and are paid for via advertising revenues. As advertisers pay by the *click*, what is published will be determined by what raises advertising income. That is often not high-quality content, but rather the flimsier, popular fare, while hard journalism tends to be more expensive to produce. The digital advertising model has in fact made transparent that traditional newspapers functioned on an invisible system of cross-subsidisation between certain parts of the newspaper. Similar effects can be seen in TV programming, where there is cross-subsidisation between popular movies and documentaries. Now that programs are becoming available on a pay-per-view basis, it is becoming uneconomical to produce expensive documentaries (Deans, 2006).

How do we create high-quality content in a world where advertisers want to pay by the click, and consumers don't want to pay at all? Nisenholtz, 2006 (Deans, 2006)

Example: The Pension Sector

Our pension system is based on solidarity and also contains cross-subsidizing elements, making it vulnerable to new service providers who want to cherry-pick. Consider the solidarity between young and old, compulsory industry-wide pension funds with large differences between companies in the age structure of participants and sick leave and pension funds where new schemes are introduced and the old and usually more expensive schemes are continued and reimbursed from a *pay-as-you-go* premium.

Potential disruption, of course, plays a role in areas where the participants now have, or in the future will have, the freedom to choose whether or not to take out a supplementary pension product with their pension fund. Alternative providers will then make an estimate of the *longevity risk* based on algorithm-driven data analysis. These providers can then offer participants with, for example, an unhealthy lifestyle and a lower life expectancy a lower premium for a supplementary pension or a higher pension payment for the same premium (anticipating a shorter period in which the pension will have to be paid). Before you know it, a pension fund offering its participants an optional supplementary pension will attract participants with a high life expectancy and a high longevity risk, and, as a result, the product will not be viable. The advice here is to apply disruption yourself (to *unbundle* products and make them *smart*) before someone else does it for you.

Uneven Playing Field or Lack of Sympathy?

New services –that are easy to use, tailored to the wishes of the user, and mostly free – generate (initially) a lot of sympathy from users. As a result, it seems that an uneven playing field has been created, whereby established companies (feel that they) are measured against stricter ethical standards than newcomers. A strategy of copying the models of newcomers is often met with resistance. Illustrative of this is where the Dutch-headquartered bank ING started a pilot program where it would provide customers with personalised offers based on analytics of payment data. ING requested consent for the processing of the payment data of the participants and complied with privacy laws. Despite this, the pilot program generated much commotion, and ING stopped the pilot program under pressure from the Dutch Financial Services Authority, the Dutch Data Protection Authority and public opinion (Wokke, 2014). This type of public reaction causes great frustration for established parties trying to innovate and also a certain level of paralysis. Newcomers, incidentally, struggle with a similar dilemma when, after first offering free services (and having generated a lot of sympathy), they want to introduce a revenue model (which erodes sympathy). For newcomers, it is a balancing act to *retain* the sympathy of their users. The difference is that established companies first *have to gain* sympathy for their digital services, which is a trickier sequence (Greenfield, 2012). I elaborate on this further in section 'The Trust Paradox – How Can You Get To Know Your Customer Without Losing Their Trust?' in the next chapter "How to Monetize Data Rules of the Road & Ethical Dilemma's".

The Expectations of Customers Are Formed by the Outside World

Digital developments are changing customers' expectations (Boden, 2019, p. 24). The new services are not only digital but also data-driven (*smart*) and designed on the basis of *User Experience* (UX). People are getting used to services tailored to them and now expect this as well. For example, 35% of sales on Amazon and 75% of views on YouTube are generated by their *recommendation engines* (AI-driven predictions) (Solsman, 2018) (MacKenzie, Meyer, & Noble, 2013). The recent PSD2 legislation is giving the financial services sector a helpful hand, whereby the Google's of this world also will be offering financial products. Citizens will think: "If a foreign company can make a financial service offer that fits my lifestyle and spending pattern exactly and that I can buy with a few *clicks*, why can't my own bank or insurance company do that? Are they not there for me?" (Accenture, 2019) These are the situations in which people lose their faith in their existing relationships and become more likely to switch providers. According to surveys in the Benelux, up

to 40% of customers and users of Google, Apple, Facebook and Amazon (GAFA) would welcome the possibility of banking via these platforms. The percentages are even higher for investments and insurance (Accenture, 2017) (Banken.nl, 2018). It is a striking contrast that if ING wants to implement personalised offers, this is met with considerable social resistance. Many see in this the double standard discussed above. Contrary to what is generally thought, this phenomenon cannot be reduced to a double standard, but can be explained through ethics. You can anticipate and manage this. I elaborate on this further in section 'The Trust Paradox – How Can You Get To Know Your Customer Without Losing Their Trust?' in the next chapter "How to Monetize Data Rules of the Road & Ethical Dilemma's".

Division of Duties Hinders Innovation

Innovation requires a culture of openness and transparency, where mistakes can be made, dilemmas can be raised and discussed and joint decisions are made about the design of new services and the risks to be taken.

Supervisory authorities around the globe, typically consider the so-called *three lines of defense model* as best practice for risk management and internal control (European Banking Association's, 2011) (Institute of Internal Auditors, 2018). This risk management model is based on a strict segregation of duties. The commercial departments are expected to innovate and ensure compliance for new products and services (*first line*). The compliance function checks for irregularities (*second line*). The audit department then reviews, post rollout (*third line*). This model is not fit-for-purpose when it comes to digital innovation. In fact, this division of tasks inhibits innovation. Because new technologies are not fully regulated yet, it is difficult to perform a clear-cut compliance check.

Artificial intelligence (AI) in particular opens up a whole new range of design issues (van den Hoven, Miller, & Pegge, 2017, p. 5) and associated ethical dilemmas (Lotti, 2009-2010) (see, for examples of design issues and ethical dilemmas, section 'Design Choices And Ethical Dilemmas' below).

To start with, large amounts of data are required for training AI, mostly from consumers and employees. The European privacy rules, in particular, the European General Data Protection Regulation (EU) 2016/679 (GDPR) require that new technologies which process personal data be developed based on *privacy-by design*. A *Data Protection Impact Assessment* must also be carried out, taking into account the potential impact for individuals and for society as a whole (e.g., a potential *chilling effect* on the liberties of individuals when using continuous monitoring techniques), i.e. *ethics-by-design* (Article 29 Working Party, 2018, p. 14).

Privacy-by-design and *ethics-by-design* are not about choosing between clear-cut options, in other words, picking between pre-existing options A or B, but about

developing option C to mitigate the negative impact of a new technology on the individual and society (van den Hoven, Miller, & Pegge, 2017, p. 5).

Example: Application AI

We regularly see in the news that the application of self-learning algorithms leads to discriminatory outcomes. For example, Amazon stopped its AI recruitment tool in 2018 because it discriminated against female candidates. The robot was trained on the basis of CV's that the company had received in the past. Because many more men than women work at Amazon, the algorithm quickly developed a preference for male candidates (Dastin, 2018). EU privacy rules require that deploying an algorithm should not lead to discriminatory outcomes. They also require companies applying algorithms for automatic decision-making - for example, automated rejection of a loan application - to provide individuals with meaningful information about the underlying logic and to an explanation of the decision, so they can challenge this decision (Moerel & Storm, 2019). At present, however, advanced forms of AI are still a *black box* - we do not know how algorithms come to their outputs. Innovation is therefore required to prevent discriminatory outcomes and ensure transparency and explanation (Moerel, 2018b). In fact, innovation at major U.S. tech companies currently is geared towards cracking this black box and developing new de-biasing techniques (Gunning, 2016). Various media recently reported that Google had tackled the black box problem with "explainable AI", which is expected to be a major competitive advantage going forward (Kelion, 2019). In this example, innovation is at the *very heart* of ensuring compliance.

As *first line*, the commercial departments are responsible for developing option C. However, in my experience, they are often not capable of doing so in practice. This is also one of the findings of a study on the factors that undermine the smooth operation of the model in practice (Udding, 2016). This leaves the compliance department with no other option but to reject the innovation. In turn, boards of established companies (often encouraged by consultants) are led to think – incorrectly – that the company must be prepared to *colour outside the lines* to be able to innovate, when, in fact, the innovation needs to be directed at how to ensure compliance. Further, they often hold the belief that far-reaching compliance requirements are a barrier for newcomers, while my observation is that compliance requirements are ultimately not a barrier, but rather become the subject of innovation and disruption themselves. An example of this is that by now it has become clear that it is easier for the big tech companies to comply with strict GDPR requirements, resulting in a competitive advantage (Yueh, 2018). In my view, responsible innovation is only possible if the relevant compliance experts *are part of* the innovation team and if teams take joint responsibility for compliance.

My conclusion is that the *three lines of defense model* prescribed by supervisors is, in this form, not suitable for achieving responsible innovation. Years of controls by the compliance function have undermined the self-learning capacity of the business to make contextual assessments and ethical considerations (Winter, 2018b, p. 170). Just like *muscles*, contextual assessments and ethical considerations wither away when not used (Moerel, 2018a). In current over-regulated sectors such as the financial sector, the reflex is now that if there is no rule that prohibits something, then it is allowed. In the words of psychologist Barry Schwartz (Schwartz, 2019) in his famous TED-talk: *Moral skill is chipped away by an overreliance on rules that deprives us from the opportunity to improvise and learn from our improvisations.*' In currently highly-regulated sectors such as the financial sector, the reflex is that if there is no rule that prohibits something, that same thing is therefore allowed and does not require *any moral considerations*. (van de Loo & Winter, 2017, p. 6).

More and more rules replace the responsibility we feel for our behavior and its consequences for others with responsibility to comply with the rules. Increasing regulation generates a feeling that anything that is not prohibited is therefore permitted and does no longer require an assessment of the consequences of one's own behavior for others. (van de Loo & Winter, 2017, p. 6)

Because new digital services present us with new ethical dilemmas, the new reality cannot be captured in rules (if that were possible). The business itself, with the help of compliance experts, should therefore develop these practical skills, challenge itself to develop the self-discipline to set the right moral course, and, at the same time, have the discipline to quickly recognize mistakes and stop them. In established companies, failure is often seen as a weakness. By contrast, tech companies see this as a strength, provided it is quickly acknowledged (*fail fast*). Illustrative here is that the CEO of Amazon systematically calls his company the '*best place in the world to fail*' (Mac, 2016). A personal note here is that *celebrating* failure in these tech companies does not mean that poor performance is accepted. In these companies, *celebrating failure* is done by the absolute *best of the best*, in a corporate culture where there is only room for excellence. This is not something that can be copied easily and it requires compliance officers to get out of their comfort zone. Often, the warning with AI is that it will require our workforce to reskill and upskill. For compliance officers, this means they will no longer check for irregularities, but collaborate with the business and think *out-of-the-box* about new technical solutions to ensure compliance. Current compliance departments are not equipped for this. A frequently heard complaint is that if compliance is involved at the start of an innovation project, innovation will not get off the ground. Working with the *Chief Privacy Officers* of U.S. tech companies, my observation is that this position existed

much earlier in the U. S. (while no rule forced them to have this position) and that these officers are very *business and tech savvy* personalities who are more heavily a part of the innovation teams than in Europe, and also correspondingly are better paid. Here, too, the cost goes for the benefit. I conclude by noting that if companies have to adapt, supervisory authorities will have to adapt, too.

Design Choices and Ethical Dilemmas

Many digital services require the processing of personal data for which prior consent of the consumer (*opt-in*) is required under GDPR or for which an objection must be offered (*opt-out*). The online design of opt-ins and opt-outs (in jargon: the *choice architecture*) requires many design decisions in which ethical considerations must be made (Thaler & Sunstein, 2008, p. 3). Because the commercial interests of collecting as much data as possible are large, in practice all tricks available are used to entice website visitors and app users to opt-in (or to make it difficult for them to opt-out). The design thereby exploits the *predictably irrational* behaviour of people so that they make choices that are not in their best interest (Ariely, 2009). In 2018, the Norwegian Consumer Authority published a report on the bag of tricks of the three largest tech companies, see (Norwegian Consumers' Council, 2018). A very simple example is that consumers are more likely to click on a blue button than a gray button, even if the blue one is the least favourable option. Telling is that Google once tested 41 shades of blue to measure *user response* (Holson, 2009). Before you think that *we, as a company, would never do so*, I would like to inform you that almost all established companies deliberately make it difficult for consumers to make their actual choice and seem to have little moral awareness of doing something wrong. If you would deliberately mislead someone in the offline world, everyone would immediately feel that this was unacceptable behavior (van den Hoven, Miller, & Pegge, 2017, p. 25). Part of the explanation for this is that GAFA have deliberately and systematically pushed the limits with their digital services in order to get their users used to certain processing practices (Zuboff, 2019, p. 159). Although GAFA's privacy practices are now under investigation by privacy and anti-trust authorities around the world, we still see that these practices have obscured the view of what is or is not an ethical use of data. Although there are compliance rules, these rules mainly concern a floor that you cannot go under. Compliance does not yet mean that you as a company also take social responsibility and create long-term value. This requires reflection on the mission of a company and how to best fulfill that mission in a digital world. That seems simple and obvious, but it is not. I regularly see elaborate digital strategies that do not contribute (or are even contradictory) to the mission. Innovation is often taken outside the existing framework with the idea

that then only *moonshot* ideas can be developed. However, in the new digital reality, innovation must also be directed to continuing to achieve the mission.

Example: Mission of a Bank

If a bank's mission is to enable people to make conscious choices for a healthy financial future (*financial autonomy*), then, as a board, you will also have to think about what *digital* financial autonomy actually requires. With new digital capabilities, that will at least mean that customers are provided with real-time insight into their finances and pension rights (which also integrates account information and pension rights with other institutions) so that they can manage their personal finances and pensions. As long as you do not offer this type of functionality, you do not give substance to your mission. We see that banks are taking the first steps in this direction, but this is often seen as a fun new digital *gadget* instead of a necessary step towards giving substance to the mission.

By way of illustration, I will provide a number of examples of new ethical dilemmas that arise in AI-driven digital services at the next chapter ("How Can It Be Done?").

Risk of New Missteps

It is sufficient that the executive should have known that mistakes of the kind that occurred were probable (for example, when there are strong incentives to complete the job as fast as possible, the risk that safety may be compromised increases). In certain organizations certain patterns are common enough that we should expect a competent official to anticipate them and to take reasonable precautions to avoid them or at least to minimize their harmful consequences (Thompson, 2017, p. 36)

Because compliance is in the design of AI-driven solutions, important design decisions are made by *data scientists*. Individual design decisions can sometimes be perfectly logical at the *micro level* from the perspective of the data scientists, but can become problematic at the *macro level* in combination with all other microdecisions in the end result. Because so many individuals are involved in the development process, *the problem of many hands* arises, where nobody ultimately has the overview and feels responsible for the complete end result (Thompson, 2017). A problem that established banks have experienced with their *Anti-Money Laundering* compliance, and something many people will have wondered is: how is it possible that we involve so many employees for this and then come to this result? If development of AI-driven solutions and the design decisions involved are left to the innovation teams with *data scientists* (Thaler & Sunstein, 2008), there is a good chance that results will come out that are ultimately not in accordance with the mission and profile of the

company. Tech companies now have extensive experience with such *missteps* by their innovation teams and have their hands full with correcting these and making publicly apologies (Zuboff, 2019, p. 159). It is the task of boards to become aware of where things regularly go wrong with others and to provide direction thereon in their own organisation. Tech companies now do this with their *Corporate AI Principles* and internal ethics boards (Machmeier, 2018) (Pichai, 2018) (Sharron & Serwin, 2018). Some also experiment with independent *ethics review boards* (Thompson, 2017, pp. 46-47). The idea behind setting up an independent ethical review board is that such a board can address the problem of the *many hands* (ironically, therefore, by actually adding more hands). In practice, I see that setting up an external independent ethical review board is not easy to integrate into current corporate governance. What do you do as a company when new critical digital services are labelled insufficiently ethical by such an external board? And, which independent expert wants to be on such a board? Illustrative is that in April 2019, Google announced its intention to set up an independent ethics board, only to cancel it within a week after heavy criticism of the proposed members (Wakefield, 2019).

Risk Assessment From a Business Perspective Is Not Sufficient

Privacy- and ethics-by-design require that the impact of innovations must be assessed on the basis of risks for *individuals* (and therefore society as a whole), and not only in the jurisdiction of the company, but also across borders (van den Hoven, Miller, & Pegge, 2017, p. 7). Established companies assess risks primarily from the perspective *of the company itself*, and on a *jurisdiction-by-jurisdiction* basis. This also requires a change of mindset. My experience is that newcomers find this easier because they usually develop a *global* platform and have a *user-centric* approach, addressing user *concerns* (the perceived negative impact and risks of services from established companies) in the new service.

Example: Concerns of Individuals That They Have No Control Over Their Financial Situation

Established banks are traditionally not very transparent about their earnings model and how the financial system functions exactly, with the idea that full transparency will ultimately only lead to a *race to the bottom*, which is not in their interest. Meanwhile, people who use financial services mainly worry that they have no overview of their overall financial situation and therefore cannot make informed decisions about, for example, their desired pension accrual. Research shows that emotional elements (and, in particular, reduction of anxious feelings) is an important factor for

the *Net Promoter Score* (NPS) and has more impact on such score than functional improvements in services (Bain & Company, 2018b, pp. 4-7). The research reports that almost all established banks score low on the *fear reduction* factor. Newcomers respond to this by offering apps that provide full transparency to their users about their integrated financial situation (regardless of through which bank or insurer their accounts, loans, mortgages and insurance have been taken out), which facilitates the creation of a personal pension plan.

Lack of Recognition Function and Impact AI

AI is often viewed as a smarter version of IT systems, in which a project team with *data scientists* is deployed to train the AI and get it into production. The function of AI, however, is, in its core, not the automation of business processes. The real progress and added value of AI is the ability to make cheaper and better predictions (Goldfarb, 2018) (Agrawal, Gans, & Goldfarb, 2018). If you look at AI through the economic lens of a reduction in the cost of predictions, it suddenly becomes possible to assess where the use of cheaper predictions can make a difference in the business operations. That is sometimes easy to imagine (how can distribution and stock management be optimised?), and sometimes it requires quite some imagination, because the real breakthrough that AI applications bring is actually devising how you can reformulate an existing problem into a prediction issue.

Example: Translation Software and Self-Driving Cars

For example, AI has made a breakthrough in translation software. Before AI, the idea was that for translating a text, the translation rules had to be programmed. Now, the issue has been reformulated into a prediction issue, and the algorithms are trained to predict the most likely translation. The same applies to self-driving cars. Instead of programming the traffic rules, an algorithm is now being trained to predict how a human driver would act in relevant circumstances.

Many companies do not systematically think through in which of its business processes cheaper predictions can play a role (or how some processes can be converted into a prediction) and therefore where AI can make a difference. And when AI is deployed, it is often treated as an IT development and implementation project, for which a project team is set up, which can be dissolved when the project is finished. The expectation is further that after the implementation of AI, fewer employees are needed for a task or that the same number of employees can generate more output. For example, if we can predict how to optimise distribution and inventory management, we need fewer people for that. These are misconceptions. In economic terms, algorithms also have their own *complementary goods*. When the price of coffee

goes down, the demand (and price) for sugar and milk goes up. The complementary goods of algorithms are data and judgements (making trade-offs on how to set up and apply the algorithms) (Agrawal, Gans, & Goldfarb, 2018, p. 15 & 18).

Data. Most companies think that they have lots of data, but practice shows that if an algorithm has to be trained to improve a business function, you require other or more data to train the algorithm properly. Because the circumstances are constantly changing, an algorithm will further have to be continuously updated with the latest data.

Example: The Call Center

Suppose a company wants to optimise the functioning of a call center (less time per caller and better answers). The expectation is that certain problems with products and services can be spotted and solved earlier. Until now, this has been done by having the call center operators write down notes of their conversations with customers and code the issues, but because the operators do not always use the right codes, it is difficult to make good analyses. The available data is therefore insufficient to train an algorithm. To be able to train an algorithm, the call center calls themselves must first be converted into data. This can be done, for example, by converting all conversations via voice recordings into voice data and applying speech and text analytics, so that problems and solutions can be identified. Because the topics about which customers call are constantly changing, the algorithm must be constantly updated with recent call data. Call center operators can then be provided with suggestions for answers in real time while having a conversation. Problems with products and services can also be identified almost in real time.

Judgements. Apart from the design choices and ethical considerations discussed earlier (see section 'Design Choices And Ethical Dilemmas'), it is ultimately your employees who determine where you can best use predictions, which data you can best use for them and how you can generate them, what to do with the predictions once you have them and whether the people who have to apply the predictions on the floor are able to do so. Proper training and use of algorithms almost always requires re- and up-skilling of employees.

Example: Insure or Not?

A company wants to consider whether it makes sense to take out insurance for certain events. An algorithm can predict the risk of a certain event occurring and the costs involved. You would still have to consider what you will do with those predictions, which also depends on other measures that you can take to prevent

risks. In that case, the predictions of the algorithm are input for an assessment, but are not the assessment itself.

All in all, I see that initial expectations regarding cost savings and efficiency improvements are overestimated by boards and the impact on the organisation is underestimated. This is mainly due to insufficient thought being given to the impact of AI's *complementary goods*. Implementation of AI applications is not a one-off IT project; it usually requires extensive adjustments by the organisation itself with regard to the data to be generated and assessments to be made.

When is AI a board issue? I noted earlier that companies often assess AI applications as an IT project and treat the associated risks as operational risks. This is not sustainable as soon as AI goes beyond increasing the productivity of tasks *to implement* the strategy and can have an impact *on the strategy itself*. The latter is particularly the case if the business model is based on a *trade-off* that can be influenced by uncertain factors, where predictions can be used to decrease the uncertainties, as a result of which the trade-off may tip in the other direction. Another example where deploying AI is a board issue is when applying AI in one part of the company also has an impact on other parts of the organisation, and where the skills required to make the assessments require a different design of the organisational structure (Agrawal, Gans, & Goldfarb, 2018).

Example: The Trade-off of the Amazon Business Model

Like other retailers, Amazon has a *shop-then-ship* business model and not a *ship-then-shop* model. The latter model will generate more sales, but will also incur more costs due to returns. If the cost of returns is too high, the ROI of the traditional *shop-then-ship* model is higher than the ROI of *ship-then-shop*. By using better predictions, the uncertainty can be reduced for both sales (higher) and returns (fewer). As a result of better predictions, the trade-off may turn out in favour of *ship-then-shop*. If Amazon were to implement this model, this would probably also have an impact on other parts of the company; for example, this could make it opportune to vertically integrate deliveries and returns, which are now mostly outsourced to third parties. (This example is from (Agrawal, Gans, & Goldfarb, 2018, pp. 156-157)).

What Is an Open Culture?

My impression, specifically for boards in the Northern European countries, is that they themselves have the conviction that they have an *open culture* (whereby everyone openly gives his or her opinion and a good discussion takes place), and that, as a result, there is a good culture for innovation. *Speaking your mind*, however, is not the same as having an *open mind*. As a rule, the boards of U.S. newcomers

are more open-minded. They listen to insights that are different from their own understanding of reality and ask further questions (which does not mean that they will then do what you say). The reactions of boards from established companies (and, in particular, those in the financial sector) are mainly characterised by 'yes, but ...', whereby an attempt is made to fit a new insight into what they already know (*confirmation bias*). By applying selective insights into existing knowledge in this way, an overestimation of one's own digital *savvyness* is created. This results in a strong tendency to confirm the status quo and complicates *out-of-the-box* thinking and a *can do* mentality, which hinders disruptive thinking. Innovation in Northern European countries, therefore, seems to focus primarily on existing services and products. These countries find it more difficult to become disruptive themselves.

Digital Is Not Expertise but Is the Business

Few boards have enough combined digital expertise to have meaningful digital conversations with senior management. (…) The solution isn't simply to recruit one or two directors from an influential technology company. For one thing, there aren't enough of them to go around. More to the point, digital is so far-reaching – think e-commerce, mobile, security, the Internet of Things (IoT), and big data – that the knowledge and experience needed goes beyond one or two tech-savvy people. (Sarrazin & Willmott, 2016, p. 2)

The board determines the digital strategy. At established companies, boards are currently insufficiently equipped for this (Weill, Apel, Woerner, & Banner, 2019b, pp. 4-5) (Stephenson & Olson, 2017) (Bonnet, 2014) (Merrill, 2019). Every digital strategy will require change management, and I would even say *transformation* management. Change management is already a disruptive affair under all circumstances, which requires a lot of commitment, perseverance and insight from the leadership (van de Loo & Winter, 2016, pp. 3-5). Not only can the change itself fail, but failure usually also means a decline in the authority of leadership. Transformation challenges are about questioning and adapting long-held views and behavioural patterns (van de Loo & Winter, 2016, p. 4) (Heifetz, Grashow, & Linsky, 2009) (van de Loo, 2010). The inclusion of a digital expert as a member of the board is not sufficient to achieve this (Merrill, 2019, p. 2). Digitisation is not support for the business, but by now has become the business itself. For a digital strategy, all relevant aspects must be considered in combination, including behaviour, culture, risk management, ethics, compliance, strategy execution, decision-making and leadership (van de Loo & Winter, 2016, p. 4). To steer this in the right direction, both executive and non-executive directors must have in-depth knowledge and experience to be able to build up the digital dimension of the company and to monitor its quality. This cannot be left to a newly

appointed (or to-be-appointed) *digital director* or *chief digital officer* or external advisors (Valentine & Stewart, 2015). The MIT Sloan study shows that companies with boards that have at least three *digital savvy* members show significantly better financial results (the value add above three was small) (Weill, Apel, Woerner, & Banner, 2019b, p. 6). A quote from the report (Weill, Apel, Woerner, & Banner, 2019a, p. 1): '*As one director commented: A single digital savvy director in the boardroom risks feeling lonely and misunderstood. To effect change at the board level, there must be a critical mass of directors who truly understand*'.

In the words of the introduction: with a minimum of three board members, it is possible to develop a common language and common principles so that a meaningful discussion can take place. The other board members will have to sufficiently master this language and these principles to be able to participate in the discussion in a meaningful way. This means that the *entire board* must commit to digital education. In U.S. companies, we do see that boards set up technology & cybersecurity committees, through which new technologies are assessed from both a risk and an opportunity perspective, including cybersecurity risks (Ferracone, 2019). Research also shows that an increase in the frequency of interaction within boards leads to a better balanced discussion about both the opportunities and risks of new business models (Kark, Puranik, Leatherberry, & McCormack, 2019) (Sarrazin & Willmott, 2016, p. 6). For some companies, cybersecurity is assigned separately to the audit committee, but it is difficult to assess this element separately from new technologies (because cyber risks are intertwined symbiotically) and risks need to be assessed in the entire context of business operations (Ferracone, 2019).

Short-Term KPI and Reporting Cycles

Established companies are often stuck in their traditional short-term reporting cycles and expect investments to generate immediate revenues or savings, while new business models are first aimed at achieving the largest possible user base and only in time introduce a (mostly indirect) earnings model, which requires a longer-term vision. Established companies sometimes overcome this issue by developing digital innovations outside the existing context and, for the time being, not formulating revenue and profit targets. That seems logical, but the real point here is that where business models are going to transform, another way of reporting should be devised to express the value of the new business models (Sarrazin & Willmott, 2016). This is something different than adjusting sales and profit expectations downwards. Furthermore, I am not an expert on remuneration policy, but it seems clear to me that where variable rewards are mainly related to annual profitability for shareholders, digital innovation will suffer. KPIs and remuneration policies should be geared towards successfully introducing innovations that are valued by existing and new customers *for their added value*.

CONCLUSION

History shows that whenever a new technology is introduced, society needs time to adjust. As a consequence, at this time the internet is still driven by the possibilities of technology rather social and legal norms (Moerel, 2014, p. 21).This inevitably leads to social unrest and calls for new rules. An illustrative example here is that in 2010, Mark Zuckerberg (CEO and founder of Facebook) caused quite a stir when he publicly announced that the end of privacy was in sight (Johnson, 2010).

People have really gotten comfortable not only sharing more information and different kinds, but more openly and with more people. That social norm is just something that has evolved over time. M. Zuckerberg, 2010 (Johnson, 2010)

However, in March 2019 (following the Cambridge Analytica data analysis scandal), Zuckerberg requested that the U.S. senate regulate tech companies (Miller, 2019) and further announced a complete overhaul of Facebook's privacy features: *The future is private . . . and that's the next chapter for Facebook* (Hassan, 2019). From *privacy is dead* to *privacy is the future*. My point here is that not only are technical developments moving fast, but also that social standards and customer expectations are evolving and that it will take years before we will have a somewhat clear and predictable new regulatory framework. This requires that boards be well *tuned in* to these developments to determine a digital strategy that does not fall into the same pitfalls as the tech companies. Digital is not a communication channel or a specific expertise; it is, by now, the business itself. It is not possible to manage a company without knowledge of the business.

The new digital possibilities require that the mission of a company is given renewed substance and that innovation is directed to that end (it is not a free playground). New ethical dilemmas must be identified and thought through, and the organisation must be trained accordingly. If change processes and cultural changes are needed to run the business, boards must ensure that these are implemented.

Boards must therefor recognise that their view of what real disruption entails and how innovation can be realised is hampered not only by the *legacy* of their IT systems, but also by the *legacy* of the set-up of the compliance function, the existing dominant language in boards aimed at financial parameters and control, short-term (financial) KPIs and reports, a remuneration policy aimed at profitability for shareholders and a culture in which it is difficult to fail.

This means that there is a fundamental need to think differently about risk and control, as well as about financial translation of the new business models and reporting on them. This requires a different look at the organisation's own strengths and weaknesses, the willingness to take joint responsibility for risks and, at the

same time, the discipline to quickly recognise mistakes and subsequently stop them. This requires a substantial reinforcement of the internal culture, not from a perspective of Corporate Governance Codes to combat irregularities (that quickly goes towards more control and compliance), but rather a focus on self-discipline and a culture of effectively challenging each other. This requires a different structure from the predominant *three lines of defense* compliance model and also a different remuneration policy, whereby the focus is on achieving innovation that actually offers added value for customers.

This can only be accomplished if boards look forward, which is only possible if they delve deeper into the strategic issues. As a result, non-executives directors are getting closer to the business than in the past, instead of assessing (financial) results as a reflection of the business (from the rear-view mirror). The roles of executive and non-executive directors will therefore come closer together and will have to calibrate a new mutual relationship.

With respect to current corporate governance, this means that the traditional profiles of non-executives being mainly former management executives from the old world is currently not *fit for purpose*. Boards will have to develop a strategy to make the board more *digital savvy* (Weill, Apel, Woerner, & Banner, 2019b, p. 3). Room must be made for a relevant number of *digital savvy* board members. Because they probably have less experience in more traditional areas of expertise, more intensive *onboarding* will have to take place, also to guarantee a cultural fit with the board and the company. In the meantime, enough digital knowledge must be present in board meetings (for example, by having digital experts from management or external advisors temporarily join), and training programs must ensure that all members acquire sufficient *digital working knowledge*.

The reflections above do not lead me to the conclusion that a *two-tier board* is unsuitable for coping with the digital transformation. There is also no compelling reason to switch from a two-tier to a one-tier board model. In both types of board models, the big challenge is to focus the dialogue between executives and non-executives on the future. In the rear-view mirror, you will never perceive the future, no matter how you design the corporate governance of companies.

I conclude with the observation that if boards of established companies have to manage and supervise differently, this will also apply to their external supervisory authorities. As long as external supervision does not innovate, it will become particularly difficult to scale up the innovations that have been developed outside the existing context within the existing context.

REFERENCES

Accenture. (2017). *Financial Providers: Transforming Distribution models for evolving customers.* Retrieved from Accenture: www.accenture.com/t20170111T041601__w__/us-en/_acnmedia/Accenture/next-gen-3/DandM-Global-Research-Study/Accenture-Financial-Services-Global-Distribution-Marketing-Consumer-Study.pdf

Accenture. (2019). *Global Financial Services Consumer Study.* Retrieved from Accenture: www.accenture.com/_acnmedia/PDF-95/Accenture-2019-Global-Financial-Services-Consumer-Study.pdf#zoom=50

Agrawal, A., Gans, J., & Goldfarb, A. (2018). *Prediction Machines – The Simple Economics of Artificial Intelligence*. Boston: Harvard Business Review Press.

Ariely, D. (2009). *Predictably Irrational.* London: HarperCollingsPublishers.

Article 29 Working Party. (2018). *Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679 (WP251).* Brussels: Author.

Bain & Company. (2018b). *New Bain Certified NPS Benchmarks: Companies Customers Love: Introducing Reliable, Objective Net Promoter Scores For Setting Goals And Priorities.* Retrieved from Bain: www.bain.com/contentassets/806b3ae1 cfe540acbafe386868edae01/bain_digest_new_bain_certified_nps_benchmarks.pdf

Banken.nl. (2018, December 11). *Banken verliezen terrein aan concurrerende techbedrijven*. Retrieved from Banken.nl: https://www.banken.nl/nieuws/21303/banken-verliezen-terrein-van-concurrerende-techbedrijven

Boden, A. (2019). *The Money Revolution: Easy Ways to Manage Your Finances in a Digital World*. London: Kogan Page.

Bonnet, D. (2014, July 9). *It's Time for Boards to Cross the Digital Divide*. Retrieved from Harvard Business Review: https://hbr.org/2014/07/its-time-for-boards-to-cross-the-digital-divide

Brynjolfsson, E., & McAfee, A. (2014). *Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant New Technologies*. London: W.W. Norton & Company.

Dastin, J. (2018, October 10). *Amazon scraps secret AI recruiting tool that showed bias against women*. Retrieved from Reuters: https://www.reuters.com/article/us-amazon-com-jobs-automation-insight-idUSKCN1MK08G

Deans, J. (2006, March 2). *OPA conference: the morning*. Retrieved from The Guardian: https://www.theguardian.com/media/organgrinder/2006/mar/02/opaconferenceisdigitalthe

European Banking Association's. (2011, September 27). *Guidelines on Internal Governance (GL 44)*. Retrieved from EBA: https://eba.europa.eu/sites/default/documents/files/documents/10180/103861/e03ae4b3-1059-4d2a-a5ff-35a287f8c850/EBA-BS-2011-116-final-EBA-Guidelines-on-Internal-Governance-%282%29_1.pdf?retry=1

Ferracone, R. (2019, July 9). *Good Governance, Do Boards Need Cyber Security Experts?* Retrieved from Forbes: https://www.forbes.com/sites/robinferracone/2019/07/09/good-governance-do-boards-need-cyber-security-experts/#70b127111859

Goldfarb, A. (2018, May 22). *How AI is Making Prediction Cheaper*. Retrieved from Harvard Business Review: https://hbr.org/podcast/2018/05/how-ai-is-making-prediction-cheaper

Greenfield, R. (2012, December 14). *2012: The Year Facebook Finally Tried to Make Some Money*. Retrieved from The Atlantic: https://www.theatlantic.com/technology/archive/2012/12/2012-year-facebook-finally-tried-make-some-money/320493/

Gunning, D. (2016). *Explainable Artificial Intelligence (XAI)*. Retrieved from Georgia College of Tech Computing: www.cc.gatech.edu/~alanwags/DLAI2016/(Gunning)%20IJCAI-16%20DLAI%20WS.pdf

Hassan, A. (2019, April 30). *Zuckerberg promises "complete overhaul" of Facebook geared towards user privacy at F8*. Retrieved from ABC: https://abc13.com/business/zuckerberg-promises-complete-overhaul-of-facebook-geared-towards-user-privacy/5277460/

Heifetz, R., Grashow, A., & Linsky, M. (2009). *The practice of adaptive leadership*. Boston: Harvard Business School Press.

Holson, L. (2009, February 28). *Putting a Bolder Face on Google*. Retrieved from The New York Times: www.nytimes.com/2009/03/01/business/01marissa.html

Institute of Internal Auditors. (2018). *The Three Lines of Defense in Effective Risk Management and Control*. Retrieved from The Institute of Internal Auditors: www.na.theiia.org/standards-guidance/Public%20Documents/PP%20The%20Three%20Lines%20of%20Defense%20in%20Effective%20Risk%20Management%20and%20Contro

Janssen, W. (1994). Seat belt wearing and driving behaviour: An instrumented-vehicle study. In Accident Analysis and Prevention (pp. 249-261). Elsevier.

Johnson, B. (2010, January 11). *Privacy no longer a social norm, says Facebook founder*. Retrieved from The Guardian: www.guardian.co.uk/technology/2010/jan/11/facebook-privacy

Kahneman, D. (2011). *Thinking Fast and Slow*. London: Allen Lane.

Kark, K., Puranik, M., Leatherberry, T., & McCormack, D. (2019, February 22). *Technology and the boardroom: A CIO's guide to engaging the board*. Retrieved from Deloitte Insights: https://www2.deloitte.com/us/en/insights/focus/cio-insider-business-insights/boards-technology-fluency-cio-guide.html.html

Kelion, L. (2019, November 24). *Google tackles the black box problem with Explainable AI*. Retrieved from BBC: www.bbc.com/news/technology-50506431BBC

Khouri, A. (2015, October 18). *Insurance start-up Oscar seeks to shake-up healthcare through its app*. Retrieved from Los Angeles Times: www.latimes.com/business/la-fi-cutting-edge-oscar-20151018-story.html

Lotti, M. (2009-2010). *Ethics and the information Age*. Retrieved from Effect Magazine Online: http://www.larsonallen.com/EFFECT/Ethics_and_the_Information_Age.aspx

Mac, R. (2016, April 5). *Jeff Bezos Calls Amazon "Best Place In The World To Fail" In Shareholder Letter*. Retrieved from Forbes: www.forbes.com/sites/ryanmac/2016/04/05/jeff-bezos-calls-amazon-best-place-in-the-world-to-fail-in-shareholder-letter/#5aa338f37bc5

Machmeier, C. (2018, September 18). *SAP Guiding Principles for Artificial Intelligence*. Retrieved from SAP News Center: https://news.sap.com/2018/09/sap-guiding-principles-for-artificial-intelligence/

MacKenzie, I., Meyer, C., & Noble, S. (2013, October). *How retailers can keep up with consumers*. Retrieved from McKinsey: www.mckinsey.com/industries/retail/our-insights/how-retailers-can-keep-up-with-consumers

Merrill, D. (2019, March 24). *What Boards Need to Know About AI*. Retrieved from Harvard Business Review: https://hbr.org/2019/05/what-boards-need-to-know-about-ai

Miller, J. (2019, March 31). *Mark Zuckerberg asks governments to regulate tech firms*. Retrieved from Techspot: www.techspot.com/news/79440-mark-zuckerberg-asks-governments-regulate-tech-firms.html

Moerel, L. (2014, March 1). *Big Data Protection: How to Make the Draft EU Regulation on Data Protection Future Proof*. Retrieved from SSRN: https://papers. ssrn.com/sol3/papers.cfm?abstract_id=3126164

Moerel, L. (2018a, June 19). *Als algoritmen routinewerk overnemen nekt dat ook expertise*. Retrieved from FD: https://fd.nl/opinie/1258607/als-algoritmen-routinewerk-overnemen-nekt-dat-ook-expertise

Moerel, L. (2018b, November 16). *Algorithms can reduce discrimination, but only with proper data*. Retrieved from Op-ed IAPP Privacy Perspectives: https://iapp. org/news/a/algorithms-can-reduce-discrimination-but-only-with-proper-data/

Moerel, L. (2019a, June 18). *Ontkomen aan digitale disruptie*. Retrieved from Pensioen Bestuur & Management Magazine: www.pensioenbestuurenmanagement. nl/nieuws/communicatie/ontkomen-aan-digitale-disruptie

Moerel, L., & Prins, C. (2016, May 25). *Privacy for the Homo Digitalis: Proposal for a New Regulatory Framework for Data Protection in the Light of Big Data and the Internet of Things*. Retrieved from SSRN: https://papers.ssrn.com/sol3/papers. cfm?abstract_id=2784123

Moerel, L., & Storm, M. (2019). Automated Decisions based on Profiling. Information, Explanation or Justification, That's the Question! In N. Aggarwal (Ed.), Autonomous Systems and the Law. Munich: C.H. Beck.

Norwegian Consumers' Council. (2018, June 27). *Deceived by Design: How tech companies use dark patterns to discourage us from excersising our privacy rights.* Retrieved from Forbrukerrådet: https://fil.forbrukerradet.no/wp-content/ uploads/2018/06/2018-06-27-deceived-by-design-final.pdf

Pichai, S. (2018, June 7). *AI at Google: our principles*. Retrieved from Google: https://blog.google/technology/ai/ai-principles/

Plato. (2017). *Allegory of the Cave*. Los Angeles: Enhanced Media Publishing. doi:10.4324/9781315303673-22

Raaijmakers, G., & Buma, O. (2019). Terugblik en vooruitblik op de invloed van de Code Corporate Governance. TvOB, 2, 65-72..

Sarrazin, H., & Willmott, P. (2016, July). *Adapting your board to the digital age*. Retrieved from McKinsey: www.mckinsey.com/business-functions/digital-mckinsey/ our-insights/adapting-your-board-to-the-digital-age

Schwartz, B. (Director). (2019). *Our Loss of Wisdom* [Motion Picture].

Sharron, S., & Serwin, A. (2018, July 20). *Managing Corporate AI*. Retrieved from Corporate Compliance Insights: www.corporatecomplianceinsights.com/managing-corporate-ai/

Solsman, J. (2018, January 10). *YouTube's AI is the puppet master over most of what you watch*. Retrieved from CNET: www.cnet.com/news/youtube-ces-2018-neal-mohan/

Stephenson, C., & Olson, N. (2017, March 15). *Why CIOs Make Great Board Directors*. Retrieved from Harvard Business Review: https://hbr.org/2017/03/why-cios-make-great-board-directors

Thaler, R., & Sunstein, C. (2008). *Nudge, Improving Decisions About Health, Wealth, and Happiness.* Yale.

Thompson, D. (2017). Designing Responsibility: The Problem of Many Hands in Complex Organizations. In *Designing in Ethics* (pp. 32–56). Cambridge: CUP. doi:10.1017/9780511844317.003

Udding, A. (2016, November 1). *Three Lines of Defence: a Panacea?* Retrieved from Axveco: https://axveco.com/three-lines-of-defence-a-panacea/

Valentine, E., & Stewart, G. (2015, January 5). *Enterprise Business Technology Governance: Three Competencies to Build Board Digital Leadership Capability*. Retrieved from 48th Hawaii International Conference on System Sciences: www.researchgate.net/publication/267448425_Enterprise_Business_Technology_Governance_Three_Competencies_to_Build_Board_Digital_Leadership_Capability

van de Loo, E. (2010). Waarom leren gevaarlijk is. Academic Press.

van de Loo, E., & Winter, J. (2016). *Cultuur en gedrag volgens de nieuwe corporate governance code*. Ondernemingsrecht.

van de Loo, E., & Winter, J. (2017, November 10). *Corporate Culture is an Alarmingly Low Priority for Boards*. Retrieved from Insead Knowledge: https://knowledge.insead.edu/leadership-organisations/corporate-culture-is-an-alarmingly-low-priority-for-boards-7676

van den Hoven, J., Miller, S., & Pegge, T. (2017). *Designing in Ethics*. Cambridge University Press. doi:10.1017/9780511844317

Wakefield, J. (2019, April 5). *Google's ethics board shut down*. Retrieved from BBC: www.bbc.com/news/technology-47825833

Weill, P., Apel, T., Woerner, S., & Banner, J. (2019a). *Companies with a Digital Savvy Board Perform Better*. Cambridge: MIT Sloan.

Weill, P., Apel, T., Woerner, S., & Banner, J. (2019b). *Assessing the Impact of Digital Savvy Board on Company Performance*. Cambridge: MIT Sloan.

Winter, J. (2018b). A Behavioral Perspective on Corporate Law and Corporate Governance. In J. Gordon & W. Ringe (Eds.), *The Oxford Handbook of Corporate Law and Governance*. Oxford: OUP.

Wittgenstein, L. (1922). *Tractatus Logico-Philosophicus*. London: Kegan Paul.

Wokke, A. (2014, March 14). *Instanties kritisch over proef ING met advertenties op basis van betalingsgedrag*. Retrieved from Tweakers: https://tweakers.net/nieuws/94841/instanties-kritisch-over-proef-ing-met-advertenties-op-basis-van-betalingsgedrag.html

Yueh, J. (2018, June 26). *GDPR will make big tech even bigger*. Retrieved from Forbes: www.forbes.com/sites/forbestechcouncil/2018/06/26/gdpr-will-make-big-tech-even-bigger/

Zuboff, S. (2019). *The Age of Surveillance Capitalism*. New York: Public Affairs.

KEY TERMS AND DEFINITIONS

Confirmation Bias: An attempt to fit a new insight into what is already known. Confirmation bias is part of the field of *bias* and *hereustics* that guide our mental processes to arrive at quick interpretations and conclusions. For information about the confirmation bias in decision-making, see (Kahneman, 2011).

Digital Savvy: 'An understanding, tested by experience, of how digital technologies such as social, mobile, analytics, cloud, and the Internet of Things will impact how companies will succeed in the next decade'. Digital savviness is based on an inventory of actual education and work experience as reported in the CVs of board members (Weill et al. 2019b, p. 3).

Net Promotor Score: An index measuring the loyalty of a customer to a company through the question: How likely are you to recommend the service or product to a friend or colleague? The NPS is also a good indicator of profitability. Banks that lead in Net Promoter Score®, which measures the likelihood that a consumer would recommend the bank to others, outperform laggards in net interest income growth (see Bain & Company, 2018b, p. 2).

Paradigm Shift: A revolution in science that leads to a dramatically different image of reality, through a fundamental change in the basic concepts of a scientific discipline. It is usually only in retrospect when the supporters of the old scientific worldview have lost their influence and power that a real conceptual revolution

can be achieved. The concept *paradigm shift* was first coined and described by the U.S. physicist and philosopher T. Kuhn, *The Structure of Scientific Revolutions*, Chicago: UCP 1962.

PSD2: The *Revised Payment Services Directive*, which allows consumers to give fintechs permission to use their payment details for new financial services (also known as *open banking*). Google was one of the first to be licensed under PSD2 (see www.irishtimes.com/business/technology/google-gets-go-ahead-from-central-bank-for-payments-1.3747901).

Status Quo Bias: The phenomenon where people tend to stick to their current situation.

ENDNOTES

[1] Both are important elements in the *best practice* provisions of for example the Dutch and UK Corporate Governance Codes (CGC). See in the Dutch CGC best practice provision 1.1 for the principle that the management board is responsible for the continuity of the company and must focus on long-term value creation for the company. See also best practice provision 1.1.1, which states that the management board should develop a strategy, paying attention to other aspects relevant to the company, such as the environment, social and employee-related matters, the chain in which the company operates, respect for human rights and fighting corruption and bribery. See in the UK CGC best practice provision 1, in particular principle A, which provides that the role of the board is to promote long-term sustainable success of the company; and principle B, which provides that the board should establish the company's purpose, value and stragey and satisfy itself that these and its culture are aligned. See also subprovision 1.1, requiring the board to assess and monior culture and when not aligned with purpose, values and strategy, to ensure that corrective action is taken.

[2] The cave allegory (Plato, 2017) is about prisoners chained in a cave, who have a limited view of reality (only able to hear echoes of voices and see shadows from the world outside). The allegory illustrates that people can only see life from their (limited) perspective and that they then assume that this is reality. As a result, their conversations can only be about their perception of this reality. If a prisoner were to break free from the chains and gain experiences in the upper world and then return, these experiences would be incomprehensible to the other prisoners because their language only refers to shadows and echoes.