

# Neurocultural Individualist Ecosystems

What are the prospects for, and the urgency of, a Neurocultural Individualist Ecosystems approach to the assessment and management of risks to complement or replace existing expert-driven or community-driven approaches?

**Christiaan Wöhle**

s1828045

University of Twente

Faculty of Behavioural, Management and Social Sciences

Master of Science programme

Philosophy of Science, Technology, and Society

## **Graduation Committee**

Supervisor

Prof. Phillip Brey

Second Reader

Prof. Owen King

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## 0. Introduction

What does it take to improve societal resilience to risks that are due to technological and scientific innovation? How can we ensure that the individuals on the front lines of new risks from new technologies, such as doctors and patients in the field of bioengineering, can reliably act morally and prudently in absence of institutional or organizational support, can identify risks appropriately and in time to prevent risks from escalating? This thesis will argue that contemporary efforts in the Assessment and Management of Risks – AMR – fail to appropriately appreciate the nature and urgency of the problem. Indeed, many risks cannot be dealt with sustainably through institutional or organisational means, and thus a neurocultural individualist ecosystems approach to AMR – or NIEMAR, for short – consisting of the education of the individual qua individual, seeks to address this issue. It is the concern with growth of character that links this proposal to a specific type of moral education as one of the many possible pathways towards the stated goal. Furthermore, the case will be made that the kind of changes needed to handle problems about tomorrow that today sound almost esoteric, are in fact practical problems that should have been dealt with yesterday.

Thus, the first chapter will try and summarise how AMR has evolved and changed. It will illustrate how the meta-debate has been circling the issue of technocracy, around the pros and cons of this particular view of governance in the context of risks. The technocracy debate here means the balancing act between the rule of, and by, experts, versus the rule of all. The latter half of this chapter will then introduce existing work that shows some similarities with what is proposed here, and which makes up much of the existing pragmatic proposals for the development of an individualistic approach. First, studies of Risk Intelligence and the concept of meta-cognition. Second, the Virtue Ethics approach to Risk. Third, the defence and assessment of Risk heuristics.

The second chapter will go into a more extensive explanation and definition of an individualist approach, illustrated by the kind of work that has already been done that proves both the effectiveness and need for increased investment in projects aimed at the individual. I will then continue to argue that, because of the speed of scientific and technological change, we are seeing changes in the nature of the human experience of their existence as humans, which I will call lifeworlds, that makes an investment in the individual increasingly essential. Thus, this second part will try to explain what definition of individualism is used in this thesis. For although the layman's

definition of individualism will be enough to understand the more direct and obvious measures one could take in AMR, such as those proposed by Gerd Gigerenzer and Dylan Evans; the more indirect and significant measures argued for here require a much more detailed description.

The third chapter will start by summarising some empirical work that strengthens the view of the individual and civilisation covered in the second chapter, i.e. that the latter is the prerequisite of the former, that they form a feedback loop, and that this process has been, overall, a virtuous circle. Indeed, for many, the idea of progress, let alone moral progress, is hard to accept (Rorty, 2007). However, NIEMAR relies on the possibility and reality of accumulating convergent individual progress, an idea which is also vital to be able to consider the subsequent ideas for moral education as a non-futile endeavour. For, the attempt at training individuals to be capable of autonomous AMR requires that they reliably put such inherently potential skill into actual use. This requires moral education that promotes moral progress while avoiding moral dictation. Thus I borrow the concept of a 'neurocultural ecosystem', an existing label used in the interdisciplinary field of cultural neuroscience (Han, 2013) for those parts of a person's environment, primarily shaped or shape-able by culture, that affect the brain's structure in significant ways, such as the ability to reason or engage in moral reflections (Zigler, 2015, pts. 1, 55/94-76/94). To pursue NIEMAR, therefore, is to actively pursue changes in daily life that promote the development of the skills and character traits involved in competent AMR on an individual level, that then function independently of social structures or legal frameworks.

Finally, I will conclude by summarising and caveating the thesis. As many issues will remain unaddressed, I will only be able to give a few mentions of the most significant obstacles that I can already see to what is proposed here.

# 1. Relevant Risk Management literature

## 1.01 Short historical overview

Where the field of AMR is concerned, there have been significant changes in the general theories and practices over the past few decades, and this history informs the arguments that are in play today and why a different or complementary approach is needed in the first place. It is, therefore, useful to start with a short account of this history. One caveat to mention is that the AMR literature has a scattered origin, meaning that analyses remain part of various academic and non-academic disciplines, each with their criteria and concerns. AMR has only relatively recently become a 'somewhat' defined area of study, thus communication between experts can be difficult. There are philosophers but also sociologists, cognitive scientists, economists, psychologists, mathematicians, etc. Each has different views on what risk is, and how to curtail it. As such, key terms don't always mean the same thing, which in turn hinders a comparative analysis of the literature. Thus, I will restrict myself to describing the history and origin of the ongoing debate between the two main conceptual groups of approaches to AMR. First, those that believe in the power and necessity of experts to do all or the majority of the assessment and management of risks in society. Second, those that believe communities should be doing all or most of this work.

In this short overview, it is the concept of Risk as something potentially mastered and controlled that is a defining feature of debate and scholarship as immediately recognisable to us today (Bernstein, 1996; Melendez et al, 2010). Therefore, I will take this concept of Risk as a starting point, one which matured around the end of the 19th century with the work done by Max Weber and Emile Durkheim. Observing the changes in society caused by industrialisation, they hypothesised that modern industrialised societies would not function properly if these societies didn't also become increasingly bureaucratic and reliant upon experts. This hypothesis was a warning, not a recommendation. Indeed, Weber and Durkheim argued that this evolution highlighted the increasing necessity of political supervision and power over said experts and bureaucrats. Thus, their 'decisionist model' of policy-making, was straightforward. The politicians, informed by societal values, should set the goals to be achieved. The experts should figure out the possible means to said goals, with the social sciences then providing recommendations for policy decisions (Millstone, 2010, p. 2). For example: politicians desire to expand and increase the

profitability of a major harbour, experts work out the technical ways to do this, the social sciences then work out the details and recommend changes in laws or policies to implement the project as efficiently as possible.

This model of decision-making had two significant problems. Firstly, it relied on officials and experts acquiring and retaining “comprehensive, secure, and reliable knowledge, understanding and information with which to reach singular and prescriptive conclusions” (Millstone, 2010, p. 3). This characteristic made the model unsuited to deal with situations where scientific understanding was lacking, incomplete, or contested. Secondly, the model relied on a relatively static view of societal change. Indeed, the political goal setting might work when risks are predictable and slow to change. However, the accelerating rate of change which typifies industrialised and industrialising societies made a constant feedback-loop between scientific experts and politicians vital for proper goal-setting, which would violate the separation between scientists and politics that Weber and Durkheim found crucial in their model (Millstone, 2010, p. 4). Thus, taking the separation between experts and policymakers to be unrealistic, proponents of what came to be known as the ‘technocratic model’ defended the idea that policy should, therefore, be primarily based on scientific expertise.

The main proponents that developed this approach were positivists, initially formulated by sociologists such as Henri de Saint-Simon and Auguste Comte. They recommended technocracy instead of warning against it (Weingart, 1999, pp. 153–155). Under this view, the only role for politicians would be to find the best scientists and experts for the jobs that existing experts judged important. It is a view that believes science and facts to be objective in the meaning of value-neutral. It allows that there may be practical limitations to wholly reliable and certain knowledge relevant to a policy issue, but it does not allow such limitation in principle. This made the approach very unpopular with non-hardcore positivists, primarily for the reason that there are few knowledge claims in science that are not contestable because incomplete or open to a range of interpretations (Millstone, 2010, p. 5). At the same time, irrespective of the conditions under which the technocratic model might be a workable approach, in practice it is rhetorically abused in specific contexts, a phenomenon that has been called ‘blame avoidance’ (Hood & Rothstein, 2001): when members of government claiming to have done nothing but follow what their expert advisors had told them to do. There are many instances when politicians assert following the technocratic model to underline the legitimacy of their actions when they did not actually follow it. This has had the effect of opponents of Technocratic approaches engaging in strawman argumentation, failing to

distinguish examples of the Technocratic model from examples of blame avoidance (Wallace et al, 1995; Beetham et al, 1999, pp. 16-22) .

We had to wait for the 1980s for general practice to truly shift away from the technocratic model. To a large extent, we owe this shift to the US National Research Council's publication that would be popularly known as the 'red book model' (Mitchell, 2017), or the 'inverted decisionist model' so-called because it is an inversion of Weber and Durkheim's decisionist model. Put simply: scientists, insulated from politics, do the Risk assessment of what they find most relevant, politicians derive policy from these assessments through a balancing act of values, interests, and material/practical limitations, with the social sciences mostly limited to the role of Risk communication. It is fundamentally a mixed approach that has some technocratic elements to it, and indeed allows for some technocratic rhetorical abuses as mentioned above. It is based on an ideal of science independent of politics, which is the primary source of criticism of this approach (Millstone, 2010, p. 7).

Indeed, despite the red book model being widely used both in the EU and the WTO, the fact that this approach lives or dies on the complete insulation of science from politics is a significant challenge, both in practice where funding follows politics, and in principle where scientists are people with convictions and biases too. Finally, despite some minor efforts at treating the issue of uncertainty in the assessment and management of risks, it is still recognised as falling short (NRC, 1983; NRC 2009; . NRC, 2011). This is important because, as Luhman has recently and extensively argued in his treatment of 'high technology' (2017), contemporary efforts in the field are particularly motivated by the urgent need to get a grip on the uncertainties related to technological and scientific innovation.

What is known as the dynamic or co-dynamic model of AMR tries to deal with these shortcomings (Saunders, 2003). It accepts that science is intimately connected to all parts of society, including politics, and tries to control for this by making the process and the people/institutions democratically accountable. It furthermore abandons the one-way influence assumed by the previous models. For example, although it is true that science is influenced by politics, that does not mean that science is defined by politics, nor that science, in turn, doesn't also influence politics. It is a way of mapping influence that is fundamentally non-fatalistic: bias is not fatal as long as you map it, stay aware of it, and design mechanisms to control it (Millstone, 2010, p. 9).

One might have noticed that the three approaches mentioned so far, are eminently expert-driven. Indeed, even the co-dynamic model, though decentralised, is in practice still technocratic

insofar as it is experts from various disciplines that do the work. Where these models do advocate some say for the public in the risk assessment and management process, it is for concerns of democratic accountability. For example, Hospital patients might be contacted for feedback on proposals or designs of new technologies, maybe even encouraged to participate in this design process. However, it is up to the experts to decide to take this feedback seriously or not. It is fundamentally a one-way street.

Thusly, the responsibility for the assessment and management of risks has gradually decentralised over time to be able to cope with increasing levels of complexity and uncertainty, but the limits of this way of handling risks have been recognised as increasingly problematic (Linkov, Anklam, Collier, DiMase, & Renn, 2014; Renn & Walker, 2008). Perhaps most importantly, the practice of calculating risks in terms of probabilities and simple cause-effect analyses came to be seen as counterproductive in dealing with risks (Renn, Klinke, & van Asselt, 2011, p. 233). This dilemma gave rise to a new way of approaching the problem, which is generally referred to as 'Risk Governance', a range of community-driven type of approaches.

Risk Governance sees expert, stakeholder, and public input to be of equal importance in the communication, deliberation, and decision stages of AMR. Non-Governmental Organizations in particular, are seen as fulfilling vital roles and possessing some advantages compared to Governmental agencies (Kern & Bulkeley, 2009). Thus where in previous approaches, one actor would be the primary actor – usually Government – in the Governance approach there is fundamentally no central actor, at least not under ideal circumstances. Instead, there are multi-actor networks of various types connecting to each other in multitudes of ways. To make this approach workable, some authors categorize these actor networks in horizontal and vertical types, to then be able to see how various levels interact (Lyall & Tait, 2005), i.e. to start the analysis with single segments of the whole, to then continue and see how these segments are interconnected. The initial idea was that, in this way, one could map the various groups that are directly or indirectly relevant to the decision-making process, and so have the Governance of Risk become part and parcel of democratic life (Rosenau, 1998).

Besides the departure from expert-driven approaches to AMR, another significant feature of Governance approaches is the recognition of various types of risk, in particular an extensive classification of the differences between simple and systemic risks. The latter distinction is meant to highlight “the extent to which a risk is embedded in the larger contexts of societal processes...going beyond the usual agent-consequence analysis” (Renn et al., 2011, p. 234). Indeed, the previously



mentioned approaches all adhered, in some way or another, to a definition of risk mostly known from economist Frank Hyneman Knight (Knight, 2014). He defined risk in opposition to uncertainty, where risks are situations in which the probabilities of possible outcomes of actions or decisions are known and can be accounted for, while uncertainties are situations where the probabilities are unknown and can't be accounted for. Proponents of the Governance approach held that even though simple risks can be said to exist and become meaningful in cases such as recurring natural disasters, car accidents, burglaries etcetera; they are the exception to the rule (Aven & Renn, 2009) or, put more modestly, will increasingly be rare exceptions to the rule (OECD, 2003). Part of the practical message of the Governance approach is, therefore, a change of focus towards the process by which the information used by risk managers is obtained, updated, and integrated into the final decisions made about any risks under investigation (Brooks & Adger, 2005).

In summary, one can already see the fundamental problem of these existing approaches within their very structure: they are all reactive. They all rely on some authority or institution to organise and engage a complex bureaucratic machine that then seeks to tackle a problem, a risk. It is obviously better than nothing at all. However, this time gap is becoming increasingly dangerous to the point of becoming a new type of risk, particularly in the context of the aforementioned fact of an increasing acceleration of the production of new risks derived from technological and scientific innovation. In other words: occurrences of all types of risks existing in a vacuum (without established methods to manage them) is going to become exponentially common; amongst those will be banal but also more dangerous risks; ipso facto, the price paid for this weakness of current approaches to AMR is going to go up also. Hence, in principle, the need to try and find a way to mitigate the risk that this time gap represents.

## **1.02 The Technocracy debate**

However, besides this fundamental issue, there is another more complex potential weakness: the ongoing debate in the field of AMR. Indeed, the history above illustrates how technocracy, and the proper balance with democratic or participatory mechanisms, remains a central issue. The more technocratic the method, the more cost efficient it appears to be. Governance approaches, however, object that this cost efficiency is mitigated when taking into account the range of possible oversights or counter-movements that can be generated in reaction to decisions people disagree

with, or don't understand. Thus, in practice, although it can be argued that there are no pure technocratic nor pure participatory models of AMR, one can see in every approach some form of technocratic attitude. It is the answer to the question of the best balance between technocratic and participatory methods that has come to define the plethora of approaches that exist today, and needs to be taken into account if NIEMAR is to be persuasive for existing professionals in the field. The details are therefore mentioned here, implicitly present in the rest of the thesis, and will be returned to in the conclusion, i.e. after covering the finer details of what NIEMAR is.

Thus firstly, putting aside Comptian 'priesthood of scientists' and its more modest variation recognised today as Scientism (Aronowitz, 1988), an interesting arena of debate is the tension that arises when one sees how, in practice, technocratic reasoning is often a natural result of utilitarianism. The earliest and still dominating forms of AMR are fundamentally cost-benefit analyses à-la Jeremy Bentham. What counts above all else are consequences, simply replacing Bentham's criteria of pleasure and pain with money (Roeser, Hillerbrand, Sandin, & Peterson, 2012, p. 1144). Thus, one way to object to the technocratic attitude is to object to utilitarianism from the perspective of other philosophical movements, such as deontology (Mossman, 2006) or critical theory (Ehrenfeld, 1996). Other authors have however noticed some of the consequences of the abandonment of the ideal of the objectivity of science that many such criticisms of AMR commit to (Leiss, 2001). Indeed, the moment one no longer grants an a-priori privileged position to scientific claims and arguments, in the context of policy or public decision-making, there occurs an exponential increase in time-inefficiencies. For, in such cases, there is no longer an established method to efficiently discard irrelevant claims or arguments, forcing a slow equal consideration of everything, which can then result in policy paralysis in cases where decisions are time-sensitive (Leiss & Powell, 2004), and which thus worsens the aforementioned time-gap problem in AMR.

The second arena of debate is the classification of science in opposition to 'primitive' thinking. Science here is defined by philosophers such as Karl Popper or sociologists such as Robert K. Merton: a universalist practice, open to access, open to criticise, expecting from its participants a skeptical and disinterested pursuit of the Truth. The debate surrounding this definition of science is two-pronged: one argument is that this ideal picture of science was never true, the other that this ideal picture of science hasn't been true since the advent of militarised and state-controlled science of the 20th century (Kaplan, 1991; Mumford, 1971). It is this question that connects studies about risks to the general scientific climate, in particular to what has become known as the 'science wars' (Brown, 2009; Gross & Levitt, 1997).

Perhaps most importantly, scholars of STS – science and technology studies – and SSK – sociology of scientific knowledge – active in the field of AMR and mostly behind Governance of risk approaches, often find themselves firmly on the postmodernist side. Glib dismissals of this ongoing conflict are common, sometimes even putting it down as motivated by hurt pride and concerns of prestige (Roeser et al., 2012, pp. 1152–1153). Unfortunately, some of the primary assumptions of postmodernism are viscerally rejected by a significant portion of scientists and other experts (Chapman & Ciment, 2015; Committee on Scientific Principles for Education Research, 2002; Kuntz, 2012) that compose the range of groups that need to be involved, and vice-versa. At the same time, unlike technocracy-heavy approaches, Governance approaches heavily rely on diverse input and cross-discipline communication to function. Despite this need however, we can observe that even people like Ulrich Beck, who are fundamentally in favour of the Governance type of approach, are sometimes rejected as merely advocating for the pluralism of expertise i.e. denying the validity or relevance of what some call ‘non-scientific’ or ‘local knowledge’ (Roeser et al., 2012, p. 1157) about Risk, terms which are both used and abused in postmodernist circles. Thus this kind of narrative, which downplays the difference between hierarchies of competence and tyrannical hierarchies, is one example of a mainstay source of strain between postmodernists and scientists in general that is damaging efficient communication between AMR scholars.

The third arena of debate is a practical objection to the presumed effectiveness of technocratic approaches. After all, what use is it to know a disaster is coming, if one is incapable of either communicating this danger or motivating the relevant actors to act? An example of the latter case is the now infamous water shortage problem in Cape Town, South Africa. Despite having been repeatedly warned by their own scientists since 2002, local government continued to ignore the problem and limit themselves to shallow attempts of awareness-raising, going so far as to rely on the vague hope that 2016 would be a year of plentiful rain, this in order to yet again postpone having to deal with the problem until 2022 (Neille, Van Der Merwe, & Dougan, 2018).

The fourth arena of debate relates to whether and how expertise in theory translates to expertise in practice. Indeed, much credit has been given to research in line with Kahneman and Tversky's 1982 book *Judgement under uncertainty* that laid out the case for how liable to error popular wisdom or intuitions are. This is one of the reasons why scientists, and more generally people believing themselves to be experts, approach a context of disagreement with the public as one where they need to teach and help the public get rid of their mistaken biases. It is an attitude that is currently driving attempts at ‘nudging’ people to do the ‘right’ thing, framing the decisions experts

judge to be preferable for people in cities through 'choice architecture' (Thaler & Sunstein, 2009). This can show up in the form of innocuous behavioural changes, such as encouraging passers-by to take the stairs instead of the escalator (Restrepo-Cadavid, 2013), to more forceful and problematic cases, such as how diesel cars were promoted over other alternatives (Forrest, 2017). Indeed, because nudges fundamentally work through habit formation, instilling the wrong habit has significant costs and thus risk attached to them, as the people doing the changing are not expected to internalise, nor critically reflect on, the reasons behind their own behavioural change. It is a type of ignorance that generates its own risks through unintended consequences and an inability of the people themselves to be able to tell when their learned behaviours are no longer appropriate.

The fifth arena of debate relates to the political nature of who gets to count as an expert. Who, in technocratic approaches, gets to decide on who gets to advise governments or people in power? Who, in participatory approaches, gets to decide who is a proper representative of any particular group? For that matter, who gets to decide what these groups are (Kaldis, 2013)? This is a thorny issue and a proper subfield in philosophy. It regularly comes up in the context of the role of science in society, but has in recent years seen significant efforts to broaden its concerns to expertise more generally, including reflections on policy practices relevant to AMR (Selinger & Crease, 2006).

To recap, the central debate in AMR can be said to circle objections to the assumptions of utilitarianism, the definition of science in opposition to other forms of reasoning, the difficulty of going from knowing to doing, the epistemic divide between theoretical and practical knowledge, and the political implications of the status of the knower. Existing approaches recognize these problems/arguments, and have developed different solutions or counter-arguments to them. A few attempts to give individualistic solutions already exist. Three of these are particularly relevant to the current thesis in also having identified investment in the individual qua individual as a possible solution mitigating all or most of the fundamental challenges in contemporary AMR : 'Risk Intelligence' as approached by Dylan Evans, 'Virtue Ethics of Risk' as approached by Allison Ross and Nafsika Athanassoulis, and 'Risky Savviness' as approached by Gerd Gigerenzer.

### **1.03 The first attempt at a solution: Risk Intelligence**

People are not good at understanding risk, and the very definition of 'Risk Intelligence' is in some cases still under discussion, if not downright under debate. For this thesis, however, a fairly simple and straightforward definition will be used: Risk Intelligence is the "ability to estimate probabilities accurately" (Evans, 2012; Roeser et al., 2012, p. 604). Here, probabilities refer both to positive/good and negative/bad outcomes. Indeed, the ability to estimate the likelihood of something occurring is often focused on negative outcomes. Evans argues that, if we are to ask what kind of people can do such estimations accurately, to then ask the question of whether this ability could be trained somehow, all examples of probability estimations done by people should be investigated for clues. Maybe it will turn out that estimations of probabilities concerning positive and negative outcomes are dealt with fundamentally differently. However, in part because of the significant lack of research funding in this area of study (ibid, p.609), I concur with Evans (ibid, pp 605-607) that competing definitions of 'Risk Intelligence' either prematurely decide on working assumptions as to the nature of such an ability, or are not verifiable/falsifiable enough to be a functional definition.

To investigate Risk Intelligence, two main approaches dominate. First, there is the straightforward comparison of interview or questionnaire results with known objective facts. It's fast, but as a method it is limited to subjects on which a significant amount of data is readily available. Furthermore, in the age of the internet, it might not be so easy to know what a large pool of individuals knows. If the data you're using is known, your subjects might remember bits and pieces of it. If so, this would make these studies, ironically, inaccurate to uncertain degrees. A second method developed by Lichtenstein et al. in the 1980s is 'calibration testing' (Lichtenstein, Fischhoff, & Phillips, 1982), which ideally involves "shortly to be known statistics" (Roeser et al., 2012, p. 607). It is a more nuanced way of mapping estimations by taking into account not just the estimations, but the confidence one has in them.

For example, the first mentioned approach could ask my estimation of the likelihood of a cat surviving a fall of 10 meters. The second approach would ask on top of that how confident I was in that estimation. This is an important extra step because low-confidence errors are made with the possibility of error in mind, whereas high-confidence errors are not. Indeed, one of the most important aims of the Risk Intelligence approach is to minimise high-confidence errors. For unlike the latter, low-confidence errors in the realm of AMR translate to significant contingency plans and

thus reduced probability for subsequent disasters, which represents a significant potential mitigation of the aforementioned time-gap risks. One area of study where this is known to be a problem, is Medicine. Doctors have been found to be routinely overconfident in their diagnoses (Christensen-Szalanski & Bushyhead, 1981), and more recently Gerd Gigerenzer showed how enormous amounts of work still needs to be done (Gigerenzer & Gray, 2011) if this problem is to be curtailed. This illustrates a well-known metacognitive dilemma: to not know is to not know what is not known, to know is to know that what is not known is unknown. The training of metacognition, thinking about thinking, is, therefore, one of the primary solutions proposed by the Risk Intelligence literature (Evans, 2012), and a major field of study in its own right that has in recent times become an increasingly important subject in the field of psychology and public policy (Jaccard, Dodge, & Guilamo-Ramos, 2005), general education (Hacker, Dunlosky, & Graesser, 2009), and others.

One example is ProjectionPoint, a non-profit research project that sought to rekindle the Risk Intelligence research that was done from the 1960s up until the 1980s. It still provides training materials as well as Research Intelligence Testing services for laypersons, experts, as well as companies to allow them to estimate where they stand and what needs improving (Evans, 2013). Sadly, ProjectionPoint, and Risk Intelligence research more generally, struggles to attract investment. Hence, even though the problem of low Risk Intelligence in the medical professions is known, and has seen some timid attempts at repair; most of such work has concentrated on 'blame avoidance,' i.e. efforts to control and protect assets, profits, and the reputation of hospitals (Heath, 1998; Lloyd-Bostock & Hutter, 2008; O'Donovan, 1997). Furthermore, from the research done in psychology on other professions, it seems that high-confidence errors are the general rule, not the exception (Gigerenzer, 2014, p. 182; Roeser et al., 2012, p. 615). Unlike with the healthcare professions, however, barely any attention is given to this information, let alone proper concern for the implied risks for the general population.

To summarise, the contribution of the contemporary Risk Intelligence research lies in having made a strong case for the need of training existing professionals and experts in improving their Risk Intelligence through meta-cognitive training. This case was notably spelt out in Dylan Evan's book *Risk Intelligence: How to Live with Uncertainty*. The biggest obstacle to achieve this seems to be the lack of funding for new research on what would be the best way to go about it, most of the important and ambitious work in this field dating from the 1970s and beginning 1980s. By concentrating on concrete skills, the acceptance of Risk Intelligence proposals do not require the technocratic debate to be resolved beforehand. Although more advanced aspects of this approach,

such as how to deal with what Dylan Evans calls the "Twilight zone", would eventually require clarity on things such as the political implications of the status of the knower, they can be dealt with gradually. It is an approach that could be implemented because it concentrates on concrete skills with easily and immediately identifiable results. It reduces high-confidence errors across the board by establishing a habitual safeguard, preventing errors from remaining under the radar until they turn into disasters, while also increasing the probability of the existence of contingency plans when disaster does strike, due to an increased rate of low-confidence errors.

### **1.04 Second attempt at a solution: Virtue Ethics of Risk**

The application of Virtue Ethics in the domain of Risk is an interesting proposal made, amongst others, by Allison Ross and Nafsika Athanassoulis. They argue that the taking of risks is primarily a character trait, part of a pattern of behaviour; character being defined as a set of stable, permanent, and well-entrenched dispositions to act in particular ways (N. Athanassoulis, 2005, pp. 27–34; Roeser et al., 2012, p. 840). Such a character trait can be encouraged or discouraged through habit formation, through the regular and repeated acts of active reflection which could potentially be provided by an educational system. In this proposal, they rely on the idea that “good decisions are made when the broad range of mental faculties involved function well and harmoniously” (Roeser et al., 2012, p. 835).

One objection to the Virtue Ethics of Risk, is that it aims not at the virtuous act but the virtuous person and the virtuous life, which brings up the question of the definition of how the virtuous person and the virtuous life are. It is, in essence, an infinite regress problem of this approach to Ethics. Virtue Ethics could respond that yes, morality is risky. As humans, in principle capable of rational thought – though not exclusively rational – any conclusion we reach through the use of our mental faculties will never be guaranteed to result in the most profitable or correct conclusions (Nafsika Athanassoulis & Ross, 2010, p. 229). Mistakes are part of being human. Thus the Virtue Ethics approach to Risk more readily accepts risks as part of life while advocating the cultivation of character as a humane way to reduce risks as much as possible.

Furthermore, Virtue Ethics relies on the Aristotelian claim that the function distinctive of human beings, is reason. For a human being to function well, means to reason well (Hursthouse, 2001; Roeser et al., 2012, p. 837). From this perspective, we can begin to analyse cases in society when people systematically make errors in judgement as indicators of errors in thinking endemic to

a population or group, thereby giving hints on what kind of education could remedy such a deficiency. It is the kind of research that the previously mentioned Risk Intelligence approach also stresses as severely lacking in contemporary scholarship of the nature of risks. The two approaches also concur on not concentrating on adverse effects, and on the need to take a more value-neutral stance on the consequences of actions. Though Dylan Evans' work on Risk Intelligence is fundamentally consequentialist, here the two approaches furthermore concur on what should be the first steps towards a better general attitude and management of risks.

Where the two approaches start to diverge, in practice, relates to the importance of rare versus everyday events. Indeed, in the Risk Intelligence approach, high profile rare events – disasters – are seen as “potentially existing” in everyday events, particularly in the case of emerging technologies. In fact, it is in the nature of emerging technologies for high profile rare events to be unpredictable in advance, hence the urgency of Risk Intelligence training, since everyday risks contain the potential for catastrophic ones. In other words, the Risk Intelligence approach in practice scraps the a priori distinction between rare and everyday events, in the sense that rare events are seen as unpredictable potentialities of everyday events, while the Virtue Ethics approach maintains it in favour of everyday events, reserving the responsibility of the reflection on, and management of, high profile rare events for the mentioned existing approaches that already exist (Ross & Athanassoulis, 2014).

Finally, the urgency of a Virtue Ethics approach to Risk is argued given the effort and time that is required to cultivate Virtue. “Virtue does not come about quickly or merely by personal fiat. It takes time and cultivation-so perhaps the focus of research governance should be on the kind of educative practices that will incline researchers towards virtue” (Ross & Athanassoulis, 2014, p. 222). Virtue education is “a long and difficult process of character development vulnerable to circumstances, to the availability of good exemplars, and good influences” (Roeser et al., 2012, p. 844), a “process of gradual habituation” (Roeser et al., 2012, p. 848) that most certainly needs to be incorporated into the training of professionals (Roeser et al., 2012, pp. 854–855) but should not be confused or equated with the training of skills (Nafsika Athanassoulis & Ross, 2010, pp. 225–226), which the Risk Intelligence approach seems to do.

In conclusion, I find the Virtue Ethics objection – or perhaps addition – to skill-based solutions like Risk Intelligence to hold true. As much as estimations of probabilities is an important skill to train, it cannot fill the required functions without help. Virtue Ethics could provide this help, a basis on which individuals might decide which estimations, which outcomes, are worth pursuing or avoiding, and at what price. The difficulty lies in how to ensure a smooth transition from a pre to a



post Virtue Ethics era. For it is one thing to theorise about and postulate the virtues, it is quite another to actually implement Virtue Ethics programs that are not the mere ideology of the reigning mood of society at the time. It is in this way that the Virtue Ethics approach has real difficulty dealing with the mentioned arena of debate related to the passage of theoretical to practical knowledge, as well as the problem of the status of the knower. It relies on people knowing the virtues, which ones are appropriate to AMR, and then to be able to teach them to others in a non-dogmatic fashion. In practice, it furthermore requires that somehow the people that you would want teaching these Virtues will be the ones being responsible for the teaching.

Finally, I cannot help but worry that the historic track record of Virtue Ethics has been one of stagnation, notably seen in Confucian societies (Collins, 1992; Deeker, 2013) . Thus, although NIEMAR shares the basic aims of a Virtue Ethics approach to Risk, the method used would need to differ in order to compensate for the difficulty of safe and sustainable implementation in the long term, particularly in order to be flexible enough to support the strain of rapid change. Indeed, those qualities which we today perceive to be Virtues, might be as ill-adapted to future contexts as the Virtues of the past are to ours. To reduce this risk, the ability to switch values relatively quickly, whenever needed, thus needs to be part of the foundations of any approach that tries to utilise the Virtues for AMR.

### **1.05 Third attempt at a solution: Risk Savviness (or heuristics)**

Gerd Gigerenzer is part of a select few who are currently trying to raise awareness, as well as improve current levels, of Risk literacy both in the general and professional population. The moral foundation his approach lies in the Kantian conception of Enlightenment. In particular, the idea that risk savviness, wisdom about Risk, is becoming increasingly important in order to safeguard and promote positive liberty, i.e. the ability to walk through the doors of opportunity without the constant guidance of others (Gigerenzer, 2014, p. 20). He argues against both soft and hard paternalistic approaches for sustaining a democracy, in favour of a third option: participatory democracy (Gigerenzer, 2014, p. 208) that is accepted to be conditional on the Risk literacy of the people as being as important as literacy tout-court. A view of the connection between democracy and education that is, in essence, almost the same as that defended by John Dewey in *Democracy and Education*.

The first stage of the argument for this view of participatory democracy has to do with the relationship between uncertainty and heuristics, or rules of thumb. For although these rules are often used unconsciously, in practice their importance increases as the degree of uncertainty surrounding an intended action increases. One good example of such a rule of thumb is the “Gaze heuristic: Fix your gaze on an object and adjust your speed so that the angle of gaze remains constant” (Gigerenzer, 2014, p. 213). Observe sports players' speed in determining where a ball will fall, imagine the calculations one would need to achieve the same result, and the power of these heuristics becomes obvious.

The second stage of the argument is the unfortunate reality of illusory certainty in two forms: the zero-risk illusion, and the calculable-risk illusion. The former has to do with mistaking a situation of Risk for a situation of Certainty. An example of this is when people mistakenly believe they are at no risk of HIV because they're using condoms during sexual intercourse. The calculable-risk illusion has to do with mistaking a situation of Uncertainty for a situation of Risk. Also called the “Turkey Illusion”, it presumes the future to be like the past, or is based on the mistaken assumption that all that is relevant of that past is known. The business of stock prediction is another example of when a case of Uncertainty is treated as a case of Risk (Gigerenzer, 2014, pp. 30–33).

The third stage of the argument relates to common misunderstandings of probabilities, in particular the mistaken assumption that experts understand probabilities better than lay people (Gigerenzer, 2014, pp. 103–107). Gigerenzer furthermore illustrates through examples the power of conflicts of interest involved in contemporary contexts when expert advice is given, e.g. the SIC syndrome (Gigerenzer, 2014, pp. 144–145).

The fourth stage of the argument is related to Occam's razor. It is the idea that one-reason decision making, the practice of finding the most important reason and ignoring the rest (Gigerenzer, 2014, p. 117) performs better in situations of Uncertainty, i.e. when the probabilities involved are unknowable.

The final stage of the argument relates to “dread-risk fear”, the evolutionary psychological pattern of fear that might have been important for our ancestors, back when “the sudden death of a substantial part threatened the survival of the rest” (Gigerenzer, 2014, p. 211), but which today is a source of some of the most destructive risks we deal with today. An example of how this works is when, after the 9/11 attacks, people took their cars instead of flying, killing a supplementary sixteen hundred people due to the increase in road fatalities (Gigerenzer, 2014, p. 15). Other examples are

the Beef scare around mad cow disease, or the pig scare around H1N1 (Gigerenzer, 2014, pp. 188–190).

In summary, Gigerenzer's Risk Savviness approach argues that heuristics, or rules of thumb, are commonly misunderstood as a 'fast and dirty' imprecise way to estimate outcomes, and should become a significant part of our efforts to improve society. Lay people, as well as experts, routinely commit to critical errors or oversights in their daily lives, many times through cognitive illusions or conflicts of interest, which could have been prevented by ensuring the general population is Risk savvy. We can learn to ask the right questions. We can be trained to identify which heuristics are relevant to which context. Meanwhile, Ethics Committees routinely fail to live up to their stated purpose (Gigerenzer, 2014, pp. 13–15) or cede to defensive decision making to avoid having to take responsibility for error. "We need more data" is the mantra (Gigerenzer, 2014, pp. 49–50), wasting time and money which is already too limited to deal with all the issues Ethics Committees are supposedly responsible for. The major downfall so far of the approach seems to have been vested interests that run counter to the measures that Gigerenzer proposes. Thus, without significant pressure from the public, Gigerenzer seems to be fighting a difficult uphill battle.

To conclude, the complementarity of the above mentioned approaches makes that they potentially compensate for each other's weaknesses. The individual and practical everyday consequences of actions, through Risk Intelligence and Risk Savviness, can sidestep the science and lay knowledge opposition. By integrating some aspects of Virtue Ethics, the difficulty of going from knowing to doing is given a flexible, though not perfect, pathway to resolution. The epistemic divide between theoretical and practical knowledge is the specific target of the Risk Savviness approach, which will therefore also be explained in more detail in the following chapter. Finally, there remains the problem of the political implications of the status of the knower, which will be a significant concern throughout but will be more specifically dealt with in the 3rd chapter of this thesis through the philosophies of Aldous Huxley and John Dewey.

## **2. The Individualist Approach**

### **2.01 The existing extended argument: proven prospects**

There are some assumptions and claims that are fundamental to the concrete application of an individualist approach. Gigerenzer, in particular, has done a significant amount of work to dispel some of the most widespread myths that hinder its broad implementation. Thus, in this part I will cover three myths that stand in the way of this alternative approach to AMR, without however proposing ultimate solutions for getting rid of these myths, as such would lie outside the scope of this thesis. After all, Gigerenzer has spent his life's work on it, with only moderate success. Then will follow a fairly detailed exposition of three underlying ideas related to what it is to be human, three ideas that together make up the metaphysical glue that can accommodate all three approaches together while avoiding some of their problems.

#### **2.01.1 First myth: belief in progress is naive**

The first myth to overcome in considering an Individualist approach is the widespread perception that people are hardwired to not understand probabilities, that the humans are fundamentally fated to repeat the same mistakes over and over again (Ariely, 2010; Gould, 1992; Piattelli-Palmarini, 1991; Thaler, 2015). It is a way of thinking that often ends up in the 'nudging' type of policies, laws, architecture, etcetera. An Individualist response to this, is to say that what we observe, and what many authors describe, might indeed be part of human nature, yet only insofar as illiteracy is. Progress can be defined in many different ways, but the progress meant here is fairly basic: the gradual accumulation over time of commensurable skills and capacities. This commensurably is an important part of both Gigerenzer and Dylan Evans' argument. No man is born knowing how to read or write. It is an artificial skill that has had to gradually spread through societies. The same, the argument goes, can be done with risk literacy and savviness. Some time ago, reading and writing became a vital skill for the proper and stable functioning of society. The industrial worker needed to be able to read as well as give instructions, and failure to do so would have had increasingly disastrous consequences. Today, we find ourselves in the same position with

regards to Risk literacy. Indeed, globally, millions of people die or severely shorten their lives unnecessarily because laypeople and experts alike are Risk illiterate.

One such example is the recurrent contraceptive pill scare in Great Britain (Gigerenzer, 2014, pp. 12–15). In the 1980s, the public being informed that the 3rd generation pill increased the risk of thrombosis twofold, panic swept the country, and women stopped taking it. It caused numerous unwanted pregnancies and abortions. What very few realised was that this twofold increase meant a relative increase from one in seven thousand, to two in seven thousand. Thus, not only was the panic unnecessary and avoidable, it caused an increase in cases of thrombosis, since pregnancies alone already increase this risk by nine in seven thousand (Lindqvist, Dahlbäck, & Maršál, 1999), compared to pre-pregnancy. Add to this the plethora of related health complications, and the picture becomes uglier still (Hall, Dalton, Zochowski, Johnson, & Harris, 2017).

Something similar happened in 2009, when the London Evening Standard mentioned a 'fivefold' increase in thrombosis (Gigerenzer, Wegwarth, & Feufel, 2010). Now, if one takes for granted that the medical and journalistic professions did not willingly and knowingly cause this mayhem, death, and destruction, one would think that the U.S. President's Council on Bioethics would, when confronted with the information of how common and destructive these situations are, easily see the problem and act accordingly. After all, this is one of those issues which could be solved with straightforward regulation: communicate risks in relative or natural, not absolute, terms. No such regulation was forthcoming, not even a recommendation (Gigerenzer, 2014, p. 15). Finally, even though general practice has seen some improvement on this issue, the temptation to use the more flashy headlines remains omnipresent and a constant multiplier of risks through panic, and remains a mainstay in the news as illustrated by the Telegraph's fancy 2015 heading "Newer contraceptive pills raise risk of blood clot fourfold" (Knapton, 2015).

Another example is the already mentioned popular reaction to 9/11 and its effects on road mortality rates the following year, costing the lives of another sixteen hundred people in the U.S. alone by them taking the car instead of the plane (Gigerenzer, 2004). In this event, and others like it, one fundamental mainly unconscious psychological principle is at play: if many people die at one point in time, react with fear and avoid that situation. "We don't really fear dying in the steady stream of everyday incidents; we fear dying together suddenly with lots of others" (Gigerenzer, 2014, p. 17). It is a strong urge anchored in our evolutionary biology that have, however, been shown to be controllable (Craske, Antony, & Barlow, 2006). One method is to willingly counter one

fear by another, for example to implicate the fear of getting one's children killed because of a personal phobia (Gigerenzer, 2014, p. 18). However, there are many other possible methods.

One approach that has been researching these psychological mechanisms, of how we are evolutionarily and psychologically predisposed to act in specific ways in reaction to the presence of fear, is Terror Management Theory, or TMT. In particular, the Mortality Salience hypothesis from this discipline, involving a theory concerning how we defend against the anxiety of death, theorises that death-related thought encourages the growth of an increasingly all-encompassing cultural worldview and self-esteem defence and striving (Burke, Martens, & Faucher, 2010). This is particularly relevant in light of the idea of neurocultural ecosystems. Cultures serve as a determining factor in what parts of a person's inclinations get triggered and consequently cultivated. "Death affects us without our conscious realisation", but we can gain control over it. (Burke et al., 2010, p. 33)

Thus in summary: ways for people to progress are many and known, yet widespread disbelief in such progress on a population-scale limits what can be done. This is a problem for any individualist approach because, on the one hand, expert-driven projects fundamentally assume the implausibility of individual progress, concentrating on laws and regulations, while on the other, community-based projects, likewise skeptical of the idea of progress, limit their ambitions to short or medium term behavioural changes. As these approaches function, at least superficially, the misbehaviour of individuals, when expert-driven or community-driven measures break down, is easily taken as justification of their assumption. Instead, such breakdowns should be taken as proof of the failure of these approaches to foster a positive neurocultural ecosystem.

### **2.01.2 Second myth: experts are more competent or honest than laypersons**

A second feature of an individualist approach is the challenge to the status of the knower, i.e. the expert, and the insistence on how unreliable official expertise is in practice. Thus, the second myth to overcome is, on the one hand, the disproven assumption that experts automatically or naturally develop Risk Intelligence (Tetlock, 2006) and, on the other hand, the habit to mistakenly (Gigerenzer, 2014, pp. 41–57) assume that experts are virtuous people by virtue of being experts. This 'habit' can come from fear of uncertainty, the desire for security that eats into the possibility for freedom (Dijksterhuis, van Knippenberg, Kruglanski, & Schaper, 1996), or it can come from an excessive trust due to a misunderstanding of what surrounds us (Dewey, 2008). The latter case is

one of the major problematic features of technology, i.e. the illusion of certainty that technological devices promote with the help of, for example, marketing techniques so compelling that the experts themselves grossly misrepresent what technologies do without even being aware of it (Gigerenzer, 2014, p. 168).

This is an important myth to overcome because it encourages taking the opinions of experts on trust, while at the same time discouraging the possibility to check whether this trust is justified. ‘X is true because my doctor said so’, is an expression that runs directly counter to the idea of a society of equals, of individuals. Yet this way of offloading mental work to experts in general, not just doctors, is commonplace. It thusly stands in the way of being able to convince people that they need to be able to, in principle, tell when there might be a problem. For if experts know better and fundamentally have the people’s best interest in mind, why would the average person go through the daily mental strain and training that would be required? Life is stressful and hard enough without it, people might say.

An illustration of how experts don't necessarily develop Risk Intelligence (Gigerenzer, 2002), is the history of HIV testing. There is the problem of ignorance amongst professionals concerning the many types of HIV tests and the optimal purposes for which these tests were designed in the first place (Gigerenzer, 2014, pp. 33–36). There is confusion about what a positive test means (Gigerenzer, 2002, Chapter 7) to the point of counsellors telling low-risk patients that positive test results are certain, even though they are not. In this case, the chance of a false positive result is around one out of twenty-six (Gigerenzer, 2014, p. 36). This is a continuous problem in healthcare and health communication, as illustrated by the popular Dutch information website for sexually transmitted diseases ‘soaids.nl’: “the result is HIV-positive. This means bad news: there is HIV in your blood. Often, you will not have noticed any symptoms yet. However, it is important to start treatment with HIV blockers as soon as possible” (“Heb ik hiv? Doe een hiv-test,” n.d.). The illusion of certainty here is based on misleading use of numbers which even doctors often don't identify. At the same time, those who find themselves HIV positive can have understandably erratic reactions. Thus, by overplaying the sense of certainty, experts can and often do promote disaster instead of preventing it. In the case of the Dutch website, even low-risk patients are encouraged to immediately spring into action and get medicated, instead of consulting their family doctor and get a second test done, then maybe even check out an external third party as final confirmation.

An example of the extent to which this lack of Risk Intelligence is becoming increasingly important, is to apply this problem to advances in genetic engineering. Today, less than half of

doctors responsible for screening newborn babies for a variety of metabolic disorders understand what a positive predictive value of a test – the approximate rate of correct positive results - is (Gigerenzer, 2014, p. 135). Meanwhile, more and more disorders are becoming screenable and pre-emptively curable. And, as there are currently eight false positives for every actual positive case, one can imagine the disaster of the pre-emptive treatment of healthy children quite easily. What is often overlooked is the further psychological consequences on parents and, particularly, on parenting and the indirect consequences on the mental health of the children (Hewlett & Waisbren, 2006). In essence, in this context we see a sort of self-fulfilling prophecy: when the parents expect their child to develop mental problems, the child unconsciously reflects this expectation. Now, what happens when we apply this dynamic to prenatal screening, or to designer babies? I don't think it is reasonable to expect doctors to miraculously and automatically improve in this area of expertise. Medical technologies are becoming ever more powerful and far-reaching; thus an inability amongst doctors and patients alike to understand these technologies and the uncertainties attached to them, will likewise have more powerful and far-reaching negative consequences.

But, a lack of Risk Intelligence amongst experts isn't the only way that experts are part of the problem. As mentioned, there is the mistaken assumption of the virtuousness of the expert. Here, virtuousness is defined in two related but not the same ways: strength of character on the one hand, and moral cultivation on the other. The former can be seen as the ability to stand your ground in a context when a moral principle is infringed; when one is incentivised to no longer hold the principle in practice. The latter is the process through which these moral principles are obtained and trained into practice. However, leaving the question of the obtention and training of moral principles to chapter three of this thesis, which will go further into whether and how this would be possible, we can here go into the issue and importance of strength of character not just in future, but in current contexts.

Indeed, current scholarship in AMR is often motivated by the need from corporations, boards of directors, CEOs etcetera to protect themselves against lawsuits, or generally from being called to account. There is a constant fixation on who should be blamed if someone makes a mistake. And this, weirdly enough, some perceive to be one of the primary purposes of ethics and ethics committees (O'Reilly, Dixon-Woods, Angell, Ashcroft, & Bryman, 2009). Those who agree with this way of thinking tend to refer to this as making the decision process 'accountable' or 'transparent'. The problem lies in the fact that many of the risks that technologies pose to societies are in the realm of genuine uncertainty. No matter how many details one accumulates in a study, no



matter how intelligent the researchers or diverse the viewpoints, guesswork is always involved. Guesswork implies error. By thus creating a climate that punishes error, a negative error culture is promoted, i.e. a workplace culture where the workers are fearful of error and in response engage in defensive decision making, covering up errors instead of hurrying to correct them. An example of defensive decision making would be when “a doctor orders tests or treatments that are not clinically indicated and might even harm the patient primarily because of fear of litigation, a practice which ninety-three per cent of doctors engage in” (Gigerenzer, 2014, p. 52).

Such an error culture is too inflexible to accommodate new contexts or address previously overlooked areas of concern in a timely fashion, with potentially disastrous consequences. Again, the time-gap problem. These consequences count for anything from mountain climbing (van Dyck, 2009) to medicine (World Health Organization, 2018). Fortunately, a negative error culture is not unavoidable. This is illustrated by the positive error culture, also known as ‘Just Culture’, dominant in the aviation industry, i.e. a culture that “supports learning from unsafe acts in order to improve the level of safety awareness through the improved recognition of safety situations and helps to develop conscious articulation and sharing of safety information.” (“Just Culture,” n.d.). One could go on and on about how bad things are in medicine as compared to the aviation industry (Shojania & Dixon-Woods, 2017), yet this difference is not due to the nature of the professions themselves.

Gigerenzer mentions a 2001 example case of a simple checklist combined with a simple directive directed towards nurses. The latter stopped doctors from proceeding if a step in the checklist was skipped, cutting the drip-line infection rate of John Hopkins Hospital significantly, and preventing forty-three infections and eight deaths whilst saving the hospital two million dollars in a matter of fifteen months (Gigerenzer, 2014, pp. 48–49). No new technology, no new ‘expert’ information, no committees. It was a simple, straightforward, common-sense list of hygiene practices. Any doctor or nurse knew these rules. Measures like these have proven extraordinarily useful. Any pilot could tell you the same thing. However, the practice is far from universal even though it is a known way to save lives easily, quickly, and cheaply. This problem is present in any field all the way from social work (Whittaker & Havard, 2016) to engineering (Jan Hayes, Maslen, Scott-Young, & Wong, 2017) to education (Hoy & Miskel, 2012).

Now, granted, checklists do not solve everything. They are but one visible result of a positive error culture that is only sustainable when the individuals responsible for the application of a checklist are fundamentally not only the originators of said checklist, but are also equipped to judge and modify it according to circumstance. Equipped in the sense of not merely legally allowed to do

so through bureaucratic procedures or in the elaboration of such a checklist, but mentally equipped and given the freedom as individuals.

### **2.01.3 Third myth: complex problems require complex solutions**

The third myth to overcome relates to the conception of rationality exemplified by the work of Kahneman (Kahneman, 2011; Kahneman, Slovic, Tversky, & Others, 1982; Kahneman & Tversky, 1972) which accepts heuristics as a fast but dirty and imprecise way of thinking. Thus, it is primarily seen as a lesser evil to be used only when 'real' thinking is too resource or time intensive to be practicable. Against this stands the argument made by Gigerenzer (1996; 2008; 2014, p.80-102): that heuristics are not just faster, but also, in many cases, more or just as precise; that intuition can be like language. Just as many would falter when asked about the grammar of their native tongue, so might insisting on a rational defence of an intuitive decision go nowhere. Just as our inability to explain our language use in the language of grammar does not mean we do not master our language nor that our language use is not rational, so it can be argued for intuition and the heuristics derived from it (Jekel et al., 2012). Indeed, in business, the reliance on, and respect for, gut feelings, are near-universally practised (Gigerenzer, 2014, p.84).

This is particularly true in cases related to the category of 'unknown risks' e.g. stock prediction, romance, business, medicine, earthquakes etc., as opposed to cases related to the category of 'known risks' e.g. the lottery, poker, slot machines, etc (Gigerenzer, 2014, pp. 106–120). In a sense, the above argument from Gigerenzer is a variation on Occam's Razor: when faced with a complex problem, make sure that every variable that you add to the problem has a potential for increased precision that is higher than the potential increased margin of error. If not, discard the addition. In computational science, this is sometimes referred to as the 'bias-variance dilemma' which is a big part of the artificial intelligence research into balancing and increasing the performance of complex systems (Yu, Lai, Wang, & Huang, 2006) such as recursive learning A.I. Thus, what is proposed is not an optimist objection against Kahneman's pessimist view of heuristics, but an empirical claim that Kahneman's judgment of heuristics relates to the realm of known risks, which are theoretical constructions that are known to be extremely rare in the real world (Sikich, 2016), i.e. which essentially don't apply to complex systems.

As mentioned, stock prediction is a good example of the widespread bias that presumes that complex problems call for complex solutions. The atrocious record of even the fanciest and

expensive predictions produced by some of the most mathematically educated people on earth (Neth, Meder, Kothiyal, & Gigerenzer, 2014) means that these highly gifted people are condemned to mediocrity and uselessness while wasting millions every year. Banks, however, keep investing in these products. On the one hand, this can be explained by defensive decision-making. But behind the reason for the pressure to engage in it also lies another problem: the lack of Risk Intelligence amongst the public, who are the ultimate customers. Based on Dylan Evans' 'ability to estimate probabilities accurately', Risk Intelligence relies on basic education and training in some common logical fallacies and statistical reasoning. The absence of such training is important because it removes the option for customers to inspect the merchandise or service offered.

One particular fallacy involved in stock market prediction is survivor bias. Experts in this field are in fact often less capable of stock market prediction than lay people, with some studies even suggesting that they are worse at their jobs than monkeys would be (Torngren & Montgomery, 2004) due to their correct hit ratio being lower than chance. This is due, in part, to the previously mentioned overconfidence of experts in the reliability of the data. This overconfidence then feeds into survivor bias, in this case applied to experts and lay people both. For indeed, they fail to reflect on the number of incompetent experts one would need to be active in a discipline for there to remain several of said experts with a perfect or near-perfect track record for logical reasons alone, even after several years of activity.

This is what creates the Guru phenomenon. Rich or successful people are praised and looked up to for guidance, asked what made them so much better than all the others that tried. The fact is, at least in finance, that they were probably merely lucky. Thus, as much as the lack of training of the relevant experts is part of the problem, so is the lack of training of laypeople, i.e. the clients, part of it. The more complex the system and the regulations, the more complex the explanations, the greater is the accountability challenge. This feeds into one major criticism of the governance approach to AMR, namely that it often fails to sufficiently take the technical requirements of a robust participatory democratic system into account.

One of these technical requirements is the spotting of conflicts of interest. Conflicts of interest may be more evident in authoritarian systems, but democratic systems also struggle with it through practices such as lobbying. Indeed, in places like the United States (Bainbridge, 2010; Davis, 2015; You, 2017) and the EU (Dolan, 2015; Enriques & Zetsche, 2014; Peter, 2011), lobbyists write legislation and sometimes have them modified after they have been passed, before they come into force, and without recourse or awareness from the people to object to the changes. Attempts at

legislation restraining their actions have come and gone, yet most of them have been largely cosmetic (Cohen & Carter, 2010; Johnson, 2006). The few extensive studies that exist regarding regulation of this profession furthermore tend to one-sidedly argue that lobbying is somehow central to the democratic process (Chari, Murphy, & Hogan, 2007; Coen, 1998).

In short, this way of thinking relies on the idea that the interests of corporations, those that afford themselves most of the existing lobbyists, somehow align with the interests of the country, of the people, or even their own workers. And even if one were to admit that one could make this case pre-Globalization, before quick and cheap displacement of factories to different continents became possible: in today's world, such an argument seems far-fetched. Nevertheless, people continue to refer to lobbyists as trustworthy experts, often with the expectation that they possess the rare knowledge needed for solving complex policy issues.

The above is an unfortunate consequence of both lay people being ill-equipped to call bullshit, as well as the inherent interest of experts in sustaining the illusion of expertise even if this expertise is not theirs. It is an illustration of the prevailing discourse that allows, by design, designated experts to continue their activities without sufficient scrutiny. This in large part because the regulatory and formulaic complexity of policies and regulations ensures that almost nobody has the technical know-how to scrutinise properly. It has become so bad that, in today's world, we need experts to translate laws and regulations even to well-educated native speakers, laws and regulations written like an increasingly complex maze by an underlying alliance amongst experts to ensure the increasing necessity of their employment. This is not because they are necessarily evil, but because to be active as an expert requires adherence to predefined rules that define the expertise (Admati & Hellwig, 2014; Sedrakyan & Shih, 2007) irrespective of the merit of these criteria. This discourse of complex solutions to complex problems is furthermore sustained by the fact that explanations in hindsight are quite convincing, no matter the actual merit or completeness of the explanation.

## **2.02 Moving beyond the basics**

In the first chapter, I summarised some existing attempts at solutions to the way much of contemporary AMR is done. First, Risk Intelligence training could give people skills or develop/maintain existing skills in the estimation of probabilities. Second, Virtue Ethics, though I have some reservations about its implementation, could promote and encourage the development of moral character by making it part of the standard method of the education of professionals. Third,

heuristics could solve numerous issues with current practices in all human professions reliant on expertise. Using the savviness approach as springboard, I then continued to show why more effort needs to concentrate on the individual, starting by tackling three widespread myths that should have disappeared long ago. I went into how the Risk Savviness approach could and should reduce the public's reliance on experts through training and education as part of the everyday life of the average person. The latter would allow a feedback loop of accountability where currently none exists.

All three approaches are a good start, necessary but not sufficient measures to mitigate the fundamental risks derived from technological and scientific innovation. Henceforth, I will argue that we need a shift towards a definition of the individual that is more adapted to the changes in the human lifeworlds that said innovation is increasingly causing. What parts of the world cede to an individual's will, which parts won't? What rules are obligatory, which ones can be bent or broken? Significant changes in the answers correspond to significant changes in human identity without, however, the individual having much say in the matter. After all, an individual can choose not to use a gun, but cannot choose to undo the conditions behind the availability of the choice.

Thusly, it is when one considers the long-term fate of human societies that a challenge arises that is different from traditional concerns of AMR: namely how to prepare our societies to prepare for, or be able to correctly react to, situations which today we either cannot predict or know we would probably not survive in our current state. A change in the human lifeworld is thus a fundamental example, because it determines how people make sense of the world, how they view their place in it, and how they act in and on the world. It is, in a sense, the most important and pressing contemporary challenge to humanity, one uniquely caused by the *speed* of technological and scientific innovation, and which NIEMAR aims to handle.

One might then ask how such a metaphysical concern would aid in the concrete business of AMR. Here, I believe the argument from uncertainty is of overwhelming importance. In other words: because we have no real clue about what will happen in the future, beyond a few broad and vague sketches, the best method to increase the probability of the continued survival and thriving of human societies, is to try and improve the quality of the persons who will be forced to deal with the future risks which today we cannot see clearly. Meanwhile, institutions currently in charge of AMR, are aimed at problems, almost never at people. Thus they are confronted with the problem of heredity. A philosopher king is useless if you cannot ensure that his replacement won't be an inbred fool.

A second argument for the importance of these foundations is directly related to the two problems of progress and uncertainty: namely the role of internalised motivation behind working practices in determining action under uncertainty. For example: if I were to work as a lifeguard on a private beach for a big luxury hotel, I would need to learn a range of rules and regulations given to me on the one hand by the government, and on the other by the hotel lawyers. Hence, what would I do when I come upon a situation not covered in these rules and regulations, or when they conflict? I will depend on the foundational, often moral, convictions and ideas attached to either the foundations of my profession, or the moral foundations of me as an individual, or a mix of the two (Ajzen, 2002). If I am the kind of person who has thought about these things, then as a consequence I will be able to act in such a way that makes a good outcome more likely than would otherwise have been the case. I could still make a mistake, but my action would be informed and reflected action. This is what allowed a lifeguard to not hesitate to save the life of someone who was drowning outside their stipulated zone of activity, despite technically violating the rules given to them by their employer, while also having been warned that they could consequently get fired for such an action (Lynch, 2012) which, in this case, they did.

What follows are thus the three foundations of NIEMAR, which together form the feedback loop that is taken to be part of the definition of individuality itself. Therefore, their main importance relates to all three when taken together. The first is the conception of the sacred in leisure as the basis of culture, and the need to undo the subordination of leisure to the total world of work. The second is a sociological account of the function of, and need for, widespread individual capacity for internal generation of meaning provided by the effects of the feedback loop of leisure to culture to institution. Finally, the third is an account of the malleability of the individual and the idea of upward and downward transcendence. The latter is vital to understand the concept of neurocultural ecosystems, and what it would mean to use NIEMAR to shape individuals in such a way that improves the individual capacity for AMR.

### **2.02.1 The link between Leisure as the basis of Culture and the Death of God**

The first part definition of individuality comes from an old tradition in philosophy widely popular until medieval times, one that sees Leisure as the precondition for the existence of culture, which in turn is the precondition of the existence of an individual. Leisure is taken here in the sense of the living link with divine worship (Dewey, 2012, Chapter 19; Pieper, 2009, p. 15), as the activity

from which we derive the word "school", but which in today's school systems we find little recognition. Indeed, modern schools continue to try and produce workers while the need for such workers is in rapid decline ("Decline of the working man," 2011). So ingrained has this conception of the human as worker become, that we talk about intellectual work, or labour (Pyöriä, 2005), both of which notions are radical departures of previous conceptions of what intellectual activity is (Pieper, 2009, p. 25).

And yet, as Gigerenzer's conception of Risk Savviness illustrates, some do reach conclusions reached previously in the middle ages, without necessarily realising this to be the case or intending to do so. Indeed, despite Gigerenzer's claim that he is primarily inspired by Kant and the Enlightenment, the conclusions he reaches and his established observations concerning the possible role and power of intuition and heuristics, might be better approached through the medieval conception of the nature of knowing that is intimately tied up with the conception of Leisure. Perhaps this oversight is because the Middle Ages, for many of us, are known under the ominous heading of the 'Dark' ages, seen as full of superstition and disease and fear. At the same time, reading Gigerenzer, I couldn't not see the similarity with Aquinas' idea of *simplex intuitus*, "that simple vision to which truth offers itself like a landscape to the eye" (Pieper, 2009, p. 28), a concept that used to be given prime place as half of the process of knowing i.e. knowing as the result of the combined action of Ratio and Intellectus.

The previously mentioned myth that complex problems require complex solutions, can from this perspective be seen as a natural extension of the Kantian view that philosophizing proper is a 'herculean labour' (Kant, 1999), the Hegelian insistence of philosophy as science, the Pythagorean definition of philosophy that earned the scorn of Socrates. "The law is that reason acquires its possessions through work" (Kant, Allison, Heath, Hatfield, & Friedman, 2002; Pieper, 2009, pp. 30–32). Thus Philosophy today is often seen as worthy of merit in large part because and insofar it is difficult. In the Middle Ages, however, the judgment concerning this view was similar to that of antiquity as seen through the infamous character of Antisthenes the Cynic. Devoid of Eros, the Muses, or Aphrodite, yet still foolishly claiming to love wisdom! By equating Truth with effort, equating knowing with Ratio, the educated person took his place "among the workers; he is a functionary in the world of total work; he may be called a specialist, but he is a functionary" (Pieper, 2009, p. 37).

This concept of the intellectual worker can be seen as the death of philosophy by way of its transformation into clerical work, and thusly its final divorce from Leisure, from Intellectus. This

loss is significant because, amongst other things, the world of total work, as described and analysed by Max Weber through one of his major works *The Protestant Ethic and the Spirit of Capitalism*, is at the end of its lifespan. As David Graeber has argued, I think successfully: the price we all pay to try and keep it afloat keeps increasing (Graeber, 2018). One can shiver at the thought of this worldview collapsing, with desperate unemployed masses finding only functionaries where they thought there were philosophers! Or, to be explicit about the theoretical social function of philosophers: the people who are expected to be able to provide hints at alternative pathways to meaning (Horkheimer, 1972) aren't there. For today, even the better philosophers' professional activities are more akin to sociology or engineering, in the sense that the worth and expertise of those philosophers is defined through the eyes of disciplines whose worth lies in their economic or political usefulness. Their worth is seen to lie outside their discipline.

This slow transformation of philosophy, and academia more generally, from the liberal to the servile arts, has been a recurrent subject of discussion ever since Nietzsche formulated this process as “God is dead, and we killed him”. However, at least back when Nietzsche said it, the absolute world of work could still sustain its narratives of worth and value. All one needed to do was buy into a few axioms, and the world of total work would not contradict you. This scenario is increasingly no longer the case, yet European societies have lost much of the social capital that used to be contained within, and preserved by, those “who devote their lives to contemplation, not for themselves, but for the sake of human society” (Pieper, 2009, p. 40). This is a civilisation-level risk.

Thus, an individualist approach, though potentially encompassing the three mentioned applied approaches of Virtue Ethics, Risk Intelligence, and Risk Savviness, is not limited to them. It tries to address the changing lifeworld of humanity in relation to current dominant ways of making meaning out of life; on the changing ways meaning is available to the average individual qua individual, and as a consequence their resilience, in the sense of the adaptive state and personality trait (Coutu, 2002; Collins, 2008), to survive and thrive through said changes.

Concretely, with the increasing obsolescence of human work in comparison to machines, both physically and mentally, we are rapidly approaching a time when very few will ever be of *material* utility to their fellow human beings. As such, it is becoming increasingly urgent that individuals find meaning outside this utilitarian usefulness to others. To find meaning in things that are not incompatible with the survival of prosperous societies under contemporary conditions. One of the ways to do this is through a medieval and classical conception of Leisure. To restore the sacred and the place of Intellectus in our societies through the application of the liberal arts to everyday life;



away from the universities where it is perverted, dying, or dead as per the Marxist principle of changing the world instead of interpreting it (Marx & Engels, 1976). We might instead be saying “don’t act, just think” (Zizek, 2012), with the ultimate aim of restoring true individuality.

Finally, the reason why it might be possible for an individualist approach to be implemented today, despite stubborn myths such as those covered previously, is because the concrete consequences of failing to invest in the individual qua individual is becoming increasingly visible, commonly experienced, and costly. Thus, unlike Apollodorus of Phaleron, who in vain tried to communicate the significance of the Symposium to a bunch of businessmen, there might be, currently or soon, a brief window of opportunity when the incommensurability of philosophizing and the world of total work (Pieper, 2009, p. 86) finds itself suspended through the collapse of said world.

### **2.02.2 Sustaining the stresses of change through internal generation of meaning**

If a society manages to restore the sense of the sacred in leisure, as a community, the first part of the feedback loop of individualist progress would be repaired. However, as Norbert Elias and Eric Dunning have argued (Elias, 2008, pp. 203-222), it is not sufficient for a leisure activity to be recognised as sacred. It also needs to be experienced as sacred, practised with a certain mindset for leisure to *function* as Leisure – leisure capable of generating significant sense of meaning within the practitioners – (Elias, 2008, pp.73-107). It is in this context that the Serious Leisure Perspective – SLP – and the related concept of Homo Otiosus (Stebbins, 2013), becomes useful to reflect on where to go from here. Indeed, SLP illustrates the importance of the preservation of philosophizing as a daily practice within individuals, and is one method to grow individual resilience to change through internal generation of meaning.

Put briefly, SLP considers that the ideal of work, as a virtue, is today intertwined with human identity for all the wrong reasons. It is a movement that came about in reaction to post-industrial economies in the 1980s and originally described serious leisure as “the systematic pursuit of an amateur, hobbyist or volunteer activity sufficiently substantial, interesting, and fulfilling for the participant to find a leisure career, there acquiring and expressing a combination of its special skills, knowledge, and experience” (Elkington & Stebbins, 2014, p. 14). It is seen as having six main characteristics: the occasional need to persevere, the ability to follow a leisure career in the pursuit, the experience of durable benefits, including both personal and social benefits, the experience of a

unique ethos of common attitudes, values, and practices through involvement in a unique social world, and finally a strong identification with the pursuit (Spracklen, Lashua, Sharpe, & Swain, 2017, pp. 439–440). Examples of such activities range from lifelong learning, local politics, attending or contributing to festivals, to being a football fan. What the activities have in common is how they *can* grant the perception of a meaningful life that is entirely separate from the world of work. They are activities which can be ends in themselves.

It is in part this nature of Leisure, its ability to generate meaning internally, that connects it to the process of civilisation. One work that tried to analyse the specifics of this process is Norbert Elias' magnum opus *The Civilizing Process*, which traced the changing perception and use of violence in leisure activities in European civilisations. This perspective is today called Figural Sociology, a movement strongly opposed to what they call ideological sociology, promoting involved detachment as per the traditional and ideal picture of science (Rojek, 1986). This places the movement in direct opposition to ahistorical sociology supported by people such as Talcott Parsons and others that dominated the social sciences when *The Civilizing Process* was first published in German in 1939 and in English in 1969 (Spracklen et al., 2017, p. 635). Of interest here is the role the Figuralists give to technologies in mediating this process of progress so peculiar to premodern European Civilisations (Hinz, 2013). It is leisure imbued with the sense of the sacred that gave birth to civilisation, which then gave birth to institutions. Institutions then civilised leisure, which in turn civilised the individuals, which in turn civilised the institutions. It was this positive feedback loop that allowed people to gradually learn to cope responsibly with change. This was, of course, done imperfectly, but good enough to cause a sustained period of technological progress beyond the stage when other civilisations collapsed and reverted to pre-technological states.

This last part is important to highlight: there is progress, but that does not mean that this progress is irreversible (Mennell, 1990), nor that it will not stagnate and collapse like it did in Ancient China or Egypt. From this perspective, there is at least one way to view the increasing urgency of changing how we deal with the risks related to, and derived from, technological change: sustained peaceful behaviour is not natural, it is the result of a civilising process which is, at least in part, the result of Leisure. The Leicester School of Sociology, which is the primary research group in this tradition of the field, illustrated the importance of this argument by analysing, amongst many other case studies, football hooliganism (Elias & Dunning, 2008; Giulianotti & Bonney, 1994). They hinted at a now commonly accepted psychological truth: human psychology is antifragile

(Mattick & Peters, 1988; Murray, 2012). The human mind profits greatly from exposure to opportunities for things such as violence to learn self-control. It highlights the difference between being good, and not having been placed in a position of power to do evil yet. Indeed, what hooliganism illustrates is the effects on a community when the individuals within it are deprived of Leisure, and with it deprived of one of the main civilising influences of the society in which they live. Work defines their lives, whether they have jobs or not, and vacations and the leisure that they do have, are part of the world of work, i.e. the function of their leisure is not the leisure, but the attempt to recuperate from and return to work.

There are of course other examples. One could compare and contrast the violence of French protests – whichever ones, take your pick – with the peacefulness of the Hong Kong Umbrella protests. One could point at Antifa protests in the U.S. (Beinart, 2017) to illustrate what happens when bourgeois upper-middle-class ‘educated’ individuals, those who have never before been given the opportunity for violence, suddenly do have that opportunity. Long story short: before disaster strikes and cars start burning, the good person and the person who as of yet has not been given the opportunity for evil, look the same. It is the civilizing process, through cultivation of internal generation of meaning through activities such as music, dance, theatre, etc. (Spracklen et al., 2017, p. 643), that allows societies to remain relatively resistant to collapse in the context of rapid and significant changes to their lifeworlds. Technology is set to accelerate such changes, and thus it is the quality of the individuals in the affected societies that will determine how unstable things will get. Is it truly reasonable to expect that current top-down mob-control measures can constrain these tendencies towards violence, in the long term? I think self-evidently not.

### **2.02.3 Progress and regression: Individuality as malleable and uncertain**

Thus far I have covered two main foundations behind NIEMAR. First, an insistence on the return of the sacred. The idea that for a human to live as a human, and not a pig, he must give significance to his activities and those of others in a way that does not rely on utility or production. This is increasingly urgent because, despite resistance to the idea from many, fewer and fewer people will ever be physically or mentally able to be of material utility to others i.e. to produce more than a machine or an algorithm could (Editors, 2016; Frey & Osborne, 2017; Shewan, 2017; Thompson, 2015). The debate, in this sense, is over. As Adair Turner has most recently argued, I believe successfully (Kook, 2018; Turner, 2018): the above is already true to a large extent, and will

increasingly be true in the future. Second was an insistence on the nature of civilisation and the ongoing civilising process of humanity. It was essentially the idea that this process can advance but could and also does, retreat, and thus should not be taken for granted. It was about the danger in failing to properly civilise citizens which, in light of ongoing and upcoming changes to human lifeworlds, poses a real risk to contemporary and future societies. The individual consumed by the world of total work, having lost the ability to hold on to said world, if not able to rely on the sacred as a self-sustaining source of meaning, while at the same time not having profited from the civilising effects of serious leisure which could dampen or civilise the inevitable reaction, poses a real risk to society writ large. For it is well known that those who thusly feel themselves not able to find a place in their social hierarchy, lash out in a variety of horrible ways (Blau & Blau, 1982; Craig, 2002; Kawachi, Kennedy, & Wilkinson, 1999; Link & Stueve, 1996).

I have explained the idea of the civilising process from the perspective of the social sciences, through SLP, taking Norbert Elias as a reference point. It is, however, useful to add a psychological and philosophical perspective to this account of civilisation; one that views the march of civilisation as a process that changes what individuals are, and what it means to be conscious. A definition that I suspect to be shared with John Dewey, though I am yet to delve into his work deeply enough to state this with confidence. The basic insight however remains clear: Norbert Elias concentrated on society and behavioural patterns, but these patterns have ontological significance the moment one accepts that context shapes behaviour because it shapes the individual, not merely the behaviour of said individual. Gerald Heard, beginning with his seminal book *The Ascent of Humanity* (1929), developed an extensive body of work about the significance of this insight. Thus, in short, he categorised individual development in three main conceptual stages one can make to explain what is going on: Group consciousness, Individuality, and finally Superconsciousness, each subdivided in many subcategories, but understanding the basic three are enough to grasp the general principle.

Superconsciousness is an ambition, a goalpost, a way of reflecting on the human potential for growth and learning. It is, in a sense, the ideal state one would wish as many people as possible to be in when technology starts changing the human lifeworld of total work beyond repair. For, from the perspective of superconscious humanity, this change would be inconsequential. Heard's speculation about progress, in 1929, was that the economic and political definition of the term would fall out of favour. Even in his times, the concept of progress was increasingly contested (Heard, 1929, p. 3), and he speculated that this was because, over time, progress had increasingly come in the form of psychological progress, i.e. progress internal to the human being, within

individuals' own minds. I believe this speculation to have been correct. Thus Heard's account is still relevant because it is one way to view the human being as malleable, but also because it is foundational for the idea of neurocultural ecosystems: that there are ways to encourage or discourage psychological progress of the individual on a grand scale.

The first stage of this view of individuality is problematic because we need to interpret the past to find examples of it. The worry is whether the stages of human consciousness are incommensurable; whether the human can ever truly understand the pig, i.e. those of our ancestors vaguely human, but not quite. But in any case, the so-called “pre-individual”, the starting block of humanity, is seen by Heard as composed of humans biologically no or little different from us, but who were entirely co-conscious in their daily practices. People whose complex mental achievements, such as music, the arts, and ritual, arose and were maintained only in limited forms, which then encouraged further mental progress towards increasing individuality. This pre-individual is more of an abstract concept than anything else, a speculation on what the first generations of more-than-apes might be capable of thinking or doing. It is the human pre-civilization, the end of which is the start of war (Heard, 1929, p. 43).

The "proto-individual" that follows the pre-individual is the human of myths and religions and war (Heard, 1929, p. 75). Individuals become identifiable and functional in their respective groups, as concepts. The priest, the hero, the king, the fool, etc. Opposing concepts arise, and thus the birth of selfish behaviours for purposes not just of survival, but of desired advantage. It is the ground from which the “pioneer individual” springs: creator of cities and civilisations. The ancient Greeks, Romans, or Chinese are examples that Heard mentions to illustrate what he means by this concept (Heard, 1929, pp. 109–153), but the radical change from proto to the pioneer individual might best be illustrated by Zarathustra (Heard, 1929, p. 116). It is the start of individuals beyond and separate from the group, the “man of honourable idleness” (Heard, 1929, p. 148).

At the same time, Heard identified this stage as the riskiest, the stage when the structural and institutional organisation of empires inadvertently encourage the vast mass of people to regress to a proto-individual state. Education and Duty were reserved for a select few, thus depriving the masses of civilising influences. Hence, in theory, why the Great Empires of the past collapsed (Heard, 1929, pp. 154–179): they failed to invest in the individual on a large enough scale to ensure stability in times of great upheaval or change, much like the situation in which we find ourselves today. This observation, of the currently dangerous stagnation and regression of western culture, is nothing new, having been noticed in everything from gender relations (Paglia, 2014) to music (Thoughty2, 2017),

as well as recently re-emerging in public discussion (Peterson, 2017). However, this above account shows what such a regression means on the individual level, and what effects this had on previous civilisations. It highlights the difficulty, as well as urgency, in repairing the damage if at all possible.

Indeed, in Heard's account it is Scholasticism that allowed Europe to protect individuality during the Middle Ages. A certain segment of the population was put aside, protected from the worst horrors of absolute poverty while encouraged to engage in internal reflection and education of the public. Ways to generate meaning internally were preserved within the monasteries and other select few establishments. European societies were thus lucky that these preserved communities survived long enough for living conditions to improve and stabilise. Culture found a rebirth, a renaissance. Thus Heard sees the difficulty of moving beyond this stage as the difficulty in reconciling Humanism with Humanitarianism, integrating Thought and Feeling. In particular, we can see how during the Enlightenment, Thought, or Humanism, was the dominant force. This was succeeded by the Age of Feeling, i.e. romanticism of various kinds broadly defined as Humanitarianism.

In both cases, thinking and feeling have been in the process of increasing divergence instead of increasing convergence that Heard argues leads towards superconsciousness (Heard, 1929, pp. 182–213). One way to keep Heard's view on the relation between Humanism and Humanitarianism in mind is the idea that “man is an animal that thinks. To be a first-rate human being, a man must be both a first-rate animal and a first-rate thinker” (Huxley, 1931). Thus although Heard does talk of higher and lower individuality to refer to, in order, reason and emotion, neither is complete without the other.

The final chapter of Heard's seminal work relates to progress and superconsciousness, or the enlargement of individuality. One element he highlights is the evolution of sight in the broadest sense. The idea that what we see and what we have become capable of being aware of, has gradually been increasing. “From attempting to affect the stars, he tries to alter the seasons and the earth, and so finally comes to himself...Biologically the stars are without meaning, and increasingly we apprehend them first by an extension of sight, and then with a vision which is not sensuous any longer” (Heard, 1929, pp. 262–263).

Heard continued to develop his concept of superconsciousness throughout his life, notably through two other books: *Morals since 1900* published in 1950, followed up in 1964 with his other major work, *The Five Ages of Man: The Psychology of Human History*. For this thesis, the simple definition of superconsciousness, which seems not to be contradicted by Heard's later work, I would

describe as follows: it is the label for the direction in which the character of an individual grows when the humanist and the humanitarian natures within the individual cooperate and mutually enhance each other. Growth refers to the gradual expansion of what an individual is capable of thinking, feeling, and perceiving. It is a fundamentally optimistic view of human nature and potential, albeit heavily constrained by numerous conditions and caveats related to leaving open, in principle and practice, the possibility of regression.

Indeed, Heard was not ignorant of the sciences of his time, and did not conceive of this evolution of the individual as hardwired in our biology; although he did wonder about the possibility that extreme events might get transmitted through nature also, mostly in his later work *The Five Ages of Man*. For, if phobias and particular skills can be inherited, which seems to be the case, then philosophical and moral progress might also. With this caveat in mind, Heard mostly postulated the existence of this changing nature of the individual as based on nurture, on the mentioned virtuous circle of sacred leisure to civilisation to individuality. Later in his life, he would describe this process as upward and downward transcendence, which became integrated with the philosophies of some his friends; such as Alan Watts, Frederick Matthias Alexander, John Dewey, and Aldous Huxley.

### **3. Towards implementation via Moral Education**

Having tried to explain an idea of the individual and the extent to which individuality is rooted in Leisure and Civilisation, I will now continue with two elements as of yet missing from the story. First, I will present some of the work done by other authors that have provided strong empirical evidence for the progression of civilisations and citizens which was mostly merely well-reasoned speculation in Gerald Heard's time. One reason to do this, is that the extended arguments provided by Pieper, Heard, and others, require that I show progress and improvement to be true on a sociohistorical level also, since they rely on the accumulated progress between generations. Another reason is that, since I'm proposing to use education to instigate moral progress, I should first establish that it is not a futile endeavour.

Second, I will go into one method of application of NIEMAR. For this, I will largely depend on Ronald Lee Zigler's book *The Educational Prophecies of Aldous Huxley*, through him cover some lesser known parts of the philosophy of John Dewey, and illustrate what it means to use neurocultural ecosystems to promote the kind of individual which will be capable of, and for the specific purpose of, applying a necessary and currently missing component in AMR as a daily practice. These are exploratory ideas amongst a potential infinity of possible options, covered here because they are already mentioned in the literature i.e. there is already a large consensus that these types of measures might work.

#### **3.01 Empirical Evidence of Moral Progress**

Steven Pinker seems to be the most high profile academic to have summarised and updated Elias' speculations and general theories for contemporary use. Because of this, I am also aware of some misunderstandings related to this way of explaining and defending the idea of moral progress, and thus I will cover some the basics of the argument here. For, *The Better Angels of Our Nature* itself summarises hundreds of studies and books and articles, and as such it is impossible to even remotely capture the amount of detail present in the book, nor can I mention all the pre-emptive treatment of possible counterarguments to many factual and causal claims in the book that Pinker addresses. That being said, his fundamental claim is that violence on the individual level has decreased over time, that this decrease was not steady, that it was obviously not brought down to



zero, nor is it guaranteed that this process will necessarily continue; however, despite these caveats, the historical trends, so far, have been clear. To make this argument, Pinker mentions six main elements to the decline of violence on the global scale.

The first element is what Pinker calls the “pacification process”, concerned primarily with prestate or nonstate societies. This stage, in essence, tried to answer the question of who was right about the human state of nature: Hobbes or Rousseau. Pinker concludes that essentially, it was Hobbes that was more right, even though neither philosophers knew what they were talking about. After all, they were making rather grand conclusions on human nature in the complete absence of relevant scientific data. This lack of data, however, is no longer the case. For example, one source of relevant data comes from forensic archaeology, which has investigated the proportion of prehistoric skeletons showing signs of violent trauma. This allows us to compare, century by century, approximate numbers of violence in these ancient societies. As a result, we can see a sharp drop in the percentage of people suffering from violent deaths (Pinker, 2012, p. 59).

The second source of relevant data comes from Ethnographic statistics about nonstate tribes currently or recently in existence. From this data, comparing the most peaceful non-state versus the most violent state societies of the 20th century, the latter are vastly less violent (Pinker, 2012, pp. 64–67). This remains true even if one takes into account the rate of war deaths, i.e. despite two world wars. For example, Germany lost 155 out of 100'000 citizens due to war every year, the U.S. lost 2.7, whereas nonstate societies average at 524. This extreme contrast is explained by three main things that are necessarily part of the centralisation of power. First, the gradual rise and expansion of States. Second, the practice of Paxes (Pax Romana, Pax Islamica, Pax Hispanica, Pax Sinica, etc.). Third, the necessity on the part of a ruler to stamp out the competition, resulting in the gradual disappearance of raiding and tribal feuds, since these are hindrances to the accumulation of taxes, soldiers, and slaves, i.e. the tools needed to hold onto and expand power.

The Second element is Pinker's take on the civilising process that is concerned with the transition Europe made from the Middle Ages to Modernity. An example of one of the statistical nuggets that support the argument is the fact that a medieval Western European was thirty-five times more likely to be murdered than a modern Western European (Pinker, 2012, pp. 74–75). The reasons behind this change are, of course, many. We see the consolidation of centralised states or kingdoms, nationalisation of criminal justice systems, then finally consolidation of centralised use of power, i.e. the Leviathan. We see the rise of infrastructure dedicated to commerce resulting in the

increasing attractiveness and accessibility of positive-sum trade, which then gradually came to replace the zero-sum plunder of previous Empires such as the Romans or the Aztecs.

The third element is what has been called the Humanitarian Revolution (also known as the enlightenment), an example of which is the gradual disappearance of radical methods of torture, and with it the negative cognitive and psychological consequences of these practices on the practitioners, bystanders, and victims alike (Pinker, 2012, p. 159). A good example of a definite shift in the neurocultural ecosystem. Another example is the abolition of the death penalty for non-lethal crimes (Pinker, 2012, p. 183) or, taking only European countries, the total ceasing of executions tout-court (Pinker, 2012, p. 181). One explanation for this is the gradual rise of empathy, the recognition of fellowship with human beings as human beings, and the rise, in the meaning of popular spread, of the idea of human rights (Pinker, 2012, pp. 210–214) through the spread of education and literacy.

Again, the historical pattern seems clear. First, the most horrible form of torture disappeared, then the contexts of judicial torture became more and more restrained and rare, until starting in the 18th century European countries started abolishing judicial torture altogether (Pinker, 2012, pp. 174–179). Other practices that gradually lessened in European countries are witch hunts, religious persecution, duelling, blood sports, debtors prisons, slavery, and many others. These are not automatic developments; they are achievements.

Thus, for example, we know that the abolition of slavery outside of Europe did not go easy nor automatically (Pinker, 2012, pp. 184–190). The U.S. had to go through a bloody civil war. Many, if not most, countries required persuasion by gunboat diplomacy (Rodriguez, 1997). The slave trade furthermore remained a common official practice in Muslim countries, as well as being informally accepted in Asia in general (Campbell, 2004) until the mid 20th century. Meanwhile, there were countries such as Mauritania, which continued the practice of legal slave ownership until 2007. Granted, today many forms of states similar to slavery still exist, and some rare people still argue for its reinstatement as an institution. However, these are the rare exceptions where it used to be widespread a century ago. This is but one of many issues that have seen such relatively slow but definite progress over time.

The fourth element is “The Long Peace”: the observation that the 20th century, when taking into account a century by century comparison, was the most peaceful century in human history, with the exception of the current one. There are a few main reasons why people might not realise this. First is the widespread ignorance of earlier history, in particular the normalised brutality of previous

centuries. Second is the habit of forgetting the significance of the fact that a century lasts a hundred years, not fifty. Third, maybe most relevant here, is the difference between relative and absolute number of victims. After all, if we're interested in violence on an individual level, absolute numbers tell us nothing. From this change in perspective, world war 2 barely manages to stay in the top ten worst things that humans did to other humans (Pinker, 2012, p. 238) on a grand scale. Then there is the extraordinary bias in underestimating wartime or wrongful deaths when comparing ancient to recent history. For not only is the concern for accurate and complete accounts of human atrocities a recent development, concern for human life in times of war, as separate from accounts of livestock, is likewise relatively new (Chalk, Jonassohn, le génocide, & Montreal Institute for Genocide Studies, 1990, pp. 32–39; Pinker, 2012, pp. 386–413).

This brings us to the fifth element: “The New Peace”. The many areas of progress and reduction in violence in Western countries start to spread to the rest of the world. The Cold War masked much of this progress, but shows up prominently the moment the USSR collapsed (Pinker, 2012, pp. 386–413). Again, our concern is the individual. From this perspective, it is clear that much of the level of violence that existed during the Cold War was pushed by and originated from State interests. Pinker then explains how much of this long period of relative peace could have come about, through Immanuel Kant's essay “Perpetual Peace” (Kant & Humphrey, 2003) that speculated on the conditions for the promotion of a more peaceful world: namely through the spread of Democracy, Trade, and International Community. Now, it is true that this essay is often misunderstood to be optimistic. Hence I should qualify: the idea was that, to the extent that peace is possible in consideration of human nature, these three elements are the main possible pathways towards a more peaceful world. As any International Relations student will know, this claim has been confirmed mainly through Oneal and Russett's work (Oneal & Russett, 2001), but reconfirmed many times over by others (Dorussen & Ward, 2010; Jarrod Hayes, 2011). This claim should be caveated by mentioning that I do not need to extend the argument beyond the minimum, as is often done. The claim here is not that these are sufficient conditions for peace, but that these are some of the main elements involved in the process of pacification in modern and contemporary context, on the level of individual behaviour.

Finally, the sixth element: “The Rights Revolutions”. In other words: the ever-increasing range of vulnerable groups coming under the protection of the law. Examples are minority groups (Pinker, 2012, pp. 470–473), women (2012, pp. 485–487), children (2012, pp. 526–533), homosexuals (2012, p. 542), and even animals (Blush, 2012; Pinker, 2012, pp. 563–565). Again, this progress is

not presumed to be the progress of the human species, but cultural. In this sense, Pinker's enumeration of violent behaviour in children, the vicarious pleasures of violence as entertainment, the prevalence of homicidal fantasies, etc., are reasonably convincing to make the argument. Taking human nature as consisting of a complex network of a wide range of inclinations, some that incline towards violence and others that counteract them, Pinker's explanation is the same as many have argued before him: that historical circumstances increasingly favour our peaceable inclinations (Pinker, 2012, pp. 580–776).

In summary, Pinker's work has fundamentally strengthened Norbert Elias' theories on the nature of progress and civilisation by updating it through numerous of results from contemporary science. Whatever questions or legitimate criticisms remained as to the claims of the primary argument, were largely responded to by Pinker with a whole new book that expanded on the initial argument: *Enlightenment Now* (2018). Finally, where Pinker concentrates primarily on behavioural observations, the power of context to influence action, a neurocultural ecosystems perspective concentrates on how context influences the mind in everything from thinking, impulse control, empathy, to psychological health. The point is to tackle the brain states underlying actions and behaviours, not the actions and behaviours themselves.

### **3.01.1 Fine-tuning the argument: Progress is plural, morality is a landscape.**

Recently, Michael Shermer also doubled down on the argument of the moral progress of human societies as a whole, and western societies in particular (2016), going through a series of criteria and compares the statistics over time. Thus we have, most importantly, the progress of governance, i.e. an increasing balance of power in favour of liberal democracies and to the disadvantage of theocracies and autocracies. Shermer sees this as most important because “democracies place more emphasis on individual liberty than any other form of governance & thus they promote the survival & flourishing of sentient beings” (Shermer, 2015). We furthermore have progress of economy, i.e. property rights and freedom to engage in trade. We have the progress of Rights. The right to think, to say, to do, to live, to be other than what is demanded. We have the progress of prosperity, with this meaning the acceleration of the decline of poverty, which shows no signs of slowing down. The same pattern holds true for health, war, slavery, homicide, rape, judicial systems, civility, etc. Thus according to Shermer, progress is evident no matter where you look. The denial of progress is a

favourite pastime for many, but it has no basis in the empirical sciences and, having no basis, merits no falsification.

Michael Shermer explains some of the reasons for progress that we can see, notably through the increasing dominance of the scientific mindset. In other words: it's the power of the insistence that claims that in principle apply to reality, need to be consistent with observed reality. This attitude has forced all contenders of moral authority to face the possibility of ridicule, gradually doing away with the many self-proclaimed prophets and snake-oil salesmen that littered and retarded moral progress in previous eras. Once this is done, people are free to investigate properly what promotes human flourishing. Finally, because human flourishing is conceived as the growing soil of the establishment of values and morals, Shermer then continues to argue, as he has been doing for quite some time (Shermer, 2013), that the study of human flourishing ought to then be the primary goal of a science of morality. This echoes Sam Harris' book *The Moral Landscape* (2011), from which the basic argument seems to be derived.

Indeed, just because we know what is morally up and down, does not mean that there is one single right answer. Taking Harris' analogy: if one pictures the mass of the world's civilisations as mountains and valleys, where mountains represent levels of flourishing and the valleys levels of suffering, we do not need to know or speculate about some one ultimate ideal condition, or mountaintop, for the human race to flourish. All we need to know is the ranges of things that encourage flourishing and those that go against it. This perspective allows us to visualise and accept that there may be different ways for humans to flourish, without however losing the capacity to identify clearly, and remain on guard against, ways to regress or encourage suffering.

### **3.02 A Neurocultural Individualist Ecosystems approach to moral education**

What all the authors covered so far have in common, is the insistence on the importance of context for character growth and the general flourishing of individuals. By changing this context, individuals can be swept away by a virtuous or vicious circle, by upward or downward transcendence. The purpose of NIEMAR would, therefore, be to try and aim at shaping the context of individuals to indirectly benefit the societal capacity of AMR on the individual level by encouraging the stimulation and cultivation of the implicated parts of the brain, resulting in societies more resilient to the rapidly changing risks of the modern world. Thus, though the motivation for taking this approach is fairly directly linked to the problem of a robust long-term

practice of AMR, the application might seem extraordinarily remote due to the need to tackle not the first order cause of a problem, but the originating human nature that makes the problem a problem in the first place. The point is not to teach morality by moralizing, but by shaping a lifeworld, a day-to-day context that encourages moral thinking, and rely on human nature to do the rest. In the following, I will use Aldous Huxley's work to illustrate possible ways to do this.

### **3.02.1 Brave New World: break the vicious circle of Schools**

The attempt to improve humanity through science and technology has numerous caveats and warnings represented in popular fiction as well as in philosophy. *Brave New World* is one such example where, even granting initially good intentions, things go horribly wrong. It is for this reason that the book is sometimes described as an example of a 'bad utopia', a warning about the consequences of trying to solve grand societal issues through centralised solutions that presume singular causes for singular problems. It is an example of the direction our societies could go if the stability of society is to ever trump the rights of, or concern for, the flourishing of individuals as individuals – as is the case currently –.

Thus, although the example of Eugenics is straightforward, a logical choice to use at the time Huxley was writing, the point was more the type of reasoning than Eugenics itself. For what is Eugenics, but a matured form of believing that genetic superiority grants natural rights, and genetic inferiority grants natural criteria for discrimination? Furthermore, what is psychometrics – I.Q. tests – but planned discrimination inherent in most of our current educational institutions? What are the SATs but a scientific basis to determine the “proper” place of people in social and economic hierarchies that have already segregated our societies on the battlelines of I.Q. (Postman, 1993), the first step towards the realisation of *Brave New World*? These tests have, after all, resulted in a “natural aristocracy”. Indeed, irrespective of any initial good intentions behind such methods of sorting people into the roles for which they would be most suited: today they essentially function as judgments on who will be condemned to poverty, and who will benefit from extraordinary wealth (Lemann, 2000), not due to merit, but from the lucky draw of genetics coated in the rhetorics of merit. It is this ‘moral calculus’, the idea that the talentless deserve their suffering, that is inherent in both *Brave New World*'s educational system, as well as ours (Zigler, 2015, pts. 2, 15/55–19/55).

The relevance of all this lies in the necessity, for an individualist approach, for all individuals to benefit from a type of education that is made impossible by the above state of many of our

educational institutions. For the tragedy of the whole system lies in the fact that, having failed a test or two in youth, or being categorised in the lower percentiles of the overall population, a child is deprived of elementary education in the disciplines of humanity. Extreme limitations are put on what such pupils are exposed to. There is little to no time for serious pursuit of art, music, theatre, poetry etc. (Grey, 2012). There is a near complete cessation of attempting to draw pupils into the mysteries of the universe, under the assumption that, somehow, the stupid or the poor do not ask or struggle with the fundamental questions that naturally occur to conscious minds. Worse still, adults deprived of proper education in this way are often used as confirmation of their 'natural' lack of interest or reflection on such existential issues, serving as justification for the continuation of the system, just like in *Brave New World*.

Another danger of this situation was predicted both by Aldous Huxley as well as John Dewey: namely the spread of the mistaken assumption that a meritocratic elite would be more likely to turn around and use their talents for the benefit of their communities – one instantiation of the myth of the virtuousness of the experts mentioned before –. Today, we know better, and yet our educational and governance systems have not changed accordingly (Bushey, Farady, & Perkins, 2012; Zigler, 2015, pts. 2, 28/55). If an Individualist approach is to ever work, this would be an obvious first step: to promote the growth of character of everyone, not only the academically gifted, to their maximum potential, whatever that is. No government, no expert, no teacher, no parent should have the right or power to, in advance, decide the limits or the potential of an individual; not just because it is deontologically repellent, but also because an ill-educated mind is a risk to others, incapable of the kind of AMR that NIEMAR requires.

If one then combines this principle with the purpose of education in the context of democracy, defined as not just a political system but as a way of associated living as developed by John Dewey, another important and yet currently absent feature of education becomes apparent. For if nobody has the right to decide an individual's limits, one role of education becomes teaching people to defend themselves against attempts to do so. *Brave New World* speculated that television would serve as a tool for limiting and defining the potential of individuals, by enslaving people through “that which we love-what amuses and entertains us” (Zigler, 2015, pts. 2, 34/55). It is the idea that you don't need to ban books or censor information iff you can make it so that too few individuals care about anything to make a difference (Postman, 2006). *Brave New World* can thus be seen as an example of a neurocultural ecosystem that “smothers its citizens in socially complacent forms of

downward transcendence” in ways that are “highly profitable” (Zigler, 2015, pts. 2, 43/55); A slow erosion of our humanness and our humanity (Carr, 2011, p. 220).

### **3.02.2 Ape and Essence: demand, not request, advanced literacy skills**

Huxley's second dystopian novel *Ape and Essence* is a fictionalized treatment of a significant problem made worse by technological and scientific progress, as seen in *Grey Eminence: A Study in Religion and Politics* (1941) and *The Devils of Loudun* (1952): the exploitation by Mr. Hyde of the achievements of Dr. Jekyll (Zigler, 2015, pts. 3, 5/53). The novel goes into many different related issues of the “pernicious impact of disguised personal ambition” (Zigler, 2015, pts. 3, 9/53), such as the subconscious enjoyment of malice, domination, and glory, while insisting that it is the will of God (Huxley, 1941, p. 170). In contemporary neuroscience, the conflict between Jekyll and Hyde is explained as differing neurological profiles: one dominated by our limbic system that is heavily implicated in fear, anger, and aggression, the other dominated by our anterior cingulate, heavily implicated in reason, logic, and compassion (Newberg & Waldman, 2010, p. 132). It is the neurocultural ecosystem that defines which parts of the brain get stimulated.

The relevance of the society depicted in the book is that Huxley took characteristics present in contemporary society, and thought about what would happen if one subtracted hypocrisy from the equation, in the context of great social upheaval. In the book, this was a nuclear holocaust, but events like runaway climate change might do just as well (Galesic et al, 2016). These characteristics are: an oligarchic government that demands obedience, scapegoating politics, and cruel retributive/corrective justice. These characteristics are then put in the service of manipulating the citizenry, who have previously been made gullible by their lack of education in advanced literacy skills such as critical thinking. If one then takes into account that neurocultural ecosystems are essentially self-reinforcing, you conclude that once a society is on the path of using such tactics in their politics, their news, their schools, etcetera, it becomes increasingly hard to change course. The effects of such practices are not limited to society, but apply to the very structure of individual brains. Worse still: it has been found that to stimulate the limbic system through fear and anger damages the anterior cingulate (Newberg & Waldman, 2010, p. 53) and thus the capacity for reason and logic and empathy.

The type of fear and anger that is most relevant to us here is what Erich Fromm called character-conditioned hate, as differentiated from rational, reactive hate, the former containing



significant addictive properties (Fromm, 1990, pp. 210–245). Likewise, John Dewey, in his *Human Nature and Conduct* (2017) initially published in 1922, anticipated and illustrated the importance of this fact for our current dilemma, namely that “a man with the habit of giving way to anger may show his habit by a murderous attack, even if the attack occurs only once in his life” (Dewey, 2017, pp. 22–23; Zigler, 2015, pts. 3, 31/53). Hence again: it is impossible to differentiate good people from people who were never in a position where they could be bad; at least, not before it is too late. Huxley likewise warned about this dilemma, which he identified as the seductiveness of downward transcendence in *The Devils of Loudun*, and wrote *Ape and Essence* with this in mind, i.e. “ends are ape-chosen; only the means are man's”.

Thus we can see how “we are always to some degree at war with the more primitive mechanisms of the brain that have evolved over millions of years” (Zigler, 2015, pts. 3, 44/53). We can ask the question of the effects of modern technologies, notably on the extent to which these technologies stifle the ability of our brain to feel genuine empathy, or how they could prevent new generations from engaging in the higher level cognitive functions that are ever more essential in retaining free will; the ability to fight off the assaults against it, designed by psychology majors turned mercenary for State power, Corporations, or elites in general. Indeed, one can only hope that future generations will find it very strange that marketing specialists can openly sell services that are wilfully designed to short-circuit free will without fearing long-term prison sentences and fines. It has become so bad that we have an entire field opening up explicitly meant to train you in this criminal endeavour: neuromarketing (INESEM, 2018). Meanwhile, however, improving defences against such depravity seems more realistic and urgent in the short term.

### **3.02.3 Island: do everything, and manage the lovers of power**

The two above novels by Huxley were both dystopian, and as such, I used them to distil two measures that would be important to try and prevent dystopian futures. Against dystopias similar to *Brave New World*, one could start by avoiding categorising children in such a way that a significant number of children end up deprived of the beneficial influences of the achievements of human civilisation. Not because the humanities are so much more important than other disciplines, but because minds having benefited from such neural activity are better minds, more competent in general cognition in a way that encompasses thinking and feeling, ratio and intellectus. Against dystopias similar to *Ape and Essence*, one could start by teaching brain chemistry and general

knowledge of some of the reasons behind human behaviour. In this way, for example, in adulthood, former pupils might be capable of mounting their defences against attempts to manipulate them, because they will have been made aware of how fragile human minds are.

The third book that I'm using as a springboard, *Island*, is different: it is a utopia. As such, I use it to try and distil not what it might take to avoid disaster, but what it might take to tip the scale of probabilities in favour of a good, instead of passable, outcome for humanity, in the long term. In this, near all philosophers covered in this thesis can be seen as part of a long and ongoing tradition in philosophy, especially political philosophy and philosophy of education: the insistence that “nothing short of everything will really do” (Zigler, 2015, pts. 4, 7/79). It is a fundamental principle of NIEMAR, in that no one-time measure will ever be enough. The challenge that technological and scientific progress poses to current societies are continuously and exponentially generated with every new technology or scientific discovery. It is in this way that currently existing approaches are band-aids; they are singular solutions to problems that are part of a network of problems generated ad-infinitum. By analogy, they are like the anti-virus programs on our computers: singular programs, the result of teams of competent but numerically and monetarily limited anti-virus experts, whose resources and numbers are outmatched by virus-creators. Even in the best case scenarios, there is always a lag between the creation of a virus, and the virus-scanner update intended to fight it. Whether the virus destroys the computer in that interval depends on the individual.

One measure illustrated in *Island*, for example, is one aimed at teenagers, who are essentially biologically programmed to make big mistakes. The idea is to make sure that they are capable of identifying and stopping the biggest of such mistakes. This is done, in part, through so-called MACs, or Mutual Adoption Clubs. These clubs ensure that every child, though having “primary” parents, also has a range of involved “secondary” parents and siblings of different social, economic, or cultural status. It is one of the measures inspired by John Dewey's insistence on Democracy as “associated living” (Dewey, 2012, Chapter 7).

It is a practice that would have many benefits, and cure many social ills of today. However, it also does two things of particular interest. First, it exposes young individuals to many different contexts and ideas, promoting a range of skills and opportunities otherwise closed off to them. Second, it exposes older individuals to new lifeworlds, allows them to keep up with technological changes and, by extension, skills and tools that they should try and become proficient in. In other words: the young get skills, the old update them. Both effects would greatly mitigate many risks

posed to society by technological innovation on an individual level by allowing individuals to identify them in time to make a difference. The elderly need the presence of mind to not click on that pop-up; the young need to realise the danger of trading privacy for safety.

Another measure illustrated in *Island* is the acceptance of the psychological draw that power has over a certain percentage of the population (Fromm, 1992; Zigler, 2015, pts. 4, 19/79), and real measures to counteract this influence. Indeed, some of the most apparent risks posed to us by technology, are those coming from the wilful desire to either do harm, or obtain power through any means necessary. In his description of the danger of the seductiveness of these tendencies, Fromm took over from Huxley, and others, the aforementioned idea of upward and downward transcendence. In particular, Fromm pinpointed the problem by explaining how people pursue transcendence tout-court. If upward transcendence is not perceived to be available to them, they will go the path of downward transcendence. Furthermore, the choice to favour upward to downward transcendence is not automatic, but reliant on neurophysiological and social conditions (Fromm, 1992, Chapters 10–11), i.e. the neurocultural ecosystem in which individuals find themselves.

Thus, if one were to summarise the proposals in *Island*, amongst which I have explained two, I can only concur with Zigler's summary, which is to have society “optimize and maximize the opportunity for the powerful incidental learning and socialization that takes place in any society and to try to ensure that these educational interactions are mutually enhancing rather than mutually exacerbating” (Zigler, 2015, pts. 4, 22/79). Ideally, this would be done not just in view of mitigating the dangers that the lovers of power and the easily manipulated pose to their societies (Zigler, 2015, pts. 4, 24/79), but also in view of fostering what Huxley called “elementary awareness” (Zigler, 2015, pts. 4, 27/79). The latter idea has been somewhat left out of this thesis, but which refers to a number of exercises and techniques of bodily awareness as promoted by people such as Paul Rebs (1998) or more importantly F. Matthias Alexander (1990), the originator of the Alexander Technique, which both Aldous Huxley and John Dewey practiced.

The final point to make in this regard is the place of meditative techniques, defended here given their contribution to the skills of interest to AMR. For one observed benefit of these techniques is a harmonisation of various parts of the brain which, as mentioned, is an important element both for the individualist approach as proposed here, as well as for Virtue Ethics. Thus, taking into account what I wrote earlier concerning the roles of the limbic and the anterior cingulate, in emotions and rational thought respectively, we come to the insight that John Dewey voiced in *Human Nature and Conduct* (2017). The idea is that of a working harmony among diverse desires, that “we enhance

our capacity for rational, human moral choices by promoting a more integrated, coordinated relationship between those parts of the brain wherein our cognitive powers and emotional responsiveness reside” (Zigler, 2015, pts. 4, 56/79). To do this, however, “Science is not enough, religion is not enough, art is not enough, politics and economics is not enough, nor is love, nor is duty, nor is action however disinterested, nor, however sublime, is contemplation. Nothing short of everything will really do” (Huxley, 1962, p. 132).

## **4. Conclusion**

### **4.01 The Technocracy Debate**

I have gradually covered how the various elements of NIEMAR would fare better than existing approaches in dealing with the five major arenas of debate mentioned in the first chapter. First, as seen through the citations used throughout this thesis: advances in psychology and neuroscience allow us to now show the beneficial utilitarian effects of initially non-utilitarian ideas. Ideas about what an individual is, what it means and what it takes to become one, are now formulate-able in ways that even businessmen, those who tend to be in the positions to decide, can potentially be persuaded. Apollodorus of Phaleron could only have dreamed of such a favourable context.

As NIEMAR doesn't deal with centralised decision-making nor community consensus, most of the problems related to scientific versus non-scientific thinking are sidestepped. Those that aren't are less of a problem because of NIEMAR's insistence on more fundamental conditions of general thinking from which moral thinking originates, instead of tackling moral thinking directly like Virtue Ethics does. At the same time, it is close enough to Virtue Ethics to potentially preserve Virtue Ethics' main strength in providing a way to have knowledge find its way to action.

Furthermore, by taking on board most of the elements of the Risk Savviness approach, the disconnect between theoretical and practical knowledge is no longer a problem. Where expert-driven approaches mostly denigrate practical knowledge, and governance approaches downplay theoretical knowledge – to grossly simplify – : NIEMAR has the two types of knowledge define each other. Likewise, because the suggested applications are aimed at strengthening the individual, aimed at reducing people's reliance on external elements to assess and manage risks, the problem of the status of the knower is miniscule compared to other types of approaches. With expert-driven approaches this is obvious, but even Governance approaches still have to deal with the always difficult issue of criteria of representation.

### **4.02 Summary**

Thus, in summary, I have tried to make clear the two main problems I see within current AMR. One the one hand, I explained the time-gap caused by the essential nature of currently dominant methods, and how this time-gap is increasingly becoming a qualitatively more dangerous weakness as time goes on. On the other, I went into how an individualist approach could not only control for

this time-gap, but also give alternative answers to the current technocratic debate in AMR. I did this by developing a rather complex definition of the nature of individuality, and especially what I see to be wrong with current ways of conceiving of what an individual is or can do. This was the motivation behind starting out with three significant myths to overcome that stand in the way of being open to the picture of individuality that I use. First, the myth that people can't change or improve. Second, that experts are innately virtuous or competent. Third, that the solution to increasingly complex problems is increasingly complex solutions. Only once these myths were out of the way did I continue to explain the definition of individuality. I insisted on the importance of the element of the sacred for culture, and the importance of culture for the existence of an individual capable of generating meaning out of life. Then, an explanation of the importance of the feedback loop between culture and the individual, and the role of Leisure as the intermediary in this process of gradual cultivation. Finally, a rough description of the stages of cultivation of the individual, putting stress on the existence of progress of entire civilisations that are, however, highly contingent and fragile to regressing if too little care is taken in the maintenance of the neurocultural aspects promoting upward instead of downward transcendence.

The third chapter started by getting into some of the empirical reasons why the account of the progress of cultures, from the perspective of promoting ever more morally capable individuals, is reasonable to believe to be true. I also dwelt on the concept of a moral landscape as used and defended by Sam Harris, to indicate that just because we might call one culture superior to another, does not mean that there is only path or one superior culture. There might indeed be many possible mountains and valleys of human achievement and morality, all however determined by some universal laws related to human nature and well-being, much like gravity and tectonic plates determine the landscape in real life.

Finally, I covered three examples of the kind of measures that NIEMAR would recommend. First, resisting early categorisation of individuals and especially children. Second, to educate the public, through any means necessary, on the many ways that their thoughts, feelings, and actions can be, and are, manipulated, often without their consent. Third, the use of measures such as Mutual Adoption Clubs to re-introduce mutual inter-generational learning. At the same time, promote techniques and habits that encourage harmonisation of parts of the brain that are often in conflict, i.e. making the brain of every individual, conceived as a complex system, more resilient through measures such as, but not limited to, the Alexander meditative techniques. In other words: ensure that routes to upward transcendence are closer to hand than those of downward transcendence.

NIEMAR would recommend these measures because they do two things at the same time: first they improve the individual capacity for identifying and managing risks as they present themselves, and second they mitigate or negate a range of risks that then no longer require management.

### 4.03 Challenges

I can see many challenges to the implementation of NIEMAR. And although it is obviously impossible to mention all of them, I can see a few that seem to be in greater need of a response than others. These are: the possible heritability of intelligence, the inequality of civilisations, Cassandra's regret, and what to do with the morally stunted.

The first challenge relates to what seems to be the consensus about intelligence: namely that genetics is at least half of what determines the intelligence of individuals (Bartels, Rietveld, Van Baal, & Boomsma, 2002). If true, an economic level playing field, often held up as the ideal to strive towards, could increasingly have the more intelligent as the absolute victors. A slowly increasing chasm between smart and stupid with every passing generation. This would conflict with my previously mentioned suggestion that no one should be allowed to decide the potential of children in advance. For if genetics is half the story, educating everyone to their maximum potential could have the averse affect of widening the gap between individuals. This problem might then be solved through genetic engineering or a complete overhaul of the fundamentals of contemporary economies, but the danger in, and difficulty of, such measures, is, I think, obvious.

A second danger is what is also illustrated by the ending of *Island*, namely the unequal state of moral progress of different societies. Indeed, even the most straightforward examples of mere training of skills, such as the Risk Intelligence and Risk Savviness approaches, rely on universal application strategies if they are to be used in AMR because their effectiveness greatly depends on the degree to which said skills have been spread throughout a population, in a way that is very much analogous to how inoculations work. Above a certain percentage of non-inoculated persons, the risk is exponential for everyone. *Island* managed to solve this issue, for a while at least, through isolationism. However, in the current globalised and interconnected world, I don't see this as a viable option. Must we then undo certain aspects of globalisation and free movement of peoples?

A third danger is about the psychology of not wanting to know – the idea that ignorance is bliss –. This could prove to be a fundamental stumbling block to an individualist approach. For iff there truly are people who are so made as to not want to know, then education won't be able to help. This

might be the best argument for using NIEMAR as necessarily complementary to, not replacing, existing approaches; it would mean agreeing with the Virtue Ethics distinction between everyday and high profile rare events mentioned in the first chapter. Furthermore, even if this turns out not to be the case, there remains the issue of what to do with current generations that have been and will be deprived of the education needed to learn to want to know. Gigerenzer has done some work on this topic, investigating the causes of wilful ignorance (Gigerenzer & Garcia-Retamero, 2017), but a solution seems not to be forthcoming.

Finally, there is the danger that the current generations pose to future generations. For even if a miracle occurs, and educational systems the world over are completely overhauled, there still remains the problem of the masses of people who are essentially morally stunted compared to the generations that would follow, while still having access to the same technologies. Neuroplasticity is not limitless, and neither do working people have the kind of limitless free time that would be needed if it was. Thus maybe this is the best argument for – at least temporarily – maintaining existing approaches to AMR; waiting for current generations to die off enough to make them needed in ever fewer context. Perhaps Virtue Ethics, despite the danger of stagnation and collapse, might even ease the transition.

#### **4.04 Final Words**

In conclusion, one might start with admitting that there is no magic solution to the problem that this thesis tries to address. In many ways, one could make the argument that the underlying idea that “nothing short of everything will really do”, dooms NIEMAR to the domain of utopian thinking, dooms the conclusion to a wailing and gnashing of teeth saying “only God can save us”. Although I can't deny this, I tried to compensate for this weakness through a pragmatic argument derived from the uncertainty that naturally dominates when one tries to predict or give advice on how things should be done in the future. This is where John Dewey comes in, and the reason for the use of both him and Aldous Huxley in the third chapter. In essence, the motivation behind turning to pragmatism for this is to allow the shift in perspective from ‘we're all gonna die’ to ‘let us try and shift the balance of probabilities of future events, as much as we can, towards the range of more positive outcomes’. From this, I have tried to distil three cases as illustrations of the kind of measures that could be imagined to work in the more modest sense, while still being realistically feasible.



Thus to summarise the point as briefly as I can: measures suggested by NIEMAR would promote a gradually increasing percentage of the general population capable of autonomous AMR; reduce our reliance on unwieldy and bureaucratic means while also improving the latter insofar as they remain necessary by gradually improving the available talent pool; while also reducing the problem-solution time gap risks in correlation to said percentage. Put very simply: a cyclist might easier identify problems with a major intersection under construction and act accordingly, the construction workers might see the same and likewise act, passers by might see the same and mention it to said workers if the latter hadn't noticed, the designer of the new intersection might be better equipped to see the problem beforehand or to repair it quickly, co-workers of said designer would have enough fundamental understanding of AMR to comment in case the designer does not see the problem – etcetera –, and finally the slow and bureaucratic institutions – that are currently the norm – would be more likely to see the problem in those cases where the previous stages failed. The less this last stage is needed, the better for all of us.

## Reference List

A. Grunwald, A., & Achternbosch, M. (2013). Technology Assessment and Approaches to Early Engagement. In N. Doorn, D. Schuurbiers, I. van de Poel, & M. E. Gorman (Eds.), *Early engagement and new technologies: Opening up the laboratory* (pp. 15–34). Springer.

Admati, A., & Hellwig, M. (2014). *The Bankers' New Clothes: What's Wrong with Banking and What to Do about It*. UK: Princeton University Press.

Ajzen, I. (2002). Residual Effects of Past on Later Behavior: Habituation and Reasoned Action Perspectives. *Personality and Social Psychology Review: An Official Journal of the Society for Personality and Social Psychology, Inc*, 6(2), 107–122.

Alexander, F. M. (1990). *The Alexander Technique: The Essential Writings of F. Matthias Alexander*. New York: Carol Publishing Group.

Anderson, S., & Felici, M. (2012). *Emerging Technological Risk: Underpinning the Risk of Technology Innovation*. New York: Springer Science & Business Media.

Ariely, D. (2010). *Predictably Irrational, Revised: The Hidden Forces That Shape Our Decisions*. London: HarperCollins.

Aristotle. (2000). *Politics*. (B. Jowett & H. W. C. Davis, Eds.). North Chelmsford: Courier Corporation.

Aronowitz, S. (1988). *Discourse and Ideology in Modern Society*. Minneapolis: University of Minnesota Press.

Athanassoulis, N. (2005). *Morality, Moral Luck and Responsibility: Fortune's Web*. New York: Springer.

Athanassoulis, N., & Ross, A. (2010). A virtue ethical account of making decisions about risk. *Journal of Risk Research*, 13(2), 217–230.

Aven, T., & Renn, O. (2009). The role of quantitative risk assessments for characterizing risk and uncertainty and delineating appropriate risk management options, with special emphasis on terrorism risk. *Risk Analysis: An Official Publication of the Society for Risk Analysis*, 29(4), 587–600.

Bainbridge, S. M. (2010). Dodd-Frank: Quack federal corporate governance round II. *Minnesota Law Review*, 95, 1779.

Bartels, M., Rietveld, M. J. H., Van Baal, G. C. M., & Boomsma, D. I. (2002). Genetic and Environmental Influences on the Development of Intelligence. *Behavior Genetics*, 32(4), 237.

Beetham, D., Lord, C. (1999). *Legitimacy and the European Union*. London: Routledge.

- Beinart, P. (2017, August 6). The Rise of the Violent Left. *The Atlantic*. Retrieved from <https://www.theatlantic.com/magazine/archive/2017/09/the-rise-of-the-violent-left/534192/>
- Bernstein, P. L. (1996). *Against the Gods: The Remarkable Story of Risk*. Hoboken: John Wiley & Sons.
- Bingham, K. (2012). *Special Report: Contemporary Practices in Risk Management*. Altamonte Springs: The Institute of Internal Auditors.
- Blau, J. R., & Blau, P. M. (1982). The Cost of Inequality: Metropolitan Structure and Violent Crime. *American Sociological Review*, 47(1), 114–129.
- Blosh, M. (2012). *The History of Animal Welfare Law and the Future of Animal Rights* (LL. M.). (M. Martin, Ed.). University of Western Ontario. Retrieved from Electronic Thesis and Database Repository, 803.
- Brooks, N., & Adger, W. N. (2005). Assessing and Enhancing Adaptive Capacity. In B. Lim & E. Spanger-Siefried (Eds.), *Adaptation Policy Frameworks for Climate Change: Developing Strategies, Policies and Measures*, (pp. 165–181). Cambridge: Cambridge University Press.
- Brown, R. C. (2009). *Are Science and Mathematics Socially Constructed?: A Mathematician Encounters Postmodern Interpretations of Science*. Singapore: World Scientific.
- Browning, C. R. (2017). *Ordinary Men: Reserve Police Battalion 101 and the Final Solution in Poland*. London: HarperCollins.
- Burke, B. L., Martens, A., & Faucher, E. H. (2010). Two Decades of Terror Management Theory: A Meta-Analysis of Mortality Salience Research. *Personality and Social Psychology Review: An Official Journal of the Society for Personality and Social Psychology, Inc*, 14(2), 155–195.
- Bushey, B., Farady, M., & Perkins, D. N. (2012). Everyday Reasoning and the Roots of Intelligence. In *Informal Reasoning and Education* (pp. 101–124). London: Routledge.
- Butler, J. (1997). *Excitable Speech: A Politics of the Performative*. New York: Routledge Psychology Press.
- Carr, N. (2011). *The Shallows: What the Internet Is Doing to Our Brains*. New York: W. W. Norton.
- Chalk, F. R., Jonassohn, K., le génocide, I. M. D. É. S., & Montreal Institute for Genocide Studies. (1990). *The History and Sociology of Genocide: Analyses and Case Studies*. New Haven: Yale University Press.
- Chapman, R., & Ciment, J. (2015). *Culture Wars: An Encyclopedia of Issues, Viewpoints and Voices*. London: Routledge.
- Chari, R., Murphy, G., & Hogan, J. (2007). Regulating Lobbyists: A Comparative Analysis of the United States, Canada, Germany and the European Union. *The Political Quarterly*, 78(3), 422–438.

Chater, N., Felin, T., Funder, D. C., Gigerenzer, G., Koenderink, J. J., Krueger, J. I., ... Todd, P. M. (2017). Mind, rationality, and cognition: An interdisciplinary debate. *Psychonomic Bulletin & Review*, 25(2), 793-826.

Christensen-Szalanski, J. J. J., & Bushyhead, J. B. (1981). Physicians' use of probabilistic information in a real clinical setting. *Journal of Experimental Psychology. Human Perception and Performance*, 7(4), 928-935.

Coen, D. (1998). The European Business Interest and the Nation State: Large-firm Lobbying in the European Union and Member States. *Journal of Public Policy*, 18(1), 75-100.

Collins, R. (1992). On the Sociology of Intellectual Stagnation: The Late Twentieth Century in Perspective. *Theory, Culture & Society*, 9(1), 73-96.

Coutu, D. (2002, May) How Resilience Works. *Harvard Business Review*. 46-56. Retrieved from <https://hbr.org/2002/05/how-resilience-works>

Cohen, D., & Carter, P. (2010). WHO and the pandemic flu“ conspiracies.” *BMJ: British Medical Journal (Online)*, 340. Retrieved from <http://search.proquest.com/openview/4c74cd100409c6d45657fda95e7f5e6a/1?pq-origsite=gscholar&cbl=2040978>

Committee on Scientific Principles for Education Research. (2002). *Scientific Research in Education*. (R. J. Shavelson & L. Towne, Eds.). Washington D.C.: National Academies Press.

Craig, K. M. (2002). Examining hate-motivated aggression: a review of the social psychological literature on hate crimes as a distinct form of aggression. *Aggression and Violent Behavior*, 7(1), 85-101.

Craske, M. G., Antony, M. M., & Barlow, D. H. (2006). *Mastering Your Fears and Phobias*. Oxford: Oxford University Press.

Crisp, R. (2009). *Routledge Philosophy GuideBook to Mill on Utilitarianism*. London: Routledge.

'Decline of the working man.' (2011). *The Economist*. Retrieved April 26, 2018, from <https://www.economist.com/node/18618613>

Deeker, W. (2013). *Mythbusting the cult of Confucius: What the Chinese really are, how to understand them and why we need to*. Minneapolis, MN: Mill City Press.

Dewey, J. (1929). *The quest for certainty: A study of the relation of knowledge and action*. New York: Minton, Balch & Company.

Dewey, J. (2008). *The Later Works of John Dewey (Vol. 4)*. Carbondale: SIU Press.

Dewey, J. (2012). *Democracy and Education*. Hollywood: Simon & Brown.

Dewey, J. (2017). *Human Nature and Conduct: An Introduction to Social Psychology*. Seattle: CreateSpace Independent Publishing Platform.

Dijksterhuis, A., van Knippenberg, A., Kruglanski, A. W., & Schaper, C. (1996). Motivated Social Cognition: Need for Closure Effects on Memory and Judgment. *Journal of Experimental Social Psychology*, 32(3), 254–270.

Dolan, C. (2015, October 16). If you're not concerned about behind-the-scenes lobbying, you should be - it affects everything you do. *The Independent*. Retrieved from <http://www.independent.co.uk/voices/if-youre-not-concerned-about-behind-the-scenes-lobbying-you-should-be-it-affects-everything-from-the-a6697056.html>

Dorussen, H., & Ward, H. (2010). Trade networks and the Kantian peace. *Journal of Peace Research*, 47(1), 29–42.

Editor. (2016, June 9). USDA publishes 2015 Animal Research Statistics. Retrieved May 28, 2018, from <https://speakingofresearch.com/2016/06/09/usda-publishes-2015-animal-research-statistics/>

Editors. (2016). Special Report: Automation and anxiety. *The Economist*. Retrieved June 1, 2018, from <https://www.economist.com/special-report/2016/06/25/automation-and-anxiety>

Ehrenfeld, J. R. (1996). Risk Assessment and Management: A Critique of Current Practices and Policy Implications. *Industrial & Environmental Crisis Quarterly*, 9(3), 376–404.

Elias, N. (2000). *The civilising process: sociogenetic and psychogenetic investigations*. London: WileyBlackwell.

Elias, N., & Dunning, E. (2008). *Quest for Excitement: Sport and Leisure in the Civilising Process*. Dublin: University College Dublin Press.

Elias, N., & Jephcott, E. (1978). *The civilizing process* (Vol. 1). Oxford: Blackwell Publishing.

Elkington, S., & Stebbins, R. A. (2014). *The Serious Leisure Perspective: An Introduction*. London: Routledge.

Enriques, Luca and Zetsche, Dirk A. (October 1, 2014). *Quack Corporate Governance, Round III? Bank Board Regulation Under the New European Capital Requirement Directive*. Brussels: European Corporate Governance Institute.

Evans, D. (2012). Into the Twilight Zone. In *Risk Intelligence: How to Live with Uncertainty*. New York: Simon and Schuster.

Evans, D. (2013). Projection Point: Risk Intelligence Solutions. Retrieved March 8, 2018, from <http://www.projectionpoint.com/index.php/frontpage>

Flach, J. M., Feufel, M. A., Reynolds, P. L., Parker, S. H., & Kellogg, K. M. (2017). Decisionmaking in practice: The dynamics of muddling through. *Applied Ergonomics*, 63, 133–141.

Fleischhut, N., Meder, B., & Gigerenzer, G. (2017). Moral Hindsight. *Experimental Psychology*, 64(2), 110–123.

Forrest, A. (2017, April 13). The death of diesel: has the one-time wonder fuel become the new asbestos? *The Guardian*. Retrieved from <http://www.theguardian.com/cities/2017/apr/13/death-of-diesel-wonder-fuel-new-asbestos>

Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation? *Technological Forecasting and Social Change*, 114, 254–280.

Fromm, E. (1990). *Man for Himself: An Inquiry Into the Psychology of Ethics*. New York: Holt and Company.

Fromm, E. (1992). *The Anatomy of Human Destructiveness*. New York: Henry Holt and Company.

Galesic, M., Barkoczi, D., & Katsikopoulos, K. (2018). Smaller crowds outperform larger crowds and individuals in realistic task conditions. *Decisions*, 5(1), 1.

Galesic, M., Kause, A., & Gaissmaier, W. (2016). A Sampling Framework for Uncertainty in Individual Environmental Decisions. *Topics in Cognitive Science*, 8(1), 242–258.

Gavrilova, M., Gervasi, O., Kumar, V., Tan, C. J. K., Taniar, D., Laganá, A., ... Choo, H. (Eds.). (2006). Computational Science and Its Applications ICCSA . In *Lecture Notes in Computer Science* (Vol. 4) . Berlin: Springer.

Gideon, L. (2012). *Handbook of Survey Methodology for the Social Sciences*. New York: Springer Science & Business Media.

Gigerenzer, G. (1996). On narrow norms and vague heuristics: a reply to Kahneman and Tversky. *Psychological Review*, 103(3), 592-596.

Gigerenzer, G. (2002). *Calculated Risks: How to Know When Numbers Deceive You*. New York: Simon and Schuster.

Gigerenzer, G. (2004). Dread risk, September 11, and fatal traffic accidents. *Psychological Science*, 15(4), 286–287.

Gigerenzer, G. (2008). Moral Intuition = Fast and Frugal Heuristics?. The cognitive science of morality: *Intuition and diversity*, 1-26 (2008).

Gigerenzer, G. (2014). *Risk Savvy: How To Make Good Decisions*. London: Penguin.

Gigerenzer, G., & Garcia-Retamero, R. (2017). Cassandra's regret: The psychology of not wanting to know. *Psychological Review*, 124(2), 179–196.

Gigerenzer, G., & Gray, J. A. M. (2011). *Better Doctors, Better Patients, Better Decisions: Envisioning Health Care 2020*. Cambridge: MIT Press.

Gigerenzer, G., Wegwarth, O., & Feufel, M. (2010). Misleading communication of risk. *BMJ*, 341,

c4830 (Online). <https://doi.org/10.1136/bmj.c4830>

Gilovich, T., Griffin, D., & Kahneman, D. (2002). *Heuristics and Biases: The Psychology of Intuitive Judgment*. Cambridge: Cambridge University Press.

Giulianotti, R., & Bonney, N. (1994). *Football, Violence, and Social Identity*. London: Routledge.

Gould, S. J. (1992). *Bully for Brontosaurus: Reflections in Natural History*. New York: Norton.

Graeber, D. (2018). *Bullshit Jobs: A Theory*. London: Penguin Books, Limited.

Gray, P. (2016, April 30). Inverse Relationship Between GPA and Innovative Orientation. Retrieved April 13, 2018, from <https://www.psychologytoday.com/blog/freedom-learn/201604/inverse-relationship-between-gpa-and-innovative-orientation>

Gross, P. R., & Levitt, N. (1997). *Higher Superstition: The Academic Left and Its Quarrels with Science*. Baltimore: Johns Hopkins University Press.

Hacker, D. J., Dunlosky, J., & Graesser, A. C. (2009). *Handbook of Metacognition in Education*. Abingdon: Taylor & Francis.

Hall, K. S., Dalton, V. K., Zochowski, M., Johnson, T. R. B., & Harris, L. H. (2017). Stressful Life Events Around the Time of Unplanned Pregnancy and Women's Health: Exploratory Findings from a National Sample. *Maternal and Child Health Journal*, 21(6), 1336–1348.

Han, S. (Ed.). (2013) [Special issue] *Culture and Brain*, 1(1), 1-75.

Harris, S. (2011). *The Moral Landscape: How Science Can Determine Human Values*. New York: Simon and Schuster.

Hayes, J. (2011). The democratic peace and the new evolution of an old idea. *European Journal of International Relations*, 18(4), 767–791.

Hayes, J., Maslen, S., Scott-Young, C., & Wong, J. (2017). The rise of defensive engineering: how personal liability considerations impact decision-making. *Journal of Risk Research*, 1–15.

Heard, G. (1929). *The Ascent of Humanity: an essay on the evolution of civilization*. New York: Harcourt, Brace and Company.

Heath, S. W. (1998). *Risk Management and Medical Liability: A Manual for Indian Health Service and Tribal Health Care Professionals*. Collingdale: DIANE Publishing.

Heb ik hiv? Doe een hiv-test. (n.d.). Retrieved March 27, 2018, from <https://www.soaaid.nl/nl/soas/meest-voorkomende-soas/hiv/hiv-test>

Hedgecoe, A. (2016). Reputational Risk, Academic Freedom and Research Ethics Review. *Sociology*, 50(3), 486–501.

- Helbing, D., Frey, B. S., Gigerenzer, G., Hafen, E., Hagner, M., Hofstetter, Y., ... Zwitter, A. (2017). Will democracy survive big data and artificial intelligence. *Scientific American*, 25. Retrieved from [https://www.bsfrey.ch/articles/D\\_283\\_2017.pdf](https://www.bsfrey.ch/articles/D_283_2017.pdf)
- Hewlett, J., & Waisbren, S. E. (2006). A review of the psychosocial effects of false-positive results on parents and current communication practices in newborn screening. *Journal of Inherited Metabolic Disease*, 29(5), 677–682.
- Hinz, M. (2013). *Der Zivilisationsprozess: Mythos oder Realität?: Wissenschaftssoziologische Untersuchungen zur Elias-Duerr-Kontroverse*. Berlin: Springer-Verlag.
- Hirsh, J. B., Mar, R. A., & Peterson, J. B. (2012). Psychological entropy: a framework for understanding uncertainty-related anxiety. *Psychological Review*, 119(2), 304–320.
- Hood, C., & Rothstein, H. (2001). Risk Regulation Under Pressure: Problem Solving or Blame Shifting? *Administration & Society*, 33(1), 21–53.
- Horkheimer, M. (1972) The Social Function of Philosophy. In *Critical Theory: Selected Essays* (pp. 253-272). New York: Continuum.
- Hoy, W. K., & Miskel, C. G. (Eds.). (2012). Chapter 9: decision making in schools. In *Educational Administration Theory, Research, and Practice* (pp. 316–355). New York: McGraw-Hill Higher Education.
- Hursthouse, R. (2001). *On virtue ethics*. Oxford: Oxford University Press.
- Huxley, A. (1931). To the puritans all things are impure. In *Music at Night and Other Essays* (pp. 155–163). New York: Doubleday Douran & Company.
- Huxley, A. (1941). *Grey Eminence: A Study in Religion and Politics*. London: Chatto & Windus.
- Huxley, A. (1952). *The Devils of Loudun*. London: Chatto And Windus.
- Huxley, A. (1962). *Island: A Novel*. London: Chatto & Windus.
- INESEM (2018). Máster en Neuromarketing, Spain Online, España 2018. Retrieved July 02, 2018, from <https://www.estudios-enlinea.com/Máster-en-Neuromarketing/Espana/INESEM-Business-School/>
- Jaccard, J., Dodge, T., & Guilamo-Ramos, V. (2005). Metacognition, risk behavior, and risk outcomes: the role of perceived intelligence and perceived knowledge. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association*, 24(2), 161–170.
- Jekel, M., Glockner, A., Fiedler, S., Broder, A. (2012) The rationality of different kinds of intuitive decision processes. *Synthese*, 189(1), 147-160.
- Johnson, V. R. (2006). Regulating Lobbyists: Law, Ethics, and Public Policy. *Cornell Journal of Law and Public Policy*, 16(1), 1–56.



Just Culture. (n.d.). Retrieved April 2, 2018, from [https://www.skybrary.aero/index.php/Just\\_Culture](https://www.skybrary.aero/index.php/Just_Culture)

Kahneman, D. (2011). *Thinking, fast and slow*. London: Macmillan.

Kahneman, D., Slovic, P., Tversky, A., & Others. (1982). *Judgment under uncertainty* (Vol. 24). Cambridge: Cambridge University Press.

Kahneman, D., & Tversky, A. (1972). Subjective probability: A judgment of representativeness. *Cognitive Psychology*, 3(3), 430–454.

Kaldis, B. (Ed.). (2013). Philosophy of Expertise. In *Encyclopedia of Philosophy and the Social Sciences*. Thousand Oaks: SAGE Publications, Inc.

Kant, I. (1999). *Raising the Tone of Philosophy: Late Essays by Immanuel Kant, Transformative Critique by Jacques Derrida*. (P. Fenves, Ed.). Baltimore: Johns Hopkins University Press.

Kant, I., Allison, H., Heath, P., Hatfield, G., & Friedman, M. (2002). On a recently prominent tone of superiority in philosophy (1796). In I. Kant, H. Allison, P. Heath, G. Hatfield, & M. Friedman (Eds.), *Theoretical Philosophy after 1781* (pp. 425–446). Cambridge: Cambridge University Press.

Kant, I., & Humphrey, T. (2003). *To Perpetual Peace: A Philosophical Sketch*. Indianapolis: Hackett Publishing.

Kaplan, F. (1991). *The Wizards of Armageddon*. Redwood: Stanford University Press.

Kawachi, I., Kennedy, B. P., & Wilkinson, R. G. (1999). Crime: social disorganization and relative deprivation. *Social Science & Medicine*, 48(6), 719–731.

Kern, K., & Bulkeley, H. (2009). Cities, Europeanization and multi-level governance: governing climate change through transnational municipal networks. *JCMS: Journal of Common Market Studies*, 47(2), 309–332.

Knapton, S. (2015, May 26). Newer contraceptive pills raise risk of blood clot four fold. *The Daily Telegraph*. Retrieved June 2, 2018 from <https://www.telegraph.co.uk/news/science/science-news/11630581/Newer-contraceptive-pills-raise-risk-of-blood-clot-four-fold.html>

Knight, F. H. (2014). *Risk Uncertainty and Profit*. Eastford: Martino Fine Books.

Kook, A. (2018, April 12). Half of all jobs can today be automated — and within 50 years, all of them can be. Retrieved June 1, 2018, from <https://www.marketwatch.com/story/half-of-all-jobs-can-today-be-automated-and-within-50-years-all-of-them-can-be-2018-04-11>

Kuntz, M. (2012). The postmodern assault on science. If all truths are equal, who cares what science has to say? *EMBO Reports*, 13(10), 885–889.

- Kuntz, M. (2016). Scientists Should Oppose the Drive of Postmodern Ideology. *Trends in Biotechnology*, 34(12), 943–945.
- Leiss, W. (2001). *In the Chamber of Risks: Understanding Risk Controversies*. Kingston: McGill-Queen's Press.
- Leiss, W., & Powell, D. A. (2004). *Mad Cows and Mother's Milk, Second Edition: The Perils of Poor Risk Communication*. Kingston: McGill-Queen's Press.
- Lemann, N. (2000). *The Big Test: The Secret History of the American Meritocracy*. New York: Farrar, Straus and Giroux.
- Lichtenstein, S., Fischhoff, B., & Phillips, L. (1982). Calibration of probabilities: The state of the art to 1980. D. Kahneman, P. Slovic, and A. Tverski (Eds.) *Judgement under uncertainty: Heuristics and biases* (pp. 306-334). New York: Cambridge University Press.
- Lindqvist, P., Dahlbäck, B., & Maršál, K. (1999). Thrombotic risk during pregnancy: a population study. *Obstetrics and Gynecology*, 94(4), 595–599.
- Link, B. G., & Stueve, A. (1996). Psychotic Symptoms and the Violent/Illegal Behavior of Mental Patients Compared to Community Controls. In J. Monahan & H. J. Steadman (Eds.), *Violence and Mental Disorder: Developments in Risk Assessment* (pp. 137–160). Chicago: University of Chicago Press.
- Linkov, I., Anklam, E., Collier, Z. A., DiMase, D., & Renn, O. (2014). Risk-based standards: integrating top-down and bottom-up approaches. *Environment Systems and Decisions*, 34(1), 134–137.
- Lloyd-Bostock, S. M., & Hutter, B. M. (2008). Reforming regulation of the medical profession: The risks of risk-based approaches. *Health, Risk & Society*, 10(1), 69–83.
- Local, T. (2018, January 2). What's behind the famous French tradition of torching cars? Retrieved May 6, 2018, from <https://www.thelocal.fr/20180102/is-the-famous-french-tradition-of-torching-cars-dying-out>
- Lodge, J. M., O'Connor, E., Shaw, R., & Burton, L. (2015). Applying Cognitive Science to Critical Thinking among Higher Education Students. In M. Davies & R. Barnett (Eds.), *The Palgrave Handbook of Critical Thinking in Higher Education* (pp. 391–407). New York: Palgrave Macmillan US.
- Luhmann, N. (2017). Chapter 5: The Special Case of High Technology. In *Risk: A Sociological Theory*. New York: Routledge.
- Lyall, C., & Tait, J. (2005). Shifting policy debates and the implications for governance. In C. Lyall & J. Tait (Eds.), *New Modes of Governance* (pp. 1–17). Farnham: Ashgate.
- Lynch, R. (2012). Florida lifeguard is fired for saving a life; uproar ensues. Retrieved May 21,

2018, from <http://articles.latimes.com/2012/jul/05/nation/la-na-nn-florida-lifeguards-fired-20120705>

Marx, K., & Engels, F. (1976). *Collected Works of Karl Marx and Friedrich Engels, 1845-47: Vol. 5: Theses on Feuerbach, The German Ideology and Related Manuscripts*. New York: International Publishers Co.

Mattick, R. P., & Peters, L. (1988). Treatment of severe social phobia: Effects of guided exposure with and without cognitive restructuring. *Journal of Consulting and Clinical Psychology*, 56(2), 251-260.

Meléndez, M., Stoppino, E., Sears, D. J., & Garcia, J. I. (2010). *Geographies of risk : an exhibition of early modern conceptions and representations of risk*. Urbana, Ill: The Rare Book & Manuscript Library and the Board of Trustees of the University of Illinois.

Mennell, S. (1990). Decivilising processes: Theoretical significance and some lines of research. *International Sociology: Journal of the International Sociological Association*, 5(2), 205–223.

Michelfelder, D. P. (2018). Critical Thinking and Heuristics: What Philosophy Can Learn from Engineering about the Back of the Envelope. In C. Mitcham, B. Li, B. Newberry, & B. Zhang (Eds.), *Philosophy of Engineering, East and West* (pp. 13–21). Cham: Springer International Publishing.

Millstone, E. (2010). The evolution of risk assessment paradigms: in theory and in practice. *SPRU - Science and Technology Policy Research*, 1–19.

Mitchell, S. (2017). *GRC Capability Model (Red Book) in Paperback*. Morrisville: Lulu self-publishing.

Morrison, G. (2012). *Supergods: Our world in the age of the superhero*. London: Jonathan Cape.

Mossman, D. (2006). Critique of pure risk assessment or, Kant meets Tarasoff. *University of Cincinnati Law Review*. *University of Cincinnati. College of Law*. Retrieved from [http://heinonline.org/hol/cgi-bin/get\\_pdf.cgi?handle=hein.journals/ucinlr75&section=22](http://heinonline.org/hol/cgi-bin/get_pdf.cgi?handle=hein.journals/ucinlr75&section=22)

Mumford, L. (1971). *The Myth of the Machine* (Vol. 1). Boston: Mariner Books.

Murray, J. (2012). *Exposure therapy: New developments*. New York: Nova Science Publishers.

Neille, D., Van Der Merwe, M., & Dougan, L. (2018). Welcome to Cape Town: welcome to the “new normal.” Retrieved March 1, 2018, from <http://features.dailymaverick.co.za/cape-of-storms-to-come/cape-of-storms-to-come-part-1.html>

Neth, H., Meder, B., Kothiyal, A., & Gigerenzer, G. (2014). Homo heuristicus in the financial world: From risk management to managing uncertainty. *Journal of Risk Management in Financial Institutions*, 7(2), 134–144.

Newberg, A., & Waldman, M. R. (2010). *How God changes your brain: Breakthrough findings from a leading neuroscientist*. New York: Ballantine Books.

NRC. (1983). *Risk Assessment in the Federal Government: Managing the Process*. Washington, DC: National Academy Press.

NRC. (2009). *Science and Decisions: Advancing Risk Assessment*. Washington, DC: The National Academies Press.

NRC. (2011). Chapter: 5 How Risk Assessment and Risk Management Relate to the Sustainability Framework. In *Sustainability and the U.S. EPA*. Washington, D.C.: The National Academies Press

O'Connor, M. C., & Paunonen, S. V. (2007). Big Five personality predictors of post-secondary academic performance. *Personality and Individual Differences*. Retrieved from <https://www.sciencedirect.com/science/article/pii/S0191886907001249>

O'Donovan, M. (1997). Risk management and the medical profession. *International Journal of Management & Enterprise Development*, 16(2), 125–133.

O'Reilly, M., Dixon-Woods, M., Angell, E., Ashcroft, R., & Bryman, A. (2009). Doing accountability: a discourse analysis of research ethics committee letters. *Sociology of Health & Illness*, 31(2), 246–261.

OECD. (2003). Emerging Systemic Risks. In *Emerging Risks in the 21st Century* (pp. 29–62). Paris: OECD Publishing.

Oneal, J. R., & Russett, B. (2001). *Triangulating Peace Democracy, Interdependence, and International Organizations*. New York: W. W. Norton.

Paglia, C. (2014, September 29). Camille Paglia: The Modern Campus Cannot Comprehend Evil. *Time*. Retrieved May 5, 2018, from <http://time.com/3444749/camille-paglia-the-modern-campus-cannot-comprehend-evil/>

Parker, T. (1879). III. Of Justice and the Conscience. In F. P. Cobbe (Ed.), *The Collected Works: Ten Sermons of Religion* (pp. 37–57). Ludgate Hill: Trübner & Co.

Peter, L. (2011, March 28). Fourth Euro MP in lobbying probe. *BBC*. Retrieved April 10, 2018, from <http://www.bbc.com/news/world-europe-12880701>

Petersen, A. (2011). *The Politics of Bioethics*. London: Routledge.

Peterson, J. B. (2002). *Maps of meaning: The architecture of belief*. London: Routledge.

Peterson, J. B. (2017). *Modern Times: Camille Paglia & Jordan B Peterson*. Youtube. Retrieved May 1, 2018, from <https://www.youtube.com/watch?v=v-hIVnmUdXM>

Piattelli-Palmarini, M. (1991). Probability blindness: Neither rational nor capricious. *Bostonia*, 28–35.

- Pieper, J. (2009). *Leisure: The Basis of Culture*. San Francisco: Ignatius Press.
- Pinker, S. (2012). *The Better Angels of Our Nature: A History of Violence and Humanity*. London: Penguin Books.
- Pinker, S. (2015). Response to the Book Review Symposium: Steven Pinker, The Better Angels of Our Nature. *Sociology*, 49(4), NP3–NP8.
- Pinker, S. (2018). *Enlightenment now: the case for reason, science, humanism, and progress*. London: Penguin.
- Postman, N. (1993). *Technopoly: The Surrender of Culture to Technology*. New York: Vintage Books.
- Postman, N. (2006). *Amusing Ourselves to Death: Public Discourse in the Age of Show Business*. London: Penguin Books.
- Priest, S. H. (2010). Trust and Attitudes. In M. Siegrist (Ed.), *Encyclopedia of Science and Technology Communication* (Vol. 2, pp. 909–912). Thousand Oaks: SAGE Publications.
- Pyöriä, P. (2005). The concept of knowledge work revisited. *Journal of Knowledge Management*, 9(3), 116–127.
- Ragoonaden, K. (2015). *Contested Sites in Education*. New York: Peter Lang Publishing.
- Rajan, R., Servaes, H., & Zingales, L. (2000). The cost of diversity: The diversification discount and inefficient investment. *The Journal of Finance*. Retrieved February 6, 2018, from <http://onlinelibrary.wiley.com/doi/10.1111/0022-1082.00200/full>
- Rebs, P., & Senzaki, N. (Eds.). (1998). *Zen Flesh, Zen Bones: A Collection of Zen and Pre-Zen Writings*. Singapore: Tuttle Publishing.
- Renn, O., Klinke, A., & van Asselt, M. (2011). Coping with complexity, uncertainty and ambiguity in risk governance: a synthesis. *Ambio*, 40(2), 231–246.
- Renn, O., & Walker, K. (2008). Lessons Learned: A Re-Assessment of the IRGC Framework on Risk Governance. In O. Renn & K. D. Walker (Eds.), *Global Risk Governance: Concept and Practice Using the IRGC Framework* (pp. 331–367). Dordrecht: Springer Netherlands.
- Restrepo-Cadavid, P. (2013, September 28). Urban Nudges: bringing behavioral economics into urban planning. Retrieved March 2, 2018, from <https://favelissues.com/2013/09/28/urban-nudges-bringing-behavioral-economics-into-urban-planning/>
- Roberts, D. D. (2017). Postmodernism, Social Science, and History: Returning to an unfinished agenda. *History and Theory*, 56(1), 114–126.
- Roeser, S., Hillerbrand, R., Sandin, P., & Peterson, M. (2012). *Handbook of Risk Theory*:

*Epistemology, Decision Theory, Ethics, and Social Implications of Risk*. Berlin: Springer Science & Business Media.

Rojek, C. (1986). Problems of Involvement and Detachment in the Writings of Norbert Elias. *The British Journal of Sociology*, 37(4), 584–596.

Rorty, R. (2007) Dewey and Posner on Pragmatism and Moral Progress. *The University of Chicago Law Review*, 74(3), 915-927.

Rosenau, J. N. (1998). Governance and democracy in a globalizing world. In D. Archibugi, D. Held, & M. Köhler (Eds.), *Re-imagining Political Community: Studies in Cosmopolitan Democracy* (pp. 28–57). Redwood: Stanford University Press.

Ross, A., & Athanassoulis, N. (2014). The role of research ethics committees in making decisions about risk. *HEC Forum: An Interdisciplinary Journal on Hospitals' Ethical and Legal Issues*, 26(3), 203–224.

Russell, B. (1932). In Praise of Idleness. Retrieved April 29, 2018, from <http://www.zpub.com/notes/idle.html>

Saunders, John. (2003). A Dynamic Risk Model for Information Technology Security in a Critical Infrastructure Environment. In *10th United Engineering Foundation Conference*, pp.23-39.

Secretariat, U. (2017, March). *Compendium on Comprehensive Risk Management Approaches*. Executive Committee of Warsaw International Mechanism for Loss and Damage. United Nations Climate Change Adaptation Panel. Retrieved January 8, 2018, from [http://unfccc.int/files/adaptation/workstreams/loss\\_and\\_damage/application/pdf/compendium\\_march\\_2017.pdf](http://unfccc.int/files/adaptation/workstreams/loss_and_damage/application/pdf/compendium_march_2017.pdf)

Sedrakyan, A., & Shih, C. (2007). Improving depiction of benefits and harms: analyses of studies of well-known therapeutics and review of high-impact medical journals. *Medical Care*, 45(10 Supl 2), S23–S28.

Selinger, E., & Crease, R. P. (2006). *The Philosophy of Expertise*. New York: Columbia University Press.

Selznick, B. S., & Mayhew, M. J. (2016, February 19). Straight A students may not be the best innovators. *The Conversation*. Retrieved February 20, 2018, from <http://theconversation.com/straight-a-students-may-not-be-the-best-innovators-54440>

Shakespeare, W. (1998). *Measure for Measure: With New and Updated Critical Essays and a Revised Bibliography*. New York: Signet Classics.

Shermer, M. (2013). The Is-Ought Fallacy Of Science And Morality. Retrieved May 30, 2018, from <https://www.edge.org/response-detail/23683>

Shermer, M. (2015, February). How Science Can Inform Ethics and Champion Sentient Beings. *Scientific American*. Retrieved April 17, 2018, from

<https://www.scientificamerican.com/article/how-science-can-inform-ethics-and-champion-sentient-beings/>

Shermer, M. (2016). *The Moral Arc: How Science Makes Us Better People*. New York: St. Martin's Press.

Shewan, D. (2017, January 11). Robots will destroy our jobs – and we're not ready for it. *The Guardian*. Retrieved April 2, 2018, from <http://www.theguardian.com/technology/2017/jan/11/robots-jobs-employees-artificial-intelligence>

Shojania, K. G., & Dixon-Woods, M. (2017). Estimating deaths due to medical error: the ongoing controversy and why it matters. *BMJ Quality & Safety*, 26(5), 423–428.

Sikich, G. (2016, September 01) Can you really calculate the probability of uncertainty? *Continuity Central*. Retrieved July 20, 2018, from <https://www.continuitycentral.com/index.php/news/erm-news/1374-can-you-really-calculate-the-probability-of-uncertainty>

Smith, R. B. (1985). *Handbook of Social Science Methods (vol. 3)*. Santa Barbara: Praeger Publishers Inc.

Spracklen, K., Lashua, B., Sharpe, E., & Swain, S. (2017). *The Palgrave Handbook of Leisure Theory*. Berlin: Springer.

Stebbins, R. A. (2013, March) Homo Otiosus: Who is this creature, does it exist, should it matter? *LSA Newsletter*, 94.

Stewart Collins (2007) Social workers, resilience, positive emotions and optimism, *Practice*, 19(4), 255-269

St. Pierre, E. A. (2002). Comment: "Science" Rejects Postmodernism. *Educational Researcher*, 31(8), 25–27.

Susen, S. (2015). *The "Postmodern Turn" in the Social Sciences*. Berlin: Springer.

Swierstra, T. (2017). Introduction to the Ethics of New and Emerging Science and Technology. In R. Nakatsu, M. Rauterberg, & P. Ciancarini (Eds.), *Handbook of Digital Games and Entertainment Technologies* (pp. 1271–1295). Singapore: Springer Singapore.

Taleb, N. N. (2010). *The Black Swan: The Impact of the Highly Improbable*. Random House Trade Paperbacks.

Tetlock, P. E. (2006). *Expert Political Judgment: How Good Is It? How Can We Know?* Princeton: Princeton University Press.

Thaler, R. H. (2015). *Misbehaving: The Making of Behavioral Economics*. New York: W. W. Norton & Company.

Thaler, R. H., & Sunstein, C. R. (2009). *Nudge: Improving Decisions About Health, Wealth, and*

*Happiness*. London: Penguin.

Thompson, D. (2015, June 22). A World Without Work. *The Atlantic*. Retrieved February 9, 2018, from <http://www.theatlantic.com/magazine/archive/2015/07/world-without-work/395294/>

Thoughty2. (2017, August 5). The TRUTH Why Modern Music Is Awful. *Youtube*. Retrieved April 11, 2018, from [https://youtu.be/oVME\\_14IwII](https://youtu.be/oVME_14IwII)

Tornngren, G., & Montgomery, H. (2004). Worse Than Chance? Performance and Confidence Among Professionals and Laypeople in the Stock Market. *Journal of Behavioral Finance*, 5(3), 148–153.

Vallor, S. (2015). Moral Deskillling and Upskilling in a New Machine Age: Reflections on the Ambiguous Future of Character. *Philosophy & Technology*, 28(1), 107–124.

van Dyck, C. (2009). The tragic 1996 Everest expedition: a tale of error culture. *Netherlands Journal of Psychology*, 65(1), 22–34.

Vasvári, T. (2015). Risk, risk perception, risk management--a review of the literature. *Public Finance Quarterly*, 1, 29–48.

VulgarTrader. (2017). Paglia and Peterson: Civilization Could Collapse in a Weekend. *Youtube*. Retrieved May 17, 2018, from <https://www.youtube.com/watch?v=41KjJ9UZWBU>

Wallace, W. and Smith, J. (1995). Democracy or technocracy? European integration and the problem of popular consent, *West European Politics*, 18, 3, 137-57.

Weber, M. (2017). *The Protestant Work Ethic and the Spirit of Capitalism*. Louisville: GLH Publishing.

Weingart, P. (1999). Scientific expertise and political accountability: paradoxes of science in politics. *Science & Public Policy*, 26(3), 151–161.

Whittaker, A., & Havard, T. (2016). Defensive Practice as “Fear-Based” Practice: Social Work’s Open Secret? *British Journal of Social Work*, 46(5), 1158–1174.

World Health Organization. (2018, March 19). 10 facts on patient safety. Retrieved April 2, 2018, from [http://www.who.int/features/factfiles/patient\\_safety/en/](http://www.who.int/features/factfiles/patient_safety/en/)

You, H. Y. (2017). Ex Post Lobbying. *The Journal of Politics*, 79(4), 1162–1176.

Yu, L., Lai, K. K., Wang, S., & Huang, W. (2006). A Bias-Variance-Complexity Trade-Off Framework for Complex System Modeling. In *Computational Science and Its Applications - ICCSA 2006* (pp. 518–527). Berlin: Springer.

Zizek, S. (2012, August 22). *Don't Act. Just Think*. Retrieved July 13, from <https://curiosity.com/videos/slavoj-zizek-dont-act-just-think-big-think/>



Zigler, R. L. (2015). *The Educational Prophecies of Aldous Huxley: The Visionary Legacy of Brave New World, Ape and Essence, and Island*. London: Routledge, Taylor & Francis Group.