

# Behavioural Accident Law and Economics

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## Contents

1	Introduction .....	1
1.1	Example 1: the cyclist.....	1
1.2	Example 2: the house owner .....	1
1.3	Example 3: the judge .....	1
1.4	Reality? .....	2
1.5	Basic assumptions .....	2
1.6	Lessons from cognitive psychology.....	3
1.7	Importance of behavioural accident law and economics .....	3
1.8	Structure.....	5
2	Assumptions of the traditional economic models of tort and insurance.....	5
2.1	Tort law: starting points .....	5
2.2	Nuances in law and economics .....	6
2.3	Critics.....	7
2.4	Strict liability versus negligence.....	8
2.5	Liability versus regulation .....	10
2.6	Insurance.....	11
3	Behavioural law and economics: main findings.....	12
3.1	General.....	12
3.2	Bounds to human behaviour .....	13
3.3	Probability neglect .....	14
3.4	Availability heuristic.....	15
3.5	Status quo bias .....	16
3.6	Selective optimism and overconfidence .....	17
3.7	Criticisms .....	18
4	Implications for liability law .....	21
4.1	Relevance of the behavioural literature.....	21
4.1.1	Increased integration of behavioural into traditional law and economics .....	21
4.1.2	Prescriptive and predictive analysis.....	22
4.1.3	Normative implications?.....	23
4.1.4	Various consequences.....	23
4.2	Efficient care by injurers.....	24
4.2.1	Underdeterrence.....	24
4.2.2	Overprecaution .....	25
4.2.3	Various directions.....	26
4.3	Errors with the judiciary?.....	26

4.4	Strict liability versus negligence .....	29
4.5	A case for regulation? .....	32
5	Implications for insurance .....	34
5.1	Criticism of ‘expected utility’ theory .....	34
5.2	Result 1: underinsurance .....	36
5.3	Result 2: mixed evidence of moral hazard and adverse selection.....	37
5.4	Towards mandatory (disaster) coverage?.....	38
5.4.1	Mandatory liability insurance? .....	38
5.4.2	Mandatory disaster insurance? .....	38
5.4.3	Information remedies? .....	39
5.4.4	Potential dangers.....	40
5.4.5	Advantage: risk differentiation and avoidance of ex post government relief .....	41
6	Concluding remarks.....	41
6.1	Increasing evidence of heuristics and biases.....	41
6.2	Implications for accident law .....	42
6.3	Behavioural literature multi-directional.....	43
6.4	Regulation? .....	44
6.5	Mandatory insurance? .....	45
6.6	Modest, but important.....	45

# 1 INTRODUCTION<sup>1</sup>

## 1.1 Example 1: the cyclist

Assume a fanatic cyclist rides his race machine through a populated neighbourhood, thereby creating the risk of hitting and hence causing damage to a pedestrian. Traditional economic analysis of tort law assumes that the cyclist will know what the probability is that by adapting his speed and taking other care measures he may hit the pedestrian. The basic idea behind the economic thinking as it has been developed since the early 1970's is that on the basis of his potential exposure to liability our cyclist will be given incentives to reduce his speed in an efficient manner, more particularly to the level where the marginal costs of prevention (reducing his speed) equal the marginal benefits (in reducing the probability that he will hit the pedestrian). Assuming away for a moment some technical differences between various liability rules the bottom line is that the cyclist will, on the basis of the available information, take a rational and moreover efficient decision to take preventive measures.

## 1.2 Example 2: the house owner

Assume someone owns a nice house, situated close to a river. The rational house owner knows that these usually so nice and romantically looking rivers can, after heavy rains or unexpectedly quick melting of snow and ice in the higher mountains, quickly change into devastating streams which could cause substantial losses to the house owner and his family. Traditional economic theory of insurance assumes that the house owner is willing to maximize his expected utility and will hence, at least in countries where this is available, seek insurance coverage against flooding on a competitive insurance market.

## 1.3 Example 3: the judge

Assume a judge who has to decide on an accident caused by the racing cyclist, who drove at reasonable speed but who, after turning a curve, was confronted with an old lady walking on the bicycle path. The lady not being visible from before the curve could hence unfortunately not be avoided by our cyclist as a result of which an accident is caused which leads to substantial damage to the expensive bicycle and to the lady of course. The judge is confronted with a liability suit brought by the old lady who claims compensation for her losses. Economic analysis of tort law assumes that the

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1. I am grateful to Ton Hartlief (Maastricht University), Roger Van den Bergh and Willem van Boom (both Erasmus School of Law, Rotterdam) for helpful comments on an earlier version of this text and to Marina Jodogne (Maastricht University) for editorial assistance.

judge will put himself in the *ex ante* position and hence ask whether the costs of additional care by our cyclists could have led to a favourable reduction of the accident risk. Given that the cyclist drove at a reasonable speed and that the lady was an unobservable object who (to complicate things a little) moreover walked on the bicycle path, we may assume that the judge will not find the cyclist liable.

#### **1.4 Reality?**

Since the examples are hypothetical, one can of course never be sure, but there is a great likelihood that in reality the results may be different than those just presented, based on the predictions of classic economic analysis of accident law. The cyclist from the first example may or may not take efficient preventive measures, but if he does so it is unlikely that he will only do so on the basis of a rational cost-benefit calculus and out of fear for an expected liability. As to the second example, that of the home owner, there is ample evidence that in fact even in countries where flooding insurance is available home owners often fail to take insurance coverage, even though this would have increased their expected utility *ex ante*.<sup>2</sup> The so called flood of the century of the Elbe in 2002 and a few years later Katrina provided dramatic evidence of this. Also the judge of example 3 may not come to the optimal determination of efficient care by the cyclist, as one had hoped on the basis of the economic model. The mere fact that the accident happened and that the old lady suffered personal injury damage may create a bias against the cyclist as a result of which judges will often hold that the mere fact that the accident occurred, sufficiently proves that the cyclist apparently did not take efficient care.

These examples, which could easily be enlarged with many others, show that in reality the parties involved in the accident setting, injurers, victims, potential insurance takers and judges, do not always react in the way in which it was assumed by the economic models.

#### **1.5 Basic assumptions**

The examples, which could easily be enlarged with many others, show that in reality, the parties involved in the accident setting, injurers, victims, potential insurance takers and judges, do not always react in the way in which it was assumed by the economic models. The neoclassic models of accident law have always assumed that injurers and victims (in short the participants in an accident setting) are rational individuals, who base their decisions, for example concerning the levels of care and activity upon an objective weighing of costs and benefits and try to maximize their utility according to their preferences. On the basis of this assumption the economic analysis of law has, now for a period of

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2. See for evidence of lacking insurance coverage, for example after hurricane Katrina *inter alia* Howard Kunreuther, 2006, p. 175-201 and see Michael Faure and Véronique Bruggeman, 2008, vol. 15, p. 1-52.

more than 40 years,<sup>3</sup> developed extensive models to explain how tort rules can be developed to contribute to a reduction of accident costs. Within this framework it is, moreover, also assumed that rational and well-informed judges will equally apply the applicable tort rules in an effective way, striving towards such a reduction of accident costs. Moreover, based on theories of utility maximization insurance theory has shown that risk averse individuals may increase their expected utility by taking out insurance coverage. Depending upon the applicable liability rules either victims will have a demand for first party insurance or potential injurers will seek third party liability cover.

## 1.6 Lessons from cognitive psychology

However, meanwhile and for an equally long period, a different literature has developed, starting with the seminal work of Kahneman and Tversky, showing that many individuals in fact suffer from a variety of cognitive heuristics and biases as a result of which decision-making may take place in a different way than neoclassic economic models assume.<sup>4</sup> Psychological theoretical literature, but moreover convincing empirical evidence, has shown that individuals suffer from so-called heuristics and biases. Heuristics affect our judgement, whereas biases affect our choice.

In recent years law and economics and the insights from behavioural sciences have met into the new domain referred to as '*behavioural law and economics*'. The importance of this encounter is well described by another pioneer of tort law and economics, Richard Epstein:

*'There is little doubt that the major new theoretical approach to law and economics in the past two decades does not come from either field, but from the adjacent discipline of cognitive psychology, which has now moored into behavioural economics'*.<sup>5</sup>

## 1.7 Importance of behavioural accident law and economics

Increasingly, the behavioural law and economics literature is also concerned with the consequences of these new insights for traditional economic theories of accident law.<sup>6</sup> However, even though some

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3. The starting point of the economic analysis of law in general were the publications by Ronald Coase, 1960 and Guido Calabresi, 1961, which both also dealt with accident law.

4. Tversky and Kahneman 1974, p. 1124-1131; Kahneman, Slovic and Tversky 1982.

5. Epstein 2008.

6. See in this respect more particularly Jolls, Sunstein and Thaler 1998, p. 1474 at p. 1523-1532; Johnston 1987, p. 137-181; Jolls 2007, p. 115-155; Korobkin and Ulen 2000, p. 1053-1146; Teitelbaum 2007, p. 431-477; Tor 2008, p. 237-327 and Ulen 1998, p. 1747-1763. Although much of the behavioural law and economics literature was originally of North-American origin behavioural law and economics has now also influenced the legal debate in Europe. See for example Eidenmüller 2005a, p. 216-224 and the reaction by

attention to this behavioural literature is paid, the consequences for existing models of accident law are not that clear yet. It seems interesting to pay more detailed attention to this question since some, especially lawyers, may suppose that this literature has important implications for the traditional model of accident law. For instance when there is indeed a systematic error by individuals both as far as the estimation of probabilities and expected damage is concerned, the question arises what the consequences are of these misperceptions for the economic model of tort law and more particularly for the choice of an efficient liability rule. The question for instance arises whether these misperceptions have a more important effect on the negligence rule than on strict liability or whether they arise under strict liability as well. Moreover, the psychological literature equally indicates that in handling tort cases there can be misperceptions by judges as well, e.g. leading to a wrong assumption about a high probability of an accident, simply based on recent incidents (availability heuristic). The result may be an inefficiently high care level required from defendants in a tort case (like with the cyclist from example 3). A related important question is of course whether the mentioned misperceptions with participants in the accident setting (and potentially the judiciary) are an argument in favour of regulation. If that would be the case the question equally arises why regulation would be better able to deal with these heuristics and biases than tort law.

Also for the field of insurance behavioural law and economics may have important consequences. The behavioural literature for example shows that for a variety of reasons and differently than assumed by traditional models, individuals do not take out insurance coverage even if it would maximize their expected utility. This hence raises again the question if these cognitive biases could be an argument in favour of a regulatory intervention leading e.g. to mandatory insurance coverage in particular fields such as damage caused by natural disasters.

In this contribution, I would like to examine the potential impact of behavioural law and economics (if any) on the traditional economic models of accident law.<sup>7</sup> By focussing on ‘*accident law*’ I mainly deal with the economics of liability law and insurance and only to some extent briefly with safety regulation as well.<sup>8</sup> Moreover, given the limited scope of this contribution, I can of course only focus

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Rittner 2005, p. 668-670 and the reaction by Eidenmüller 2005b, p. 670-671. For a summary of this debate see Grechenig and Gelter 2008, p. 299-300.

7. I hereby build further on an earlier study to honour Guido Calabresi (Faure 2008, p. 75-102), where I examined to what extent some of the ideas of the behavioural literature are already incorporated into Calabresi’s work.

8. I only focus on the relevance of the behavioural literature for accident law, although there is a broad literature dealing with its relevance for other legal domains as well. See for example for the area of criminal law MacAdams and Ulen 2009.

on the main results of the meanwhile very rich behavioural literature and its consequences for accident law.<sup>9</sup>

## 1.8 Structure

In order to examine the potential impact of the behavioural literature for the economics of accident law I will first briefly review the assumptions underlying the traditional models of accident law (2). Next, some of the most important findings of behavioural law and economics (in as far as relevant for liability and insurance) will be addressed (3). The main questions are of course what the consequences are of this literature for the economic model of tort law (to be addressed in 4) and insurance (5). A few concluding remarks finish this contribution.

## 2 ASSUMPTIONS OF THE TRADITIONAL ECONOMIC MODELS OF TORT AND INSURANCE

### 2.1 Tort law: starting points

Classic economic analysis of law starts from the assumption that by exposing parties to the costs of their activities via liability rules they will be given appropriate incentives for taking optimal care to prevent accidents. Taking optimal care would be the way to reduce the total social costs of accidents since it is the level of care where the costs of prevention and the expected damage costs are minimised.<sup>10</sup> The desired incentive effects of course assume that all parties have information about the applicable tort law regime, but equally about the probability that their behaviour may create a certain accident risk, about the magnitude of the damage that may occur in case of an accident and about the optimal preventive measures that could efficiently reduce the accident risk. Moreover, traditional models of tort law equally assume that the parties involved not only have this information available, but that they equally are able to process this information, in other words, to make objective and correct assessments of all of these elements. Economic analysis of tort law hence crucially follows the rationality assumption underlying economic analysis of law. This idea, also referred to as the '*rational choice model*' holds that a rational actor can rank alternatives according to his preferences.<sup>11</sup> In the words of Posner it is assumed that man '*is an rational maximizer of his ends in life*'.<sup>12</sup> Also, economic

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9. The reader interested in further reading can consult the studies concerning behavioural law and economics summarized *inter alia supra* in footnote 6.

10. This optimal care is hence to be found where marginal prevention costs equal the marginal benefits in further reduction of the expected damage. See generally Shavell 1980, p. 1-25, as well as Shavell 1987, p. 5-32, as well as Shavell 2004, p. 175-288.

11. Cooter and Ulen 2004, p. 15.

12. Posner 2007, p. 3.

analysis of tort is hence based on this rationality assumption, assuming that the decision maker has stable, well-ordered preferences.<sup>13</sup>

Information and the ability to process this information correctly is indeed a crucial assumption of the traditional economic analysis of tort law. The basic assumption is indeed that on the basis of all of this available information parties will adapt their behaviour and thus contribute to reducing accident risks in an efficient manner.<sup>14</sup>

Following upon example 1 from the introduction this means that the cyclist will be assumed to take preventive measures based on information on costs and benefits of these measures, equally taking into account the deterrent effects a liability rule may have.

## 2.2 Nuances in law and economics

Of course the law and economics literature has clearly indicated that it is by no means necessary that all of this would take place as a cognitive process whereby the cyclist would be aware of this calculus.<sup>15</sup> Many persons will implicitly and without much cost-benefit calculation do the right thing and adapt to a speed by which they can avoid to hit the pedestrian. However, a basic assumption of the economic literature is that it is the exposure to liability law that plays a crucial role in giving the cyclist incentives for taking preventive measures (reducing his speed). Nevertheless, also the economic literature of course recognises that the incentives for speed reduction do not only come from the exposure to tort law: the injurer may fear that in case of an accident he could be hurt himself or he may simply suffer discomfort by the thought of causing harm to a victim. These are in the literature considered as additional but not sufficient motives for the injurer to reduce his speed. In the absence of law (and in situations where private bargaining is not possible)<sup>16</sup> economics assumes that the injurer will not reduce his speed optimally and that thus an internalisation of the externality does not take place.

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13. Cooter and Ulen 2004, p. 350-351.

14. Although the idea that tort law can be considered as an incentive mechanism that influences the behaviour of parties potentially involved in an accident setting was originally of North-American origin, it has now largely been accepted by European legal scholars as well: see for example for Germany Wagner 2006, p. 352-475.

15. In the words of Schäfer and Ott, “rationality does not, however, imply that the agent is conscious of the choices” (Schäfer and Ott, 2004, p. 52).

16. Otherwise the Coase Theorem would be applicable and the efficient solution will automatically be reached in this low transaction cost setting (see Coase *supra* note 3).

### 2.3 Critics

This traditional economic model of tort law has received a lot of criticism from various strands of literature. Scholars belonging to the so called critical legal studies movement (CLS) have, since the beginning of the economic analysis of law, launched several attacks on law and economics. The main representative of this movement, Duncan Kennedy, launched a serious attack on the use of cost-benefit analysis to determine entitlements and more particularly to internalize externalities.<sup>17</sup> Richard Abel, who also associates himself with CLS, formulates a criticism on '*capitalist tort law*', thereby also criticizing the fact that tort law has turned to the language of economics, replacing moral judgement with concern for the efficient allocation of resources.<sup>18</sup> He also criticized '*the scientific façade of this economic formulation*' (more particularly of the Hand formula) which would conceal '*a number of fundamental theoretical flaws and empirical problems*'.<sup>19</sup> More interesting for the topic of this contribution is that Abel also criticized the fact that economics assumes that tort liability stimulates the potential tortfeasor to the optimum level of safety on the basis of a correct cost-benefit analysis by the judge and an evaluation of all possible safety precautions by potential tortfeasors.<sup>20</sup> In addition, Abel argued that '*the efficacy of tort liability in encouraging safety rests on several dubious assumptions about economic rationality and market conditions. Some actors are not profit maximizers in any simplistic sense*'.<sup>21</sup>

Also tort lawyers have challenged the assumption that potential injurers in an accident setting would change their behaviour on the basis of an exposure to liability. Tort law is not about the rationality of certain precautions (compared to the costs) but about interpersonal reasonableness, so it was held *inter alia* by Keating in an attack on the utilitarian approach to tort law defended by law and economics.<sup>22</sup> A related criticism is that according to some traditional lawyers tort law would have as main goal to compensate accident victims, not to provide deterrence, let alone that this were possible. Critics also held that there would be little to no empirical evidence that people would actually change

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17. Kennedy 1980-81, p. 388-445.

18. Abel 1989-90, p. 785-831, at p. 794-795.

19. Abel 1989-90, at p. 808-809.

20. Abel 1989-90, at p. 810.

21. Abel 1989-90, at p. 812.

22. Keating argues that the concept of reasonableness fits the doctrine and rhetoric of due care law better than the rationality concept defended by law and economics scholars such as Robert Cooter, Thomas Ulen and Richard Posner (Keating 1995-96, p. 311-384). Compare this to Rodgers who argues that rational decision-making by an injurer should be an argument in favour of strict liability whereas in case of non-rational decision-making '*risk-creating behaviour of psychological origin is unsuited to a social cost-benefit analysis*' (Rodgers 1980-81, p. 1-34).

their behaviour as a result of an exposure to liability.<sup>23</sup> The latter point remained an important weakness of the economics of tort law: notwithstanding some modest successes in specific areas it remained generally difficult to find a strong empirical backing for the statement that potential injurers would in all cases change their behaviour as a result of an exposure to liability.<sup>24</sup> In addition, many activities are subjected to extensive safety regulation, which makes it often difficult to distinguish the preventive effects of regulation from the deterrent effect of tort law.<sup>25</sup>

#### **2.4 Strict liability versus negligence**

The economic literature moreover makes a distinction between strict liability and negligence. In a case where only one party (usually referred to as the injurer or tortfeasor) influences the accident risk (a so-called unilateral accident case) the literature generally holds that both negligence and strict liability provide incentives for efficient care; strict liability would, however, have a preference if also an efficient activity level needs to be respected.<sup>26</sup> Within the context of this contribution it is, however, important to indicate that there is a difference between strict liability and negligence as far as the necessary information is concerned. In case of strict liability both prevention and damage costs are shifted to the injurer. It is hence the injurer himself who will have to balance these costs and benefits and fix the optimal care standard. All information costs about the elements that underlay the efficient working of tort law, mentioned above, in this case fall on the injurer.<sup>27</sup> In case of negligence there is a division of labour as far as the necessary information is concerned. Under negligence it is the judge who will determine the efficient care standard. Therefore the judge will need information on the costs of preventive measures and will have to weigh these against the probability that additional investments would reduce the expected damage. This will hence be translated in a due care standard to be followed by the potential injurer. Under negligence the injurer only needs information about the due care required by the court on the basis of case law.

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23. See for an overview of the critics on the law and economics approach to tort the summary in Schwartz 1994-95, p. 377, at p. 381-382.

24. Difficulties also arise as far as the measurement of that particular claim is concerned: injurers are often insured (in which case one could only measure the extent to which insurers can control moral hazard; the empirical evidence in that respect was recently summarized by Van Boom 2008, p. 253-276).

25. An early and interesting overview on the effects of tort law with nuanced conclusions was provided by Schwartz 1994-95. For an equally interesting overview see Dewees, Duff and Trebilcock, 1996 and Ben Vanvelthoven, 2009.

26. See for these criteria for strict liability *inter alia* Schäfer and Schönenberger 2000, p. 597-624 and for a more recent account see Schäfer and Müller-Langer 2009, p. 3-45 and Faure 2003, p. 29-32.

27. Shavell 2004, p. 184.

In the law and economics literature it is recognised that in this respect problems can arise. The first one to recognise the importance of cognitive biases and bounded rationality for accident law was undoubtedly the founding father of the economic analysis of tort law, Guido Calabresi. In a 1972 article in the Yale Law Journal Calabresi and Hirschhoff argue that the choice between different liability regimes should ‘*depend not on their theoretical ability to optimise accident costs given certain assumptions, but on the degree to which the particular assumptions required by each devise actually do obtain*’.<sup>28</sup> This quote is followed by an interesting footnote (17) that holds *inter alia*:

*‘These assumptions relate, inter alia, to the cost of information to each party, the absence of psychological or other impediments to acting on the basis of available information, the administrative costs of shifting losses, and the extent to which parties actually bear the costs which the particular tests impose upon them’.*

Here one notices an explicit reference to psychological impediments that may be decisive in the choice between negligence and strict liability. Even though Calabresi’s work dates from before the behavioural literature, his model for allocating liability seems to allow taking into account the cognitive abilities of all parties involved in the accident setting. Thus Calabresi even holds that account should be taken of the ‘*likelihood of foolish behaviour by the victim or the unusual sensitivity of some victims*’.<sup>29</sup> In these and other publications of Calabresi it becomes clear that the balanced approach he proposes thus provide the scope to incorporate the consequences of human errors – now referred to as cognitive biases – in the decision on the allocation of the accident risk. In that respect Calabresi can even be referred to as a ‘*behaviouralist avant la lettre*’.<sup>30</sup>

Also Shavell discussed under the heading of ‘*factors bearing on the determination of negligence*’ that there is the danger that either the actual care of the injurer can be too high or too low, since he misperceives the legal standard or the legal standard set by the judge can be either too high or too low because of misperceptions by the judge.<sup>31</sup> The result is of course that the actual care taken by the injurer may not match the due care set by the legal system. This can on the one hand lead to liability cases where the injurer is found negligent (under a perfectly working negligence rule this should

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28. Calabresi and Hirschhoff 1972, p. 1059.

29. Calabresi and Hirschhoff 1972, at p. 1067.

30. So Faure 2008, p. 96-99.

31. Shavell 1987, p. 73-83. See also Shavell 2004, p. 224-241.

normally not be the case since the injurer always has incentives to take due care); on the other hand it may also lead to inefficiencies (also in cases where the injurer is not found negligent).<sup>32</sup>

The consequences of relaxing the rationality assumption in analyzing tort law have been explicitly addressed by Cooter and Ulen. They also suggest a corrective measure when that assumption is violated and more particularly refer to the example of product liability for a defective power tool. If a consumer would err in the probability of an accident and hence take too little precautions, this would make the accident situation unilateral, rather than bilateral and would thus, according to Cooter and Ulen be an argument in favour of strict manufacturer liability.<sup>33</sup> They add:

*‘These thoughts raise concerns about whether tort liability induces the appropriate precautionary action by potential injurers and victims. We shall tentatively maintain the rationality assumption but shall be ready to amend our conclusions about efficient tort rules when there is sound evidence that the appropriate decision-makers are not behaving rationally’.*

## **2.5 Liability versus regulation**

It should, moreover, be stressed that law and economics scholars have paid attention to particular circumstances under which liability rules may fail to have a deterrent effect. In the so-called public interest theory of safety regulation, again largely developed by Shavell, criteria have been developed indicating that under particular circumstances regulation may provide better results in an efficient reduction of the accident risk than tort law.<sup>34</sup> One relevant criterion in this respect is precisely the availability of information. It is held that when public authorities can better obtain information on the probability of the accident, the expected damage and the efficient preventive measures to reduce the accident, regulation would be preferred over liability. Another argument in favour of regulation is generally that when (for a variety of reasons) liability suits can be expected to have no deterrent effect it is better to rely upon regulation. The latter can for example be the case when there is a long time lapse between the tort and the emergence of the damage (so-called latency) or when causation problems exist.

One could hence argue that when behavioural studies would show that potential parties in an accident setting (injurer, victim or judge) lack appropriate information or when there are other reasons to believe that tort law may lack a deterrent effect, alternative solutions to provide incentives for care

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32. This may more particularly be the case where the legal standard is set inefficiently low or inefficiently high and followed by the tortfeasor. See on these errors in the determination of the negligence standard also Cooter and Ulen 2004, p. 337-339.

33. Cooter and Ulen 2004, at p. 352.

34. Shavell 1984, p. 357-374.

should be examined. However, public choice scholars have powerfully presented the private interest theory of regulation, arguing that regulatory failure may cause serious inefficiencies in safety regulation as well.<sup>35</sup>

## 2.6 Insurance

Traditional economic theory of insurance starts from the assumption of risk aversion and holds that individuals suffer disutility as a result of being exposed to risk. The theory holds that the expected utility can be increased when risk is removed from individuals and traded for certainty.<sup>36</sup> The basis for this 'expected utility' hypothesis in explaining insurance is therefore that individuals can increase their utility by trading an uncertain risk (being e.g. exposed to the risk of flooding) for a certain loss (the payment of a premium).

Basic assumptions of this expected utility hypothesis (relevant for this topic) are that individuals are aware of the risks they are exposed to, being both of the probability that the event may occur and of the magnitude of the damage and that they are aware of the availability of insurance.<sup>37</sup> The expected utility hypothesis assumes that based on this information (and the availability to process it) individuals will rationally decide to purchase insurance when it increases their utility<sup>38</sup> and if insurance companies are willing to supply cover on a competitive insurance market.

Of course traditional insurance theory also requires that other conditions of insurability are met. In this respect it is for example necessary that both the dangers of moral hazard and adverse selection can be controlled. One of the remedies proposed in the literature is exposing the insured partially to risk (thus providing incentives for care); another remedy is an adaptation of premium conditions in accordance to the behaviour of the insured.<sup>39</sup> This type of risk differentiation of course assumes that the insured is aware of the policy conditions and is able to process this information and react appropriately to it with a behavioural change. In other words: also the expected utility hypothesis as a starting point for insurance theory assumes the ability of individuals to adapt their behaviour to different incentives given to them via the insurance policy.

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35. See Buchanan and Tullock 1962; Olson 1965 and Posner 1974, p. 335. The possibilities of inefficiencies in safety regulation have especially been stressed by Maloney and McCormick 1982, 99-123.

36. See Loubergé, 2000, (providing an overview of the developments in risk and insurance theory).

37. See for the basic theory of Insurance *inter alia* Arrow, 1963 and Arrow, 1968.

38. The latter will of course depend upon the specific attitude towards risk of the individual, their degree of risk aversion and the price that ultimately needs to be paid (the premium) to have the risk removed.

39. Shavell 1979, p. 541-562.

There are alternative explanations for insurance, *inter alia* based on transaction costs,<sup>40</sup> but they can remain undiscussed, since they are less relevant for this topic.<sup>41</sup>

### 3 BEHAVIOURAL LAW AND ECONOMICS: MAIN FINDINGS

#### 3.1 General

Since the early writings of Kahneman and Tversky a rich behavioural literature has emerged challenging the assumptions of neo-classic economics.<sup>42</sup> To some extent the limits of the traditional assumptions (availability of and capacity to process information, rationality) were well-known to law and economics scholars.<sup>43</sup> Ulen even notices that it is striking that the behavioural literature seems to be better known to lawyers than to economists.<sup>44</sup> For example, some concepts, such as bounded rationality, pointing at the limits of individuals to make rational choices, have been well-known and were earlier documented in the law and economics literature. However, increasingly also psychological experiments, both in laboratory and in real life have challenged some of the assumptions underlying the economic analysis of accident law.

Behavioural law and economics has been the subject of a lot of controversy. Hence, already the previous statement, that behavioural studies would constitute a challenge to the assumptions underlying classic law and economics, has been the subject of controversy. Cass Sunstein, in his well-known provocative style, indeed argues in the many papers he devoted to behavioural law and economics that '*economic analysis of law has proceeded on the basis of inaccurate understandings of decision and choice*'.<sup>45</sup> His co-author Christine Jolls, also well-known for her writings in this domain, however clearly argues that '*behavioural law and economics is not a critique of law and economics*'.<sup>46</sup> Tom Ulen, also a prolific writer in this domain, seems to agree with Jolls that '*behavioural law and economics does not attempt to undo any of the remarkable accomplishments of law and economics. Rather, it is an attempt to refine*'.<sup>47</sup> The founding father of law and economics, Richard Posner, is not

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40. Skogh 1989, p. 726-732.

41. For an overview of insurance theory based on the "non-expected utility analysis" see Loubergé, *supra* note 36 at 11-12 and Machina, 2000 as well as Gaullier, 2000.

42. See Kahneman, Slovic and Tversky 1982.

43. It is more particularly through the work of Simon that the limits of rational choice theory have been made clear, also to the law and economics community. See for example Simon 1955, p. 99-118. For a summary of the work of Simon see Gigerenzer 2005, p. 37-67.

44. Ulen 1998, p. 1747, at p. 1748.

45. Sunstein 1997, p. 1176 at p. 1194.

46. Jolls 1998, p. 1653, at p. 1654.

47. Ulen 1998, at p. 1748.

surprisingly critical of the behavioural approach, at least in the way it is presented in a paper by Jolls, Sunstein and Thaler<sup>48</sup> to which Posner reacts. His point of view, to which I will come back in more detail below, is that some insights that are ascribed to behavioural economics are already a part of economic analysis of law and that the problem moreover is that no definition is provided of what behavioural law and economics exactly means. Posner criticizes the fact that the behavioural approach is only defined negatively like: it is law and economics ‘*minus the assumption that people are rational maximizers of their satisfactions*’.<sup>49</sup> It is not my intention to pronounce a final judgement on the usefulness of behavioural law and economics. However, these quotes already show that it has been subject of controversy and this will of course also affect the central question of this article, being to what extent its findings have implications for the economic analysis of accident law.

Meanwhile, the entire body of literature in this domain has become so rich that it is impossible to review it entirely within the scope of this contribution.<sup>50</sup> Many scholars distinguish a variety of possible cognitive problems, sometimes under different names and headings.<sup>51</sup> I will now briefly address some of the main cognitive issues in as far as they can potentially be relevant for accident law.

### **3.2 Bounds to human behaviour**

In contrast to the standard economic theory, which assumes that people will maximize their utility, behavioural economics argues that people’s behaviour often violates such an assumption. Behavioural economics tries to explore the actual human behaviour, by stressing the importance of ‘bounds’ on human behaviour.<sup>52</sup> The notion ‘bounded rationality’ is of course not new to behavioural (law and) economics but was introduced by Herbert Simon to show that actors often take shortcuts in making decisions that frequently result in choices that fail to satisfy the utility maximization prediction.<sup>53</sup>

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48. See Jolls, Sunstein and Thaler 1998, 1471-1550.

49. Posner 1998, p. 1551, at p. 1552. Posner refers actually to ‘behavioural economics’ but his criticism applies as well to behavioural law and economics.

50. For recent summaries see in addition to the studies quoted *supra* note 6 for example the contributions to Slovic 2000a and to Sunstein 2000a, but also a useful summary provided by Ogus 2005, p. 303-320 and Ogus 2006, p. 219-252 as well as Wibisana 2008 and Ulen 2000, p. 790-818.

51. For example Sunstein mentions the following problems: 1. The availability heuristic; 2. Informational and reputational cascades; 3. Loss aversion; 4. Systemic effects; 5. Emotions and alarmist bias; 6. Separate evaluation and incoherence (Sunstein 2000, p. 1065-1073). Ogus mentions the following: 1. Status quo bias; 2. Availability heuristic; 3. Excessive discounting; 4. Selective optimism and control; 5. Social pressure (See Ogus 2005, at p. 307-310 and Ogus 2006, p. 219-252).

52. See further Wibisana 2008, p. 229-230.

53. See Korobkin and Ulen 2000, p. 1075. See on this issue also Lindenberg 2001, p. 239-251. And Krebs, 1998.

In addition to bounded rationality Jolls, Sunstein and Thaler also identify bounded willpower and bounded self-interest as other ‘bounds’ to human behaviour. According to Jolls *et al.*, bounded willpower occurs because people often make decisions that they know to be in conflict with their long-term interests. On the other hand, the authors state that bounded self-interest occurs because people are willing to be treated fairly; hence they will treat others fairly as long as these others treat them fairly. As a result, in some situations, people care about others, even strangers, or act as if they care.<sup>54</sup>

In the literature two main reasons are indicated for a decision-making that does not maximize expected utility, being complexity and ambiguity. The limits of human cognitive abilities make it in some (rather complex) situations impossible to follow a utility maximizing strategy. This is the process that Simon refers to as ‘satisficing’, namely that people’s decisions do not choose the option that maximizes their utility, but rather they choose one that satisfies their aspiration.<sup>55</sup> In addition to complexity also ambiguity concerning the consequences of various alternatives can lead to suboptimal decision-making from the perspective of maximization of expected utility. This ambiguity problem plays more particularly a role when decisions concern the estimation of various likelihoods, e.g. that one’s house will be damaged as a result of an earthquake.<sup>56</sup>

### 3.3 Probability neglect

Another deviation from the standard model identified in behavioural studies refers to the fact that people tend to pay more attention to the absolute outcomes than to the probability that this adverse event may occur. The impact of the probability on people’s feeling depends strongly on the characteristic of the particular outcome. As a result small probabilities can be largely over-estimated, resulting from the strong feelings about fears for negative outcomes or hopes for a positive outcome. People tend therefore to focus more on the absolute outcomes rather than on the probability that this may occur.<sup>57</sup>

In a broader example, the probability neglect is also indicated by societal concerns about hazards, such as nuclear power and exposure to extremely small amounts of toxic chemicals, which still fail to recede even after the society is provided with the information showing that the probabilities of such hazards to occur are very small.<sup>58</sup>

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54. Jolls, Sunstein and Thaler 1998, p. 1479.

55. Simon 1979, p. 502-503; see also Wibisana 2008, p. 230.

56. Korobkin and Ulen 2000, p. 1083.

57. Wibisana 2008, p. 241-242.

58. So Wibisana 2008, at p. 242.

### 3.4 Availability heuristic

People usually do not use statistics to judge the likelihood of a future event. Instead, they use their memory to judge the likelihood of a similar accident to recur. In this case, rather than evaluating the likelihood based on how often the accident has occurred in the past, people usually think an accident is about to happen because a similar accident that occurred in the past is readily available in people's memory, enabling them to easily remember such an accident. The easier this memory comes to the people's mind, the more likely the accident seems to occur. This phenomenon is referred to as the 'availability heuristic'. It is a mental shortcut that individuals use on the basis of which they assume that memorable events are memorable precisely because they are common or have recently occurred. However, these estimates based on 'availability' can be biased and be largely unrelated to the objective statistical probability of certain events occurring.<sup>59</sup> As a result of availability heuristic errors will occur whereby the likelihood of some incidents (like a nuclear accident) is (wrongly) perceived as high, whereas others (like a stroke) as relatively low.<sup>60</sup>

The availability heuristic is not only affected by the distance of the past events, but also by the imaginability of the future events. Moreover, several studies have shown that risks from dramatic or sensational causes of death tend to be greatly overestimated.<sup>61</sup> The availability heuristic could explain why judged frequencies of highly publicised causes of death (e.g., accidents, homicides, fires, tornadoes, and cancer) were relatively overestimated and underpublicised causes (e.g., diabetes, stroke, asthma, and tuberculosis) were underestimated.<sup>62</sup> Thus, if media coverage has given prominence to a particular event individuals may attribute a greater probability to the event recurring than is objectively justified.<sup>63</sup>

One factor contributing to the formation of the availability heuristic is the social amplification risk. Kasperson, *et al.* argue: '*Social amplification of risk denotes the phenomenon by which information process, institutional structures, social-group behaviour and individual responses shape the social experience of risk, thereby contributing to risk consequences*'.<sup>64</sup> Thus, the experience of risk is not only related to the physical harm, but is also a product of a social process by which groups or individuals learn to create the interpretations of risk.<sup>65</sup> This phenomenon is referred to as a 'ripple' effect, because of its analogy of dropping a stone into a pond. The ripple effect can illustrate how a

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59. See Korobkin and Ulen 2000, p. 1087-1090 and Kuran and Sunstein 1999, p. 683-768.

60. Sunstein 1997, at p. 1188.

61. Slovic 2000b, p. 184.

62. Wibisana 2008, at p. 243.

63. See Ogun 2006, p. 236 and Wibisana 2008, p. 224 and Jolls 1998, p. 1662.

64. Kasperson 2000, p. 237.

65. Kasperson 2003, p. 15.

risk event can first affect the directly concerned victims and then spread outward to other levels and potentially even future generations.<sup>66</sup>

One should, however, notice that the term ‘availability’ has been used to explain quite different reasons for distorted perceptions concerning probability judgements. Gigerenzer therefore argues that first the empirical evidence has to be examined carefully to establish what the term ‘availability’ exactly refers to before any conclusions are drawn upon it.<sup>67</sup>

### 3.5 Status quo bias

This bias, related to the so called ‘endowment effect’ relates to the fact that individuals often place a higher monetary value on items they own than on those they do not own yet. Many experiments have provided evidence of this phenomenon.<sup>68</sup> Experiments also show that, all things being equal, individuals will prefer a status quo outcome.<sup>69</sup> This for example explains continued risky behaviour such as smoking in which individuals have engaged in for a number of years apparently without significant adverse effects.<sup>70</sup> As a result of the status quo bias individuals may disregard objective information (e.g. on the riskiness of their behaviour) but may also not be willing to explore alternatives to familiar choices.<sup>71</sup>

A related point is the phenomenon of so called ‘loss aversion’, meaning that persons are more displeased with losses than they are pleased with equivalent gains. An implication is, according to Sunstein, that the allocation of legal entitlements does matter since those who are initially allocated an entitlement are likely to value it more than those without the entitlement.<sup>72</sup> Not everyone is, however, convinced that this endowment effect shows an empirical failure of rational-choice economics. Posner for example argues that anyone who owns a good, will value it above the market price. If they did not, they would sell it to non-owners. Hence, he argues that the endowment effect makes perfect sense from a straightforward rational-choice perspective. The fact that you value something more because

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66. Ibidem.

67. Gigerenzer 2005, at P. 45.

68. For a summary of the literature see Korobkin and Ulen 2000, p.1107-1112.

69. See Ulen 2000, at p. 804-806. Recent literature, however, criticizes earlier findings concerning this endowment effect. See in this respect more particularly Plott and Zeiler 2005, p. 530-545.

70. Ogus 2006, p. 235.

71. This explains for example that default rules in contract law are more difficult to contract around than rational choice theory has suggested. The status quo bias leads individuals to prefer the default rules to alternatives (Korobkin 1998a, p. 608-647 and Korobkin 1998b, p. 1583).

72. Sunstein 1997, at p. 1179-1181. On this basis Sunstein criticizes the Coase theorem (Ronald Coase, *supra* note 3). I will come back to that point below. See on loss aversion also Sunstein 1999, p. 131-135.

you possessed it for a long time may, according to Posner illustrate the operation of habit and is not irrational at all.<sup>73</sup>

### 3.6 Selective optimism and overconfidence

Many experiments also provide evidence of selective optimism of individuals: they tend to generalize information based on highly selective examples that suit them well.<sup>74</sup> Jolls reports that nearly 200 studies have shown that individuals believe that good things are more likely than average to happen to them. Bad things are more likely than average to happen to the others.<sup>75</sup> Many experiments have provided evidence of this selective optimism.<sup>76</sup> This optimism seems to be stronger when the individual has a degree of control over the event like in the case of a car driver: a study showed that 90% of drivers thought that they drove more safely than the average driver.<sup>77</sup> Unrealistic optimism leads to an underestimation of the probability that unpleasant events will happen to oneself.<sup>78</sup>

This selective optimism is, so many studies show, not weaker with laymen than with experts. Experiments have for example shown that there is a strong so called self-serving bias in the analysis of the chances of winning a law suit by lawyers. As a result lawyers systematically anticipate their trial prospects as being better than they objectively are.<sup>79</sup> Slovic, Fischhoff and Lichtenstein also discuss many examples of overconfidence by experts. They refer for example to studies showing that the reactor safety experts had greatly overestimated the precision with which the probability of a core meltdown could be assessed. Another case discusses the unwarranted confidence of engineers who were certain to have solved many serious problems during the construction of the Teton dam which eventually collapsed in 1976.<sup>80</sup> In another paper the same authors summarize several other studies identifying common ways in which experts may overlook pathways to disaster.<sup>81</sup>

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73. See these powerful arguments in Posner 1998, at p. 1564-1567.

74. Ogus 2006, p. 237.

75. Jolls 1998, p. 1653, at p. 1659.

76. A nice example is provided in a study concerning Virginia residents who applied for a marriage licence: even though the respondents knew that almost half of all marriages ended in divorce, when they had to predict the likelihood that their marriage would end in divorce the model response was zero (Baker and Emery 1993, p. 439. For a discussion of this and other studies see Korobkin and Ulen 2000, p. 1091-1093).

77. See the study by Svenson quoted by Ogus 2006, p. 237-238.

78. See also the many studies quoted by Jolls 1998, at p. 1658-1663. See also Sunstein 1997, at p. 1182-1184, and Sunstein 1999, p. 136-137.

79. Korobkin and Ulen 2000, p. 1093-1094. This is one explanation for the fact that many more cases than one would expect to go to trial instead of being settled.

80. Slovic, Fischhoff and Lichtenstein 2000, p. 104-120.

81. Slovic, Fischhoff and Lichtenstein 2001, p. 477.

Many other studies show so called ‘calibration errors’, being mistakes in estimating probabilities. These especially occur when experts have to assess risks in the absence of precise data. Moreover, the errors do not seem to diminish once the experts have become familiar with the problem. The ‘learn ability’ of risk assessment seems therefore to be low.<sup>82</sup>

A particular type of judgement error in probabilistic assessment (also of experts) is the so called ‘hindsight bias’. This is the simple tendency of individuals to overestimate the *ex ante* prediction of an event on the basis of the knowledge that the event actually occurred. The hindsight bias plays a role with physicians<sup>83</sup> but also with judges and more particularly in tort cases as well. Experiments showed that the knowledge that an accident actually occurred has a dramatic influence on the appraisal of whether (on the basis of the Learned Hand formula) the accident could have been prevented by taking additional precautionary measures.<sup>84</sup>

### 3.7 Criticisms

The brief introduction to a few cognitive problems which have been identified in the behavioural literature (and which could easily be extended by discussing many others) shows that individuals may behave differently than what is assumed on the basis of the utility maximization hypothesis. However, not all scholars are to the same extent enthusiastic about this literature, especially when it comes to the central question of the implications of the mentioned studies for traditional law and economics.<sup>85</sup>

First, Posner argues that many of the behavioural findings are based on experimental settings. Selection effects suggest that the real-world environment could be systematically different than the experimental one.<sup>86</sup> Many of the findings of behavioural studies are based on experiments with students, as a result of which Posner argues that the empirical evidence for the claim of the behaviouralists is weaker than is often held.<sup>87</sup> He suggestively adds: ‘*An interesting study would be to compare the subsequent career paths, and earnings, of students who score high in rationality in experiments conducted by behavioural economists with those who score low*’.

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82. For a summary of these studies see Wibisana 2008, p. 264-268. For that reason Posner is critical of Jolls, Sunstein and Thaler arguing that they put too much trust in expert judgement whereas it is not clear why they would be less subject to ‘cognitive quirks’ or ‘weakness of will’ as ordinary people (Posner 1998, p. 1575).

83. See Jolls 2007, p. 124.

84. See Rachlinski 1998, p. 571-625 and see also other studies discussed by Korobkin and Ulen 2000, p. 1095-1096.

85. For a discussion of the criticisms on behavioural law and economics (and a reply to the critics) see Sunstein 1999, p. 147-150.

86. Posner 1998, p. 1570.

87. Posner 1998, p. 1571.

Second, Posner equally argues that much of the empirical evidence which is presented as proof of criticism of rational choice theory in fact is proof of rational behaviour of individuals. Sunstein and co-authors had, in various publications, criticized the fact that the highly publicized rash of illnesses of people living near Love Canal gave rise to the superfund law. It made according to Sunstein *et al.* a legislative response nearly inevitable, irrespective of the actual facts.<sup>88</sup> The example is provided as anecdotal evidence of the above mentioned ‘availability heuristic’. Posner to the contrary argues that it is entirely rational for people to rely on anecdotal evidence in the absence of better evidence. ‘*Limited information must not be confused with irrationality*’, so he continues. The fact that people sometimes overreact to highly publicised events may be the result of lacking information to form a correct assessment of the risk, not of irrationality.<sup>89</sup>

Third, another problem with the broad behavioural literature is that the findings do not always clearly point in one direction as far as the deviation from the objective standard of cost-benefit analysis is concerned. Some elements of the behavioural literature may point in one direction (systematic underestimation of risks) whereas others may point in the opposite direction (overestimation of risks). For example due to bounded rationality and limited capacity to process information some risks may be systematically underestimated (probability of being victim of a hurricane or earthquake) whereas other research shows that for example because of high publicity concerning the same risks the availability heuristic could point in the direction of an overestimation of the same risks due to ‘social amplification’. Also: probability neglect and availability heuristic may lead to overpessimism and thus overprecaution, whereas selective optimism and overconfidence could lead to overoptimism and thus underprecaution. It is, in other words, not always clear whether the behavioural literature points in the direction of systematic over- or underestimation of risks.<sup>90</sup> Jolls, however, argues that it would be wrong to infer from this that behavioural deviations could go either way. Underestimations of the general probability of an accident tend to be more frequent when individuals are injurers, like car drivers. Highly available events which to the contrary lead to overestimation of the risk tend to involve firms, not individual liability.<sup>91</sup> If one were thus to draw conclusions on the basis of the behavioural studies it is certainly possible to differentiate between these (and other) situations, even though it obviously makes the analysis more complicated as well.

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88. See Jolls, Sunstein and Thaler 1998, p. 1521 and Kuran and Sunstein 1999, p. 691-698.

89. Posner 1998, p. 1572-1573.

90. See also Sunstein 1997, p. 1184: ‘*While people may sometimes think that low-probability events have higher probability than they in fact do, many individual agents think that they personally are peculiarly less susceptible to such events, which may lead them to underestimate rather than overestimate probabilities*’. See also the interesting study by Eric Posner (to which I will come back below) arguing that errors may both lead to too little care and to too high care (Posner 2004, p. 125-141).

91. Jolls 1998, p. 1663.

A fourth problem is that the many studies in social psychology can provide evidence that individuals may act differently than assumed in traditional economic models, they do not yet offer an alternative integrated theory which would replace traditional law and economics.<sup>92</sup> Korobkin and Ulen therefore rightly hold that since ‘law and behavioural science’ still lacks a single, coherent theory of behaviour there is no reason to replace the rational choice theory through an alternative paradigm.<sup>93</sup> Gigerenzer also points at the fact that behavioural (law and) economics has been criticized ‘*for merely listing anomalies without providing a theory*’<sup>94</sup> and – not surprisingly – also Posner holds that behavioural (law and) economics is undertheorized ‘*because of its residual, and in consequence purely empirical, character*’.<sup>95</sup> Posner moreover holds that behavioural economics does not invite to formulate a theory. ‘*Faced with anomalous behaviour, the rational-choice economist, unlike the behavioural economist, does not respond, ‘of course, what do you expect?’, but would rather be challenged and would rather ‘wreck his brains for some theoretical extension or modification that will accommodate the seeming anomaly to the assumption of rationality*’.<sup>96</sup>

Fifth, again others have held that behavioural economics may point at a variety of human errors but that these should not necessarily lead to regulatory interventions (through aggressive regulation) but to examine how individuals are themselves capable to remedy (partially) these errors by learning in order to improve their situation.<sup>97</sup> For example John List has on the basis of various experiments shown that as participants gain experience in market transactions some of the cognitive biases disappear.<sup>98</sup> More generally some have held that debiasing can counteract cognitive and motivational distortions although many of those debiasing strategies have their own disadvantages and limitations as well.<sup>99</sup>

This literature therefore does not deny the findings of the behavioural economics, but is rather critical of the normative implication that regulation would be necessary to correct for these human errors. This raises more generally the question to the implication of the behavioural literature

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92. See Tor 2008, p. 291 and ff. See also the suggestive title of the paper by Mitchell 2002, p. 67.

93. Korobkin and Ulen 2000, p. 1057.

94. Gigerenzer 2005, p. 61.

95. Posner 1998, p. 1559. He adds: ‘*Behavioural economics is defined by its subject rather than by its method and its subject is merely the set of phenomena that rational-choice models (or at least the simplest of them) do not explain*’.

96. Posner 1998, p. 1567. Posner there foresees the major fruit of behavioural economics as ‘*The stimulus it provides to new and better rational-choice theorizing*’.

97. Epstein 2006, p. 111-132, p. 130: ‘*The real challenge is not to deny the experimental findings, but to explain the full range of personal and market mechanisms that make them disappear without a trace*’. See on this issue also the exchange between Epstein and Bar-Gill referred to above (*supra* note 5).

98. List 2003, p. 41 and List 2006, p. 1.

99. See Jolls and Sunstein 2006, p. 199-241; Sunstein 1999, p. 150-151 and Tor 2008, p. 292-300.

discussed in this section for the traditional economic analysis of tort and insurance as presented in section 2.

## 4 IMPLICATIONS FOR LIABILITY LAW

### 4.1 Relevance of the behavioural literature

#### 4.1.1 *Increased integration of behavioural into traditional law and economics*

First of all it should be repeated<sup>100</sup> that even traditional economic analysis of accident law never took a completely naïve view of potential parties in the accident setting assuming e.g. that they would be consciously calculating individuals constantly making decisions on the basis of a weighing of prevention costs versus the expected damage. Take the first example mentioned in the introduction of the cyclist deciding on what measures to take to avoid running over the pedestrian. Even though law and economics scholars would generally assume that this decision-making takes into account the fact that there may be an exposure to liability, no scholar ever held that the cyclist would actually make a conscious calculation of costs and benefits taking into account the existence of liability rules. That is not what traditional law and economics claims and also not necessary for the predictions of the economic model to work. In the words of Posner: ‘*rational choice need not be conscious choice*’.<sup>101</sup>

However, it can not be denied that the behavioural law and economics literature presented in Section 3 showed that potentially both individuals in an accident setting and judges, having to examine *ex post* an accident situation, may be exposed to a variety of heuristics and biases which may affect the assumptions underlying the traditional economic model, especially concerning the way in which these individuals are expected to behave. However, since the early work of Herbert Simon, Tversky and Kahneman, these insights have, perhaps slowly, but still increasingly been incorporated into the law and economics literature as well. Sunstein still held in 1997 that ‘*economic analysis of law has proceeded on the basis of inaccurate understandings of decision and choice*’.<sup>102</sup> That seems, however, no longer correct. Major handbooks of law and economics now take the behavioural literature seriously and include the results in the economic analysis, even though admittedly some authors seem to be more convinced of its relevance<sup>103</sup> than others.<sup>104</sup> Posner himself could therefore rightly argue

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100. See *supra* section 2.2.

101. Posner 1998, p. 1551.

102. Sunstein 1997, p. 1194.

103. See for example Cooter and Ulen 2004, who spent substantial attention to behavioural law and economics, also in their discussion of accident law (Cooter and Ulen 2004, p. 350-352) as well as Schäfer and Ott, who provide a detailed discussion of the various cognitive biases (Schäfer and Ott *supra* note 15).

that some of the insights that are ascribed to behavioural economics are already a part of economic analysis of law ‘*which long ago abandoned the model of hyperrational, emotionless, unsocial, supremely egoistic, non-strategic man or woman*’ that some appear to ascribe to it.<sup>105</sup> It can therefore certainly not be held that a pure rational choice theory would still be the mainstream paradigm of law and economics.<sup>106</sup>

#### 4.1.2 *Prescriptive and predictive analysis*

The importance of the behavioural literature for the economic analysis of liability law and accident law more generally could be analysed from different angles. A first question that could arise is whether the behavioural literature is better able to prescribe more accurately how parties in an accident setting will behave and whether it also allows to make better predictions about how parties will react e.g. to an exposure to liability rules. If that were the case the use of the results of the behavioural literature would certainly be useful since it could improve the prescriptive and predictive value of economic models of accident law. This is the way in which for example Jolls tries to present the behavioural literature to seduce law and economic scholars. Behavioural law and economics, so she argues ‘*is not a critique of law and economics*’, ‘*its goal is to offer better predictions and prescriptions about law based on improved accounts of how people actually behave*’.<sup>107</sup> If this is what behavioural literature does, no law and economic scholar could object against its use since it would allow to make prescriptions and predictions about the functioning of accident law which are closer to reality. However, here again Posner would react that many of the insights presented under behavioural economics in fact already are part of law and economics and moreover, ‘*need not derail rational-choice economics*’.<sup>108</sup> Taking again the cyclist from the introduction: one does not need cognitive psychology to know that the cyclist will not make conscious calculations of costs and benefits of preventive actions taking into account the applicable liability law. However, an advantage of the behavioural studies is that they undoubtedly provide possibilities to come to a further refinement of existing models of accident law, thus allowing better predictions e.g. on reactions of potential injurers or victims taking into account the biases that may affect their behaviour. However, as I will argue below, one can question to what extent these insights were not already largely present in traditional

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104. Posner also spends some attention to the behavioural literature in his famous handbook *Economic Analysis of Law* even though it obtained a less prominent place than in the other just mentioned monographs (Posner 2007, p. 17-20).

105. Posner 1998, p. 1552.

106. So Arcuri 2008, p. 79.

107. Jolls 1998, p. 1654.

108. Posner 1998, p. 1557.

models of accident law as they were e.g. developed by Shavell, or at least to what extent the existing models allow to incorporate these new behavioural insights, without fundamentally changing them.

To the extent behavioural studies allow to improve the predictive and prescriptive economic analysis of law its use will hardly be disputed. One problem is, however, as Posner indicated, that the more one takes the behavioural literature into account and the more the description of actual behaviour becomes more accurate, the less economic models become predictive. In the words of Posner '*descriptive accuracy is purchased at a price, the price being loss of predictive power*'.<sup>109</sup> The rational choice model may unrealistically assume rational behaviour, but by relying on what rational men would do in a given situation, economic models have at least a higher predictive value.<sup>110</sup>

#### 4.1.3 Normative implications?

The enthusiasm for the behavioural literature, however, disappears when at the normative level behavioural literature is used to formulate policy recommendations.<sup>111</sup> Ogus rightly pointed at the fact that one should be careful with paternalistic interventions based on cognitive biases since notwithstanding the biases there may still be welfare maximization and hence no need for regulatory intervention. Moreover, if such an intervention takes place the question still arises whether the benefits outweigh the costs.<sup>112</sup> Second, Korobkin and Ulen rightly pointed at the fact that in some cases more empirical research is needed for policymakers to be able to make effective use of the insights provided by behavioural literature<sup>113</sup> and that in some other cases the legal implications of a particular behavioural phenomenon may not be that clear cut.<sup>114</sup> That is why warnings are especially formulated at the normative use of behavioural law and economics.<sup>115</sup>

#### 4.1.4 Various consequences

With these limitations in mind, I will simply examine how relaxing the behavioural assumptions of rational choice based on the behavioural literature may affect the traditional economic model of tort law.<sup>116</sup> In this respect we can meanwhile refer to a large body of literature where these consequences

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109. Posner 1998, p. 1559.

110. Ibidem.

111. For a summary of the critics see Tor 2008, p. 318-325.

112. Ogus 2006, p. 250-252.

113. E.g. concerning the overconfidence bias (Korobkin and Ulen 2000, p. 1092).

114. More particularly of the so called hindsight bias (Korobkin and Ulen 2000, p. 1097).

115. See Posner 1998, at p. 1553 and p. 1575. Also Sunstein argues that normative accounts should not be confused with descriptive accounts (Sunstein 1997, p. 1175).

116. Given the limits of this study I will only address a few possible effects of the behavioural literature for accident law. However, many other could be examined as well. For example loss aversion could have

have also been examined.<sup>117</sup> There are in fact many more potential consequences of behavioural literature for the economics of accident law which go beyond the scope of this study. Sunstein for example claims that one important consequence of loss aversion and the endowment effect is that the Coase theorem is in one respect quite wrong for the simple reason that the allocation of the initial entitlement may well matter.<sup>118</sup> As I, however, mentioned above this endowment effect is highly criticised by Posner.<sup>119</sup>

I will first address the importance of the behavioural literature for the efficient care by injurers (4.2), then address the possibility of errors with the judiciary (4.3) and analyse the consequences for the choice between negligence and strict liability (4.4). I then discuss whether the cognitive problems addressed in section 3 can be interpreted as a case for regulation (4.5).

## **4.2 Efficient care by injurers**

A question which of course arises as a result of the behavioural literature is how these findings affect a crucial assumption of the standard economics of tort law, being that injurers will react with efficient care to efficient standards set by judges (under negligence) or will find themselves the efficient care-level on the basis of a weighing of costs of prevention and benefits in reducing the accident risk (under strict liability).<sup>120</sup> The question therefore arises how human errors by potential injurers and judges may affect the economics of tort law. The question arises what can go wrong, in the sense of what the deviations are from the standard model and what the implications may be.

### *4.2.1 Underdeterrence*

Many of the cognitive limitations described in section 3 can influence the care taken by injurers. It is remarkable that some of these limitations point in the direction of injurers taking higher care (overprecaution) whereas others point in the direction of injurers taking lower care (underdeterrence).

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consequences for the way in which damages are calculated as well as for the choice between specific performance and damages. See on these issues, Rachlinski 1996, p. 113-185 and Sunstein 1999, p. 133.

117. Again, given limited space I will only address a few consequences. The reader interested in further details can be referred to e.g. Johnston 1987; Korobkin and Ulen 2000; Posner 2004; Schäfer and Müller-Langer 2009 and Teitelbaum 2007.

118. Sunstein 1997, p. 1179.

119. Posner 1998, p. 1564-1567. See for a behavioural criticism on the Coase theorem also Ulen 2000, p. 810-811.

120. I disregard situations where also victims can affect the accident risk (so-called bilateral accidents) and thus focus merely on unilateral accidents. It may be clear, however, that equally victims may suffer from similar cognitive limitations. For a discussion of the influence of cognitive problems on the victim's side (and hence the bilateral case) see Posner 2004, p. 137-138 and p. 140-141.

Starting with the latter, some have indicated that bounded rationality will lead to systematic misperception of individuals in the probability of accidents. One reason is the well-known affect heuristic: if an individual considers a certain activity as useful and pleasant, the likelihood that he will realise that the consequences of the activity are damaging will be lower than when he dislikes or disapproves of the activity.<sup>121</sup> Also the presentation of the facts and social acceptance may have an influence on the estimation that the activity will lead to damage.<sup>122</sup> Jolls, Sunstein and Thaler also point to overoptimism as a source for miscalculations of the probability of a bad outcome of certain events. Such overoptimism may lead to underdeterrence of potential tortfeasors.<sup>123</sup> Especially with respect to car accidents there is overwhelming evidence of the so called optimism bias as a result of which drivers underestimate their absolute as well as their relative (to other individuals) probability of being involved in a car crash.<sup>124</sup>

#### 4.2.2 Overprecaution

Other cognitive limitations (or even the same) may lead to injurers taking higher care than would be efficient (overdeterrence). A typical problem leading to a potential overdeterrence is the so-called probability neglect: overweighing of small probabilities because of fear of negative outcomes.<sup>125</sup> Focussing more on the outcome than on the probability of such an outcome potential injurers may take excessive care against low probability high damage events.<sup>126</sup>

The same danger exists with the so-called availability heuristic. When a danger has materialised and thus is 'available' the probability of that negative outcome may be overestimated. This availability heuristic can be strengthened by negative publicity concerning particular types of accidents.<sup>127</sup> Excessive care can thus be the result.<sup>128</sup>

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121. See for example with respect to smoking Slovic 2001.

122. A summary of this literature is also provided in the inauguration address of Van Boom 2003, p. 9-11.

123. Jolls, Sunstein and Thaler 1998, p. 1524-1525. They, however, equally indicate that the role of overoptimism can vary significantly with context, since there is equally a tendency to overestimate the likelihood of being sanctioned (for example concerning superfund litigation).

124. Jolls 2007, p. 123. See also an empirical study showing evidence of this so called self-favouring bias with drivers by Guppy 1993, p. 375-382. See also Jolls 1998, p. 1658-1660.

125. Wibisana 2008, p. 241-242.

126. Eric Posner argues also that a person who discounts remote risks might take too much care, which would equally lead to overdeterrence (Posner 2004, at p. 126).

127. In the words of Ogus: *'If media coverage has given prominence to a given contingency, say an accident, individuals will attribute a greater probability to the contingency recurring than is objectively justified'* (Ogus 2005, at p. 308).

128. See Jolls 1998, at p. 1558-1663 and Posner 2004.

Moreover, bounded willpower can also explain why in some situations people care about others, even strangers, or act as if they care. The importance of this bounded willpower for accident law is clear: it may explain why potential tortfeasors (e.g. the cyclist from the example in the introduction) may simply wish to avoid inflicting harm on the pedestrian.<sup>129</sup>

#### 4.2.3 Various directions

So far a problem with the consequences of this literature for injurer behaviour is that, of course depending upon the circumstance, the results go in various directions: some problems like overoptimism may lead to underdeterrence, whereas others such as the availability heuristic may lead to precisely the opposite result.

The interesting question is of course to which conclusions this leads as far as the economic analysis of liability rules is concerned. Ulen rightly notes that cognitive limitations should not necessarily affect liability rules. If it for example appears that as a result of limitations drivers take insufficient care one solution may be the installation of passive restraints like airbags which operate independently of a judgment made by the driver.<sup>130</sup>

Cognitive problems may not only affect potential injurers, but can also have an influence on the judiciary.

### 4.3 Errors with the judiciary?

Given that errors with injurers are multidirectional the question arises whether similar problems arise when the judge has to fix the standard of due care in the context of the determination of negligence. There seems to be no evidence that judges systematically do better than laymen.<sup>131</sup> First of all it is not clear whether judges in fixing a standard of care in a negligence case are really 'experts'. They deal with a lot of different cases and compared especially to corporate defendants, it is not difficult to argue that the likelihood that judges misinterpret the efficient care standard is larger than that defendants do so. There is overwhelming evidence that also judges are subject to cognitive limitations which influence their judgement. Biases that played a role in the assessment of probabilities and risks for laymen can equally play a role when similar assessments are undertaken by judges. Hence, the judges may also overweigh small probabilities and hence fix a too high standard of care for activities which,

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129. This can also be related to notions of fairness people have: most people care about being fair and about being treated fairly, so Sunstein 1999, p. 121 and p. 125.

130. Ulen 1998, p. 1753.

131. Also Posner argues that there is no reason to assume that 'experts' would not be subject to the same cognitive limitations as ordinary people (Posner 1998, p. 1575: '*The expert, too, is behavioural man... Dare we vest responsibility for curing irrationality in the irrational?*').

if they result in an accident, cause high damage. Also the availability heuristic can influence the judiciary: highly publicised causes of death (through particular accidents) could thus lead to higher estimations concerning the danger of those activities by the judiciary. In the literature various methods have been proposed to educate the judges e.g. by developing guidelines for communicating statistical information in court.<sup>132</sup> These remedies may of course help, but may not completely remove cognitive limitations of the judiciary in dealing with accident cases. As a consequence the due care level set through case-law could be either higher or lower than the efficient one and under- or overdeterrence could follow.

Judges may also suffer under the representativeness heuristic, which considers a previous performance as typical for a future performance. Willem van Boom provides an interesting example of this based on a case before the Netherlands Supreme Court. The case concerned the following facts: Wendy Jansen helps her sister Monique Jansen moving a cupboard up the staircase to Monique's apartment. It considers two cupboards of each 180 cm height and 60 cm breadth. Moving the first cupboard nothing goes wrong. However, when the second cupboard is brought up the staircase Monique loses her balance, is in danger of falling down with the cupboard and in a reflex she pushes the cupboard up. As a result of that Wendy's arm is squeezed between the cupboard and a door and suffers serious injury. Wendy files a claim against her sister based on tort. The *Hoge Raad* refuses to accept liability *inter alia* based on the argument that the sisters had just before brought a similar cupboard up the staircase without apparent problem.<sup>133</sup> Van Boom rightly argues that this reasoning of the *Hoge Raad* provides a good example of a representativeness heuristic: the mere fact that the first act did not cause any damage does not say anything at all about the dangerousness of the particular activity as such. Van Boom argues that from a statistical point of view staircases are an important source of death and personal injury: 70% of all accidents in the house take place on staircases, many of which have a fatal outcome.<sup>134</sup> The *Hoge Raad* apparently assumes that the previous performance (nothing happened on the staircase) was typical for the future performance and made the methodological mistake of ignoring the objective probability that during this type of activity personal injury would emerge.<sup>135</sup>

A well documented problem, which may play a role in case of decision making by the judiciary, is the so called hindsight bias, being the tendency of decision-makers to attach an excessively high

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132. See Gigerenzer 2005, p. 52 and p. 56.

133. Hoge Raad 12 May 2000, *NJ* 2001, 300, *Aansprakelijkheid en Verzekering*, 2000, 106-107, with case note by Hartlief. For a discussion of this case see also Faure and Hartlief 2002, p. 358-359.

134. Bakerl, 1992. Viscusi even argues that staircases are on number one in the top ten of 'products most involved in injuries' (Viscusi 1985, p. 530. See also Viscusi and Zeckhauser 2004, p. 74).

135. Van Boom 2003, at p. 11-13.

probability to an event simply because it ended up occurring.<sup>136</sup> It is related to the fact that judges will *ex post* always take their decision on the basis of the information that the accident happened and that therefore the particular activity was apparently risky. The result of this hindsight bias is that the decision on whether the defendant took appropriate care to avoid the accident will always be biased against the defendant: the fact that the accident occurred apparently shows that he did not take sufficient care, whereby a debate on the objective question whether from an *ex ante* perspective the defendant took efficient care is not asked anymore: '*hindsight bias will lead juries making negligence determinations to find defendants liable more frequently than if cost-benefit analysis were done correctly – that is, on ex ante basis. Thus plaintiffs win cases they deserve to lose*'.<sup>137</sup>

In a lengthy study Rachlinski, however, shows that the situation should not necessarily be as negative as sketched at first sight. Many judicial opinions explicitly recognise the prejudicial aspects of judging in hindsight and judges have developed specific tools to avoid the hindsight bias. For example when a reliable *ex ante* assessment of reasonable care is available, such as custom in a medical malpractice case, courts will rely on that rather than on their own independent assessment of reasonable care.<sup>138</sup> This implies that judges being aware of the hindsight bias should for example in negligence cases suppress evidence of subsequent remedial measures because it reflects the defendant's understanding after an accident, not before.<sup>139</sup>

Also in the Netherlands the Hoge Raad has repeatedly held that the lawfulness of particular behaviour of a defendant in a tort case should be judged according to the standards applicable at the time of the behaviour. The Hoge Raad applies this for example in employer's liability cases for asbestoses<sup>140</sup> but also on the domain of professional liability of notaries.<sup>141</sup>

These examples show that even though some biased judgements may still be unavoidable courts are often aware of the problem, have responded to concerns about the hindsight bias by suppressing post-event information and may thus to some extent be able to mitigate the adverse consequences.<sup>142</sup>

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136. Jolls, Sunstein and Thaler 1998, at p. 15-23 ff; Van Boom 2003, at p. 14-15; Jolls 2007, p. 124 and Korobkin and Ulen 2000, p. 1095-1100 and Viscusi and Zeckhauser 2004, p. 72-94.

137. Jolls, Sunstein and Thaler 1998, at p. 1524.

138. Rachlinski 1998, p. 571 at p. 574.

139. Rachlinski 1998, at p. 624.

140. Hoge Raad, 2 October 1998, *NJ* 1998, 683 with case note by J.B.M. Vranken and Hoge Raad, 17 December 2004, *Rechtspraak van de Week* 2005, 4.

141. Hoge Raad, 15 September 1995, *NJ* 1996, 629.

142. Rachlinski 1998, at p. 624.

#### 4.4 Strict liability versus negligence

After having established that according to this literature human errors may affect the judgement of potential injurers in a tort case the next question is of course what the consequences may be for the economic model of tort law (and more particularly for the choice of the optimal liability rule). One way of approaching this problem is to return to the classic distinction in tort cases, mentioned above,<sup>143</sup> between unilateral and bilateral accidents. Ulen suggests that cognitive problems related to dealing with uncertain outcomes may be a factor in determining whether precaution was unilateral or bilateral. For example in product related accidents one could argue that if it is more likely that consumers err as far as their abilities in taking care are concerned and assuming that producers remain reliably rational, the situation is in fact one of unilateral precaution which would be an argument in favour of a strict liability rule.<sup>144</sup>

However, the choice between strict liability and negligence is not only related to the question whether care is unilateral or bilateral. An important difference also relates to whether cognitive problems are more serious with potential injurers than with judges. If that were indeed the case it would be an argument in favour of a negligence rule and against strict liability. Indeed, strict liability assumes that injurers weigh costs and benefits and thus apply efficient care, whereas negligence assumes that the judge determines the due care standard. There are, however, a number of problems with this reasoning: first, the behavioural evidence showed that there are both problems with potential injurers and with judges that can lead to misperceptions and thus to inefficient care standards. There is no *a priori* reason to argue that judges would in that respect do better than injurers. Second, even if one would move to a negligence rule, judging that the judiciary is better able to fix a due care standard, problems can still arise under negligence since potential injurers may still have various misperceptions either concerning the actual care they should take or concerning the due care required by the judiciary, which can lead to inefficiencies. Third, it might be dangerous to move to a negligence rule simply on the basis of behavioural arguments (even though it is not clear in which direction they go), thereby neglecting that an overwhelming economic literature has pointed at other advantages of strict liability with respect to internalisation of risks.<sup>145</sup>

Problems of course arise in the negligence determination as well. The consequences can go in various directions and depend on whether the judiciary alone, the potential injurer or both err. However, these imperfections of the negligence standard are well-known in the traditional doctrine and have been described in detail by Shavell.<sup>146</sup>

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143. See *supra* footnote 120.

144. Ulen 2000, at p. 815-816.

145. Shavell 1980, p. 1-25 and Shavell 1987, p. 8.

146. See Shavell 1987, p. 73-83.

The consequences of the various cognitive limitations for the economic model of liability law have recently also been analysed in detail in papers by respectively Eric Posner<sup>147</sup> and Teitelbaum.<sup>148</sup>

Teitelbaum explicitly analyses the unilateral accident model under ambiguity (explicitly referring to the behavioural literature). He argues that neither strict liability nor negligence is generally efficient in the presence of ambiguity and that the injurers level of care decreases with ambiguity when he is optimistic and increases when he is pessimistic. Teitelbaum argues that in case of optimism negligence leads to better results than strict liability in some cases and that in case of pessimism negligence leads to better results than strict liability in all cases. On the basis of this study it could therefore be concluded that in case of ambiguity the negligence rule should be preferred. However, in his study Teitelbaum merely focuses on ambiguity on the side of the injurer and therefore assumes that the judge is able to set an efficient level of care (essential for the efficiency of the negligence rule). The result may be different when also biases on the side of the judiciary are taken into account such as the hindsight bias, which I discussed before. Korobkin and Ulen argue that the hindsight bias casts doubt on the ability of juries (and the judges) to reach a proper negligence determination because they are likely to believe that precautions that could have been taken would have been more cost-effective than they actually appeared *ex ante*. Since this bias does not occur under a strict liability regime they argue that the hindsight bias points towards favouring strict liability.<sup>149</sup>

Eric Posner also comes to differentiated conclusions on the optimal liability rule depending on whether injurers are either overoptimistic or pessimistic which is again related to their exposure to various cognitive limitations.<sup>150</sup> Posner comes to the counter intuitive conclusion that under specific conditions optimism concerning the probabilities of an accident could lead to higher levels of care both under strict liability and negligence. Posner hence argues that optimism could result in too little care because of an underestimation of the expected liability, but that under strict conditions the individual could also think that little extra care will have a dramatic effect on the probability of a bad event occurring as a result of which too high care would follow.<sup>151</sup> He therefore argues that the optimism with the potential injurer can lead to various effects depending ‘*on the relationship between the probability distribution, the level of harm and the care function*’.<sup>152</sup>

The least one can say looking briefly at the way the results of behavioural studies have been incorporated into the literature on tort law and economics and more particularly as far as the choice between strict liability and negligence is concerned, is that it has certainly not become easier to

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147. Posner 2004.

148. Teitelbaum 2007.

149. Korobkin and Ulen 2000, p. 1098-1099.

150. Posner 2004.

151. Posner 2004, p. 127-128.

152. Posner 2004, p. 127.

identify an efficient liability rule. In that respect the finding of Jason Scott Johnston is also rather compelling, being that the behavioural problems do not have a clear direction and that both under- or overdeterrence relative to the correct application of the cost-benefit standard is possible.<sup>153</sup>

Teitelbaum equally argues that ambiguity leads to the result that neither strict liability nor negligence is generally efficient, but shows, focussing on injurers care, a slight preference for the negligence rule. When, however, the hindsight bias is taken into account as well, like Korobkin and Ulen do, a strict liability rule seems to be preferred. If one were therefore to take into account the result of this literature in the economic models of tort law, it would lead to a highly elaborated and differentiated system whereby the efficient liability rule would depend upon the nature of the biases (pessimism or optimism) with either the injurer or the judiciary. It may be clear that, as Korobkin and Ulen indicated, one can wonder whether sufficient empirical evidence is already available to provide clear guidance as far as the choice of an efficient liability rule is concerned. The available studies so far point towards a highly differentiated system of which the administrative costs may substantially outweigh the benefits in differentiation.<sup>154</sup>

It was a point already made by Calabresi. As far as the choice between strict liability and negligence is concerned he argued in his 1975 paper 'On optimal deterrence and accidents',<sup>155</sup> that the relevant question is '*who is best suited to make the cost-benefit analysis between accident costs and accident avoidance costs? In other words, it would ask who would bear the incentive to decide correctly*'.<sup>156</sup> He adds that this decision '*is a matter of empirical judgements, not theory*'.<sup>157</sup> However, Calabresi equally recognised that a detailed differentiation on the basis of the (cognitive) abilities of the potential parties involved in an accident setting has the clear disadvantage that '*the administrative costs of making such individualised judgements would presumably be too great*'.<sup>158</sup> In other words, the costs of taking the refinements, offered by the behavioural literature, into account, may simply be too high.

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153. Johnston 1987, at p. 154-164. Johnston does not explicitly deal with implications of the behavioural literature, but the findings of his paper (from 1987) which deal with optimal liability rules under ambiguity, uncertainty and possibilities of error, also apply to the cognitive biases identified in the behavioural literature.

154. Confirming the worry of Ogus that an intervention based on behavioural studies should only take place when the benefits exceed the costs (Ogus 2006, p. 250-252).

155. Calabresi 1975, p. 660-662.

156. Calabresi 1975, p. 666.

157. Calabresi 1975, p. 667.

158. Calabresi and Hirschhoff 1972, at p. 1068.

#### 4.5 A case for regulation?

A general finding of the behavioural literature is of course that potential tortfeasors may react less appropriately to incentives given by the tort system than expected by the economic model and also judges may not always be able to set the standards correctly. These errors of course raise the question whether, within Shavell's criteria for safety regulation<sup>159</sup> these constitute arguments for a stronger reliance on regulation than on liability rules.

Many have been critical of using human errors as a reason for regulatory intervention.<sup>160</sup> For example Glaeser argues that bounded rationality will often increase the costs of government decision making relative to private decision making.<sup>161</sup> However, this criticism largely applies in a context where there is consumer choice. Even Glaeser argues '*after all there have always existed plenty of grounds, like market failures and externalities, for government intervention in the economy*'.<sup>162</sup> In the cases discussed here third parties suffer harm and externalities are hence real. A regulatory intervention should thus not necessarily be classified as paternalism, suggesting that it would be an unnecessary intervention. If it could be argued that government is better able to assess specific risks than individuals (potential tortfeasors or judges) there is a simple case in favour of safety regulation based on the superior information of the regulatory authority.<sup>163</sup> A distinction in this respect is of course to be made between on the one hand the question whether the individual has adequate information on certain risks and on the other hand the question whether, even if adequately informed, the individual is able to respond rationally to adequate information. The human errors we discussed in section 3 of course belong more to the second category.<sup>164</sup> In that case Ogus argued that a paternalist goal of increasing social welfare can justify regulation on the basis that the regulator assumes what would have been the preferences of individuals if they had responded rationally to full information.<sup>165</sup> Ogus provides the following criteria to evaluate paternalistic regulation:

*'- are there plausible traditional justifications (externalities, information failure, inadequate competition) for the measure, operating independently of paternalism?'*

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159. Shavell 1984.

160. See for example Klick and Mitchell 2006, p. 1620; Rachlinski 2006, p. 207; Rachlinski 2003, p. 1165 and Tor 2008, p. 314-317.

161. Glaeser 2006, p. 133.

162. Glaeser 2006, p. 142.

163. See also Ogus 2006, p. 219-252, p. 305.

164. See Ogus 2006, p. 306.

165. Ibidem.

- *if not, and taking account of the insights of social psychology, is the regulated activity one with regard to which a significant proportion of the agents make decisions that are unlikely to reflect their real preferences?*
- *if so, are the likely costs of the regulatory measure proportionate to the likely benefits and/or could the same be reached at lower cost by an alternative instrument?'.<sup>166</sup>*

Many scholars argue indeed that some of the behavioural biases can be considered as arguments in favour of regulation.<sup>167</sup> For example Korobkin and Ulen argue that the hindsight problem with the judiciary can be an argument in favour of broader *ex ante* regulation of safety by administrative agencies.<sup>168</sup> They also defend the mandatory use of seat belts or the instalment of airbags in cars as a rational decision by government to remove safety decisions from individual actors, given cognitive biases.<sup>169</sup> Camerer *et al.* defend regulation as ‘asymmetric paternalism’ since e.g. a device which would disable a car in case the driver would have a too high alcohol level would regulate behaviour of those whose driving and decision making is assumed to be undermined, whereas it would be completely unobtrusive for those who don’t need it (the drivers who are not drunk).<sup>170</sup>

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However, many may question whether standards set by government are necessarily a superior reaction to the tort system, even under bounded rationality. Public errors are as realistic a problem as private errors<sup>172</sup> and moreover public choice scholars have powerfully shown that public regulation always runs the risk of inefficiencies caused by private interests. ‘*Paternalism has been abused by*

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166. Ogas 2006, at p. 312.

167. Sunstein has a nuanced position on this point: behavioural economics does not necessarily lead to a general sympathy for paternalism. However, regulation may, at least in principle, ensure that judgements will be based on facts rather than intuitions in such a way as to reduce the problems introduced by biases and heuristics (Sunstein 1999, p. 145-146).

168. Korobkin and Ulen 2000, p. 1099.

169. Korobkin and Ulen 2000, p. 1107. See also Ulen 2000, at p. 813 who argues ‘*that cognitive limitations might lead to principled justifications for far more paternalistic policies than those that rational choice theory typically recommends*’.

170. Camerer, Issacharoff, Loewenstein, O’Donoghue and Rabin 2003, p. 1211-1254. This is what Thaler and Sunstein referred to as ‘libertarian paternalism’ (Thaler and Sunstein 2008, p. 72).

171. Also Thaler and Sunstein provide many examples how through a more careful ‘choice architecture’ individuals can be ‘nudged’ in beneficial directions. See Thaler and Sunstein 2008.

172. Glaeser 2006, p. 134.

*governments responding to special interests or seeking to aggrandize their own authority*'.<sup>173</sup> It is well-known that thus regulatory interventions can often have effects that are counterproductive for the goals they aim to achieve.

To counter *inter alia* these risks economists have proposed the use of cost-benefit analysis for risk regulation precisely since also regulation runs a serious risk of providing merely a response to irrational social fears.<sup>174</sup> This is also related to the debate on whether the well-known precautionary principle can be a useful tool in risk regulation, an issue which goes beyond the scope of this contribution.<sup>175</sup>

In sum safety regulation can be advanced if there are reasons to believe that the regulator will be better able to make an adequate risk assessment and hence to set standards closer to the efficient care levels than that private parties (under strict liability) or the judiciary (under negligence) would. Cost-benefit analysis can be used to guarantee that regulators will not be subject to the same cognitive problems as individuals.<sup>176</sup>

## 5 IMPLICATIONS FOR INSURANCE

### 5.1 Criticism of 'expected utility' theory

Behavioural experiments have first of all been critical of the descriptive adequacy of the traditional expected utility theory to explain insurance. Many experiments showed preferences which run counter to utility theory. One such problem which is hard to explain by traditional utility theory is the preference which appeared from an experiment for low-deductible insurance policies, notwithstanding the proportionality high premiums; another one refers to the failure of individuals to purchase insurance even when the premiums have been highly subsidised.<sup>177</sup> Some 30-40% of insurance decisions of many residents of hazard-prone areas were inconsistent with predictions from the theory.<sup>178</sup> Jolls also discusses experiments suggesting that under particular circumstances people are

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173. Glaeser 2006, p. 135.

174. See the eight propositions suggested as remedies by Jolls, Sunstein and Thaler 1998, at p. 1093-1096.

175. See in that respect *inter alia* Dana 2003, p. 1322 ff. For a critical appraisal of the precautionary principle see Ogus 2006, p. 158-161.

176. See Ogus 2006, p. 250-252 and Sunstein 2000b, p. 1065-1073. Sunstein argues that cost benefit analysis could be used as a sensible response both to interest-group power and to the problems in the public demand for regulation caused by cognitive limitations.

177. See Slovic, Fischhoff, Lichtenstein, Corrigan and Combs 2000, p. 53.

178. Ibidem.

risk seeking rather than risk averse towards probabilistic losses of moderate size.<sup>179</sup> Again this is not what is usually assumed in insurance theory.

Hence, Slovic, Kunreuther and White offer an alternative, 'description decision theory' based on bounded rationality which takes into account the cognitive limitations that the decision maker is exposed to as alternative to the expected utility hypothesis.<sup>180</sup> The cognitive limitations discussed in section 3 may indeed also seriously limit the possibility of an individual to take an efficient insurance decision based on his ability to judge his probability of being exposed to a risk, the potential damage and the corresponding premium.<sup>181</sup>

Some of the problems become especially clear when it concerns the ability of individuals to make a decision to take insurance protection against natural hazards. One problem is the status quo bias and the closely related problem of inertia. Individuals may not be prepared to incur even trivial costs of exploring beneficial alternatives to customary choices.<sup>182</sup> Behavioural experiments also have shown that low probability events like the risks of natural hazards are systematically misjudged.<sup>183</sup> Experiments show evidence of the mentioned probability neglect: individuals systematically ignore low probability, high damage events.<sup>184</sup> Occupants of flood prone areas reduce uncertainty by various means of denial.<sup>185</sup> It is related to the inability of individuals to conceptualise floods that have never occurred.<sup>186</sup> The result of these phenomena is that individuals will often take an 'it will not happen to me' attitude.<sup>187</sup>

Jolls indicates that the fact that many people still take insurance is in fact surprising. Given the fact that many people often underestimate the probability of negative events, why would they then take insurance against them? She argues that one reason may be a high level of risk aversion toward large losses, despite their underestimation of the probability that such losses will occur. Jolls concludes that in fact we simply do not know why people on the one hand appear to be unrealistically optimistic but on the other hand often purchase insurance.<sup>188</sup>

Moreover, other psychological experiments have shown that *ex ante* people may prefer uncertain losses rather than the certain loss of having to pay a premium. Kunreuther showed that because insurance is considered as an investment, some people will refuse to insure against low probability,

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179. Jolls 1998, p. 1668.

180. See Slovic, Kunreuther and White 2000.

181. Many more cognitive biases affecting insurance decisions are discussed in Faure and Bruggeman 2009.

182. See Ogus 2005, p. 307.

183. Slovic, Kunreuther and White 2000, p. 7.

184. See Sunstein 2002, p. 50-52.

185. Slovic, Kunreuther and White 2000, p. 7.

186. Slovic, Kunreuther and White 2000, p. 14.

187. See Kunreuther 1996, p. 175; Epstein 1996, p. 287, p. 293 and Zeckhauser 1996, p. 113, p. 115.

188. Jolls 1998, p. 1665-1667.

high damage events (such as flooding) because there is a likelihood of never receiving any return during a lifetime.<sup>189</sup> These types insurances provide a low expectation of a return on the 'investment' and hence there is a corresponding low demand. The fact that insurance is seen as an investment again is at odds with the expected utility hypothesis.<sup>190</sup>

To be clear: many of the deviations found from standard theory do not necessarily constitute evidence that the rational choice theory would be wrong. Underestimation of e.g. the risks of natural hazards may be the result of a lack of information and is in that sense not irrational. Perhaps more interesting than examining whether the experiments falsify the rational choice theory or not is what their influence may be for actual behaviour of both insured and insurers.

## 5.2 Result 1: underinsurance

An obvious result of the underestimation of low probability events is that individuals will purchase too little insurance.<sup>191</sup> As a result also in countries where voluntary first-party insurances for catastrophic losses (such as the ones caused by e.g. flooding) are available,<sup>192</sup> victims apparently do not insure, or only to a limited extent. The evidence in that respect is overwhelming. Kunreuther and others already pointed at the low demand for earthquake insurance, even in areas which are vulnerable to earthquake risks.<sup>193</sup> Well-known is the example that after the Northridge earthquake in California in 1994 a high number of citizens decided to buy first-party disaster insurance as a reaction against the suffered damages. This may be the result of the affect or availability heuristic according to which the past experience shows the individual that the probability of the unpleasant event is apparently that high that it is a problem worthy of attention. However, after daily life had taken over again a large quantity of those new insurance policies was cancelled again.<sup>194</sup> Eight years after the creation of the California Earthquake Authority the coverage went down from 30 to 17%.<sup>195</sup>

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189. See Kunreuther et al. 1978, p. 248 and Schoemaker and Kunreuther 1979, p. 612.

190. Slovic, Fischhoff, Lichtenstein, Corrigan and Combs 2000, p. 62 and p. 70.

191. See Posner 2004, p. 138.

192. In some countries insurances against natural hazards were not available or only to a limited extent. This was for instance the case in the Netherlands where insurance for flooding and earthquake risks was for a long time excluded as a result of a cartel agreement between insurers who agreed not to cover the particular risks. As a result of intervention from the European competition authorities these so called (binding decisions) were abrogated. For details see Faure and Hartlief 2006, p. 202-206.

193. Kunreuther, Doherty and Klefner 1992.

194. For details see Rabin and Bratis 2006, p. 303-360 and Slovic, Kunreuther and White 2000, p. 14.

195. *Risk Management Solutions, the North Ridge California Earthquake: a 10-year retrospective*, May 2004.

The underinsurance for flooding risks has also already been described in the literature.<sup>196</sup> Recently the experience with Katrina showed once more that only a low percentage of house owners had flood insurance.<sup>197</sup> Similar evidence comes from Europe. For instance after the flooding of the river Elbe in 2002, referred to as the ‘flood of the century’<sup>198</sup> it appeared that only a very small percentage of victims had insurance coverage.<sup>199</sup>

Jolls again provides a behavioural explanation for the fact that people fail to buy insurance against negative events such as floods and earthquakes (despite massive federal subsidies): an unrealistic optimism leads to an underestimation of the probability that these events will happen to them.<sup>200</sup>

### **5.3 Result 2: mixed evidence of moral hazard and adverse selection**

Not only does the behavioural research cast doubt on the ability of individuals to choose an appropriate insurance coverage that will maximise their utility. Empirical research equally indicates that the well-known problems of moral hazard and adverse selection may play less of a problem than is assumed on the basis of classic insurance economic literature. A recent overview of the various available empirical studies in this respect shows that the extent of adverse selection depends on the insurance market at hand.<sup>201</sup> For example no evidence of adverse selection was found as far as motor vehicle insurance in France is concerned<sup>202</sup> nor as far as health insurance in the US is concerned.<sup>203</sup> The extent of adverse selection thus seems to depend on the insurance market at hand. Moreover, there is also evidence of an opposite phenomenon: it would more particularly be the serious law abiding citizens (and hence the good risks) that would have a demand for insurance. There is indeed some evidence of this phenomenon of so-called ‘propitious selection’ for example in motor vehicle insurance<sup>204</sup> but also as far as life insurance is concerned: those individuals purchasing life insurance would have a longer life expectancy than those who don’t.<sup>205</sup>

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196. See e.g. Kunreuther 1996, p. 171-187 and Zeckhauser 1996, p. 135.

197. In Louisiana the percentage of house owners with insurance ranged from 57,7% in St. Bernard’s to 7,3%, in Tangipahoa. In Orleans only 40% had flood insurance (see Kunreuther 2006a, p. 175-201).

198. In Germany referred to as the ‘Jahrhundertflut’.

199. Magnus 2006, p. 130 and Schwarze and Wagner 2004, p. 156-160. See also Gigerenzer 2005, p. 45.

200. Jolls 1998, p. 1660-1661.

201. Van Boom 2008. That paper builds further on Faure and Van Boom 2008, p. 305-340.

202. Chiappori and Salani 2000, p. 56-78.

203. Cardon and Haendel 2001, p. 408-427.

204. See again Chiappori and Salani 2000 and see generally on propitious selection Hemenway 1990, p. 1063-1069.

205. Cawley and Philipson 1999, p. 827-846.

There is similar evidence as far as the problem of moral hazard is concerned. The empirical evidence seems to suggest that moral hazard is more likely to occur in some insurance markets than others.<sup>206</sup> For example as far as hospital admissions is concerned (probably not surprisingly) moral hazard did not seem to be a major issue.<sup>207</sup>

In sum, also as far as moral hazard and adverse selection is concerned empirical evidence seems to indicate that these problems play (at least in particular cases) less of a problem than one would expect on the basis of the economic model of insurance.<sup>208</sup> Let us return to the finding that psychological research shows that as a result of cognitive problems there may be substantial underinsurance. The question obviously arises whether that should at the normative level give rise to some remedy at the legislative level.

## **5.4 Towards mandatory (disaster) coverage?**

### *5.4.1 Mandatory liability insurance?*

Above I mentioned behavioural research showing that as a result of overoptimism people and more particularly car drivers overestimate their own (driving) capabilities and underestimate the probability of being engaged in an accident. The result would be that those car drivers who could potentially be injurers in an accident setting would also have a too low demand for insurance coverage given their underestimation of the risk.<sup>209</sup> These cognitive limitations could be considered as an argument in favour of mandatory liability insurance. This is a result from behavioural studies that will probably not be shocking to most scholars familiar with the law and economics of accident law. Indeed, information problems, together with the potential underdeterrence resulting from the insolvency of the average car driver have always been advanced as the main reasons in favour of mandatory liability insurance e.g. for motor vehicles.<sup>210</sup>

### *5.4.2 Mandatory disaster insurance?*

One could go one step further and not only argue in favour of the well-known mandatory liability insurance but also in favour of mandatory insurance against low probability events where there is a systematic underestimation of the risk such as disasters. At the policy level behavioural scholars argue that one way to get people to insure low probability high damage risk is to sell disaster insurance along

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206. See Van Boom, W.H. 2008, p. 260.

207. Van Boom 2008, p. 260, footnote 45.

208. The empirical evidence on this point is, however, very mixed. For a much more detailed discussion see again Van Boom 2008.

209. See Jolls 1998, at p. 1165.

210. See Jost 1996, p. 259-276 and Faure 2006, p. 149-168.

with insurances against likely losses at reasonable costs. Tests confirmed that this compounding with other risks, as a result of which a so-called ‘comprehensive insurance policy’ was offered was preferred: subjects were willing to spend 30% more for compound insurance than the sum of their expenditures for the two single earn policies. Slovic *et al.* conclude: ‘*if it is in society’s best interest for people to insure themselves against unlikely calamities then adding protection against a small but likely loss might help them accomplish this purpose*’.<sup>211</sup> A consequence from this behavioural literature is thus that they suggest compulsory insurance as an example of a policy that can play a role in improving hazards perception.<sup>212</sup> Compulsory insurance also has the advantage that risks can be spread and that risk based premiums can provide adequate incentives e.g. not to develop in high-risk areas.<sup>213</sup>

#### 5.4.3 Information remedies?

However, if lacking information would be the reason for a duty to insure, one could hold that regulation aiming at providing information might to some extent be a less interventionist remedy than mandatory insurance. Showing people the consequences of e.g. flooding with visual displays may help to pursue the public to view insurance as a potential remedy.<sup>214</sup> However, a weakness in this argument is that behavioural experiments have shown that it is only to a limited extent possible to cure the information asymmetry through regulation.<sup>215</sup>

The problem is indeed that the behavioural literature not only shows a lack of information (in which case the information asymmetry could constitute a reason for a regulatory duty to purchase insurance), but also that even when potential victims are well informed about the risks, they prefer not to purchase insurance. The reason is that insurance is apparently perceived as an investment. In case of low probability, high loss events there is a great likelihood that people will be paying a lot of premium without ever having any return during a lifetime.<sup>216</sup> This research hence shows that it is not primarily poor information of potential victims which would cause the low demand, but rather the unwillingness of victims (even if well informed) to purchase coverage against low probability high loss events. If this were the case, there is always a danger that the mandatory insurance in fact amounts to paternalism.<sup>217</sup>

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211. Slovic, Fischhoff, Lichtenstein, Corrigan and Combs 2000, at p. 60-61 and p. 70-71, suggesting to combine low probability hazards with high probability threats in one insurance ‘package’.

212. Slovic, Kunreuther and White 2000, at p. 25 and Ogus 2005, at p. 304.

213. Kaplow 1986, p. 548-550.

214. See Slovic, Fischhoff, Lichtenstein, Corrigan and Combs 2000, p. 71.

215. See Slovic, Kunreuther and White 2000, p. 15.

216. See Slovic, Kunreuther and White 2000, p. 1-31 and Slovic, Fischhoff, Lichtenstein, Corrigan and Combs 2000, p. 51-72.

217. See Ogus 2005, p. 303-320.

#### 5.4.4 *Potential dangers*

There are, however, also several potential dangers of introducing mandatory disaster insurance.<sup>218</sup> When introducing mandatory disaster coverage, there is always a danger that the legislator in fact forces potential victims to purchase an insurance policy even if there would be no demand.<sup>219</sup>

There is, moreover, a recent study by Sandroni and Squintani showing that there is some danger with introducing compulsory insurance based on behavioural biases.<sup>220</sup> They argue that compulsory insurance is more particularly problematic when the market has a significant fraction of overconfident agents in which case compulsory insurance could result in a transfer of wealth from low risk to high risk individuals. The reasoning is simple: the higher the fraction of overconfident agents in the economy, the higher is also the average risk of the pool of low-risk and overconfident agents and the higher thus the price that insurance firms will charge. At high prices low risk individuals would be better off with purchasing small amounts of insurance and are in fact hurt by compulsory insurance. This paper therefore shows that basing paternalistic policies on behavioural biases is not totally unproblematic since it may not make all agents better off, more particularly the low risk individuals. Compulsory insurance based on behavioural biases then effectively leads to cross-subsidisation.

A generalized duty to purchase e.g. flooding coverage always entails the risk that the duty is also imposed on those who constitute no risk at all: the well-known owner of an apartment on the tenth floor. This problem plays less<sup>221</sup> when a generalized duty to provide cover is imposed (for all type of risks) such as in the French case: if one cannot be a victim of flooding, there can at least be other risks (such as heavy rainfall, winds or tornados) to which one can be exposed. This problem is more serious if the duty is limited to a specific risk such as e.g. flooding. In that particular case it might be more indicated to limit the duty to specific risk areas, but the administrative (and more particularly political) costs of identifying those areas may be high. This was shown in the case of Belgium: a new act of May 2003 introduced additional mandatory coverage on voluntary insurance policies, but proposed to apply this new solution only to persons living in specified risk areas. These risk areas were to be identified through regulation. However, the attempt to identify the risk areas led to political disagreement and a subsequent impossibility to apply the Act. The result is that in 2005 a new system was introduced with a generalized duty to purchase additional coverage for natural hazards in addition to the fire insurance. It seemed impossible to pursue the idea of limiting the mandatory coverage,

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218. Slovic, Kunreuther and White 2000, at p. 1-31 and Slovic, Fischhoff, Lichtenstein, Corrigan and Combs 2000, p. 51-72.

219. See for a discussion of pros and cons of mandatory disaster insurance also Faure 2007, p. 339-367 and Faure and Bruggeman 2009.

220. Sandroni and Squintani 2007, p. 1994-2004.

221. As also indicated by Schwarze and Wagner 2004, p. 156-160.

given the high political costs of identifying the special 'risk areas' where the duty to insure would apply.<sup>222</sup>

The duty to purchase mandatory disaster coverage in addition to voluntarily purchased property damage contracts may cause problems from the angle of competition law. It is a so-called tie-in agreement forcing a consumer to buy a specific service or product together with another product, which may restrict competition.<sup>223</sup>

Mandatory coverage is of course only a solution where insurance markets are available. In many, more particularly developing, countries a large part of the losses is not covered under insurance at all. Where insurance markets are not available to a large part of the population, imposing mandatory disaster insurance will of course not be the miracle solution.

#### 5.4.5 *Advantage: risk differentiation and avoidance of ex post government relief*

Although there are thus several disadvantages of this suggestion a clear advantage is, that through the compulsory insurance solution suggested by behavioural law and economics an adequate risk differentiation through insurance is possible: individuals and communities might better adapt their risk levels if they are forced to do so through insurance premiums rather than when they can rely on *ex post* government relief.<sup>224</sup> Law and economics scholars and more particularly Howard Kunreuther have therefore already since 1968 strongly argued in favour of mandatory disaster insurance,<sup>225</sup> he repeated this plea, supported by behavioural studies, many times. Also after Katrina had again shown large underinsurance in specific neighbourhoods, Kunreuther concluded once more that the time has come for comprehensive disaster insurance.<sup>226</sup>

## 6 CONCLUDING REMARKS

### 6.1 Increasing evidence of heuristics and biases

In a publication by leading scholars in the area of behavioural law and economics it was held '*the experimental work described in this chapter documents man's difficulties in weighing information and judging uncertainty. Yet, this work is quite recent in origin and still very much in the exploratory stage. In addition its implication does not fit with the high level of confidence that we typically accord*

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222. For a detailed discussion of disaster insurance coverage in Belgium see Bruggeman, Faure and Haritz 2008.

223. See on this issue further Van den Bergh and Faure 2005, p. 25-54.

224. Slovic, Kunreuther and White 2000, p. 27 and Priest 1996, p. 219.

225. Kunreuther 1968, p. 133-163.

226. See Kunreuther 2006b, p. 208-227 and Kunreuther 2006a, p. 175-201.

our higher mental processes'.<sup>227</sup> Notwithstanding this caveat the same authors conclude '*the laboratory conclusions are congruent with many observations of non-optimal decision-making outside the laboratory – in business, governmental policy setting and adjustment to natural hazards. The belief that people can behave optimally when it is worthwhile for them to do so gains little support from these studies. The sources of judgemental bias appear to be cognitive, not motivational*'.<sup>228</sup>

Indeed, notwithstanding the modesty of some of the authors in this domain there is now a wide literature of which just a small summary was presented in section 3, showing that some of the traditional assumptions underlying economic models do not comply with how people behave in real world situations.

It may at first sight seem rather worrisome, at least to law and economics scholars, that many of us apparently do not completely act in the way predicted by the rational actor model. However, we should remember that in a way the heuristics and biases from which we suffer are nothing else than shortcuts to handle a lot of complex situations and thus make our life a lot easier. There is as such nothing wrong with e.g. the overoptimism from which many of us 'suffer' since it tends to correlate with happiness, contentment and the ability to engage in productive, creative work. Jolls indicates that there is also evidence that individuals with accurate as opposed to excessively favourable impressions of their own personal abilities tend to be clinically depressed.<sup>229</sup>

## **6.2 Implications for accident law**

Notwithstanding this positive note the relevant question today is of course what the implications are of the behavioural studies for the economics of accident law. Is there a 'Behavioural Accident Law and Economics'? Generally some authors like Jolls hasten to say that behavioural law and economics is not a critique of law and economics.<sup>230</sup> Arcuri holds that other theories may well enrich the analytical apparatus of law and economics and she suggests an 'eclectic' approach to law and economics which would entail a selection of what appears to be best in various doctrines, methods or styles.<sup>231</sup> Posner is, not surprisingly, more critical of such a fishing expedition for ideas and fears that enriching the rational choice model in this way '*runs a risk similar to that of behavioural economics, of explaining nothing by explaining everything*'.<sup>232</sup>

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227. Slovic, Kunreuther and White 2000, p. 22.

228. Slovic, Kunreuther and White 2000, p. 23.

229. Jolls 1998, p. 1661. See also Sunstein 1999, p. 136.

230. Jolls 1998, p. 1645.

231. Arcuri 2008, p. 59 and p. 79.

232. Posner 1998, p. 1567.

When addressing the potential consequences of the behavioural literature for the economic analysis of accident law one has again to distinguish between the descriptive, prescriptive and normative economic analysis of law.<sup>233</sup> Most relevant and least threatening is of course the relevance of behavioural studies for descriptive and prescriptive law and economics. If behavioural models were better able to explain what happens in real life situations this could certainly add to the explanatory power of the models. There is generally much more criticism on behavioural law and economics when it concerns its implications for normative law and economics. Some have even doubted whether there should be any change at all to the main rules of the common law on the basis of the findings in the behavioural literature.<sup>234</sup>

What are the main consequences of the behavioural literature for traditional economic models of tort and insurance? The implications of the behavioural literature are not as clear cut as it seems. As far as the economics of tort law is concerned at first blush the findings of the behavioural literature suggest important changes. Indeed, the assumptions underlying the economics of tort law assume that potential injurers as rational decision makers have the ability to process information concerning the probability of an accident and expected damage in relation to the costs of preventing the accident. Behavioural literature suggests that a lot can go wrong in the way potential injurers process this information, being subject to a variety of heuristics and biases. Not taking into account these cognitive limitations may jeopardize an efficacious enforcement of tort law.<sup>235</sup>

### **6.3 Behavioural literature multi-directional**

However, as has already been shown earlier in the literature, a problem with this strand of the behavioural literature is that the direction of the biases is not always very clear. Some biases point in the direction of injurers being overcautious (and thus being inefficiently overdeterred), whereas others point in the direction of injurers systematically neglecting specific risks and thus spending too little care (leading to underdeterrence). I showed above that, for example as far as the choice between strict liability and negligence is concerned some authors (more particularly Teitelbaum) seem to favour the negligence rule (on the basis of an analysis of certain biases) whereas others (Korobkin and Ulen) seem to favour the strict liability rule (more particularly to counter the hindsight bias with the judiciary). The result therefore is that the findings of the behavioural literature present a very nuanced and differentiated picture, whereby the liability rule would depend upon the type of biases and whether they occur with the parties in the accident setting (injurer or victim) or with the judge. Even if one

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233. Jolls, Sunstein and Thaler 1998, p. 1471-1476.

234. See Epstein 2006, p. 118.

235. So Van Boom 2006.

would already assume that the findings of the behavioural literature are that clear cut that they warrant an adaptation of traditional models, it is hence not that clear in which direction that adaptation goes.

Moreover some of the shortcomings of the negligence standard (errors in factual or efficient care on the side of potential injurers or judges) have been identified earlier by Shavell and have been incorporated into the economic analysis of tort law. Moreover, also mainstream economists had generally acknowledged the problem of ‘bounded rationality’, although mainly as an indicator of the parameters beyond which traditional analysis could not go.<sup>236</sup>

This does not lead to the conclusion that the behavioural findings are irrelevant for the economic analysis of tort law, but rather that first, it seems too early to replace traditional economic analysis of accidents of which the validity has to some extent also been proven in empirical research<sup>237</sup> by a behavioural approach since that still lacks a coherent theory and second, that given the multidirectional nature of the lessons provided by the behavioural studies, it may be difficult to apply these results in legal practice.

#### **6.4 Regulation?**

The behavioural literature only seems to present a strong case in favour of safety regulation where indeed individuals are not able to adequately assess information on risks and thus not able to set efficient care levels. Assuming that government agencies are less vulnerable to these cognitive limitations (although there is doubt that it is really the case) there may be reasons for increased safety regulation. However, again some may argue that this fits into the traditional criteria for safety regulation as advanced by Shavell, although others could argue that in this case regulation does not merely cure a lack of information, but bounded rationality as well and therefore amounts to a justified type of ‘regulatory paternalism’.<sup>238</sup> This paternalistic call on government interventions based on cognitive limitations is, however, highly debated. As a reaction to these calls for paternalism some have held that bounded rationality may increase the cost of government decision making relative to private decision making.<sup>239</sup>

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236. Ogus 2006, p. 233.

237. For an overview of the empirical findings, see Dewees, Duff and Trebilcock, *supra* note 25 and Van Velthoven, *supra* note 25. And see Sloan, 1998 and Kessler and Rubinfeld, 2007.

238. See Ogus 2005, p. 306.

239. Glaeser 2006.

## 6.5 Mandatory insurance?

A much stronger policy conclusion is – at first blush – formulated in the behavioural literature with respect to insurance. Not only do the experiments cast serious doubt on the validity of the expected utility hypothesis to explain the demand for insurance; the literature equally suggests that a type of compulsory coverage for natural hazards, whereby comprehensive insurance is offered would be welfare improving. Individuals would then be forced to purchase mandatory insurance against low probability high damage events (like natural hazards) in addition to higher probability low damage events (e.g. housing insurance). The behavioural literature can thus provide an important support for a tendency in many legal systems to replace the traditional *ex post* government relief for natural hazards by compulsory first party insurance policies. The latter have, moreover, the advantage that some type of risk differentiation can be applied whereby individuals may have incentives for risk reduction under differentiated premiums, incentives which would be absent in government relief programs.<sup>240</sup> However, although a mandatory insurance e.g. for natural hazards may be defended as ‘libertarian paternalism’<sup>241</sup> there are many potential dangers and disadvantages as well. One well-known issue, recently again stressed by Sandroni and Squintani<sup>242</sup> is that mandatory insurance could always lead to cross-subsidisation to the disadvantage of low risk individuals.

## 6.6 Modest, but important

Of course some lawyers could argue that my perception of the implications of the behavioural literature for the traditional economic analysis of accident law is simply too modest: it may not substantially change the economics of tort law and only leads to an argument in favour of compulsory disaster insurance. The suggestions formulated by Shavell to deal with uncertainties in the application of the negligence rule can equally be used to handle human errors of the type suggested by the behavioural literature. Moreover, the literature seems divided on the consequences of behavioural studies for the traditional test between negligence and strict liability. Perhaps, as was also suggested by Korobkin and Ulen, further empirical research is necessary before one could conclude to adaptation of traditional models. Moreover, in that case there is of course no need to abandon the economic analysis of tort law (based on the rational choice model) completely, but rather to refine the models on the basis of the findings from social psychology.

That conclusion would, however, do short to the importance of this literature. Even though there is no need yet to fundamentally change the economics of tort law, the knowledge about specific heuristics and biases can provide useful insights in the actual behaviour of potential parties in an

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240. See also Kaplow 1991, p. 167-175.

241. See Camerer et al. 2003 and Sunstein and Thaler 2008, p. 72.

242. Sandroni and Squintani, *supra* note 220.

accident setting. Moreover, it can, have important consequences for example for the way in which judges should behave in deciding negligence cases. For example the awareness of the existence of the hindsight bias should lead the judiciary to be far more careful in judging ‘sins of the past’ on the basis of norms of today. Already a good insight with the judiciary in their own exposure to heuristics and biases might increase the accuracy of their decision making. Also, the importance of the behavioural findings for the compensation of victims of catastrophes should not be underestimated given the importance of this topic today. Many countries are increasingly confronted with a variety of natural and technological disasters and governments have increasing difficulties meeting the calls on them to provide relief via the public budget. Hence the behavioural literature can provide an important support for tendencies in some legal systems (notably France) to solve compensation for victims of catastrophes through the type of comprehensive disaster insurance suggested by the behavioural literature rather than through *ex post* government relief.

Finally it should be noticed that some of the implications discussed in this contribution<sup>2</sup>.

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