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CALABRESI AND BEHAVIOURAL TORT LAW AND ECONOMICS

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Abstract

Written in honour of Guido Calabresi, this essay discusses critically several of the basic assumptions of the neo-classic model of tort law: one being that rational individuals will respond to applicable tort rules, striving to maximise their utility and to satisfy their own self-interest. Insights from behavioural law and economics are used to show that decision-making often takes place in a way that is different from that assumed by traditional economic models. The paper discusses the consequences of the behavioural literature for the economic analysis of law. It also demonstrates that Calabresi's approach to tort law is more differentiated and flexible than some of the more formal models. This approach has the advantage that it allows one to take into account all kinds of cognitive limitations, errors, and information problems, as did Calabresi himself in many of his publications on this issue in the 1960s and 1970s. The paper illustrates how Guido Calabresi was already aware of cognitive limits: for instance, concerning the ability of parties to assess how much they should spend 'for their own good'. This led him to arrive at balanced conclusions with regard to normative consequences of these limits. Many of the ideas of behavioural law and economics were hence already implicit in Calabresi's writings.

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1 Introduction

It is a great privilege to write an essay in honour of Guido Calabresi, one of the founding fathers of the economic analysis of tort law. Calabresi was undoubtedly the first scholar to apply insights from economic theories in his seminal publication 'Some Thoughts on Risk Distribution and the Law of Torts',[1] which was a milestone in the development of the theory that later became known as the new law and economics. In this and many other publications, the best known probably being *Costs of Accidents,*[2] Calabresi developed an alternative framework for dealing with accidents through tort and alternative instruments, more particularly the idea that wrongdoers should be exposed to the social costs of their actions. Subsequently, others expanded Calabresi's pioneering work by developing the economic analysis of tort law in more formal models as well.[3] An extensive literature has developed over a period of more than forty years, demonstrating how tort rules can contribute to Calabresi's central question: how to achieve an optimal reduction of accident costs.

A basic assumption within this neoclassic model of tort law is that injurers and victims (the participants in an accident setting) are rational individuals who will respond to applicable tort rules, striving to maximise their utility and to satisfy their own self-interest. Moreover, traditional models assume that well-informed judges will apply the tort rules in an effective manner.

However, starting with the original work of Kahneman and Tversky in 1982, a different strand of literature has emerged, showing that many individuals use a variety of cognitive heuristics and biases. The result is that decision-making may take place in a different way than is assumed by traditional economic models.[4] Meanwhile, there is also convincing empirical

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[1] G. Calabresi, 'Some Thoughts on Risk Distribution and the Law of Torts' (1961) 70 *Yale Law Journal* 499-553.

[2] G. Calabresi, *The Costs of Accidents. A Legal and Economic Analysis* (New Haven: Yale University Press 1970).

[3] See for example R. Posner, 'A Theory of Negligence' (1972) 1 *Journal of Legal Studies* 29; J.P. Brown, 'Toward an Economic Theory of Liability' (1973) 2 *Journal of Legal Studies* 323 and S. Shavell, 'Strict Liability versus Negligence' (1980) 9 *Journal of Legal Studies* 1.

[4] D. Kahneman, P. Slovic and A. Tversky, *Judgement under Uncertainty: Heuristics and Biases* (Cambridge: Cambridge University Press 1982).

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evidence that supports the existence of these heuristics and biases, both in experiments as well as in real-life situations.

Nevertheless, even though some attention is paid to this behavioural literature, the consequences for existing models of accident law are not yet entirely clear. It is of interest to examine this question more closely, since the behavioural literature may contain important implications for the traditional model of tort law. For instance, when there is indeed a systematic error by individuals as far as both the estimation of probabilities and expected damage is concerned, the questions arises as to the consequence of these misperceptions for the economic model of tort law and more particularly for the choice of an efficient liability rule. One needs to look at 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. In addition, the psychological literature indicates that in handling tort cases there can be misperceptions by judges as well, leading for instance to a wrong assumption about a high accident probability, simply based on recent incidents (availability heuristic). The result may be an inefficiently high level of care required from defendants.

I have chosen this topic to honour Guido Calabresi because essentially he suggested it to me himself. In March 2007, we both participated in an international workshop organised by the University of Messina Law School,[5] where I held a presentation on 'Behavioural Law and Economics: The Consequences for Economic Models of Liability and Insurance'. Calabresi was deeply interested in the significance of the behavioural literature, and held that in his early writings he had already indicated that the different psychological ability of parties to evaluate and deal with risks should be an important criterion in deciding to whom to allocate liability. He was thereby suggesting that the Calabresi framework of tort based on *The Costs of Accidents* and other papers would be better able to incorporate some of the findings of behavioural theories than would other more formal mathematical models that were developed subsequently. This is precisely the question I would like to address. On the one hand, it will enable me to sketch the importance of certain behavioural literature for the economics of accident law; on the other hand, it will allow me to summarise Calabresi's rich thoughts in this regard and to relate them to this new literature. Given the limited scope of this paper, however, I will deal only with part of the behavioural literature and the consequences for tort law. Moreover, I will focus solely on liability rules and will briefly discuss safety regulation.

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[5] International Workshop, *Searching for New Models in the Economic Analysis of Law* (Messina-Taormina, March 2007).

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Following this introduction, the paper is structured as follows: (1) the assumptions of the traditional models of liability are briefly summarised; (2) several of the most important findings of behavioural law and economics (insofar as they are relevant for liability rules) are addressed; (3) the consequences of that literature for the economic model of torts are discussed in section 4, whereas section 5 relates this literature to the work of Guido Calabresi. The paper concludes in section 6.

2 Assumptions of the traditional economic model of tort Law

The classic economic analysis of law starts from the assumption that by exposing the costs of their actions via liability rules, parties will be appropriately motivated to take optimal care to prevent accidents. The result would be a reduction in the total social costs of accidents, since it is at the level of care that the costs of prevention and expected damage are minimised.[6] The desired incentive effects assume that all parties have information about the applicable tort law regime, about the probability that their behaviour may create a certain accident risk, about the magnitude of the damage that may occur in the case of an accident, and about the optimal preventive measures that could efficiently reduce the accident risk. Further, traditional models of tort law assume that the parties involved not only have access to this information but are also able to process it: in other words, to make objective and correct assessments of each of these elements. It is on this basis that parties will adapt their behaviour and thus contribute in an efficient manner to reducing accident risks.

Nevertheless, the economic literature also recognises that incentives to reduce the speed of a vehicle do not come only from exposure to tort law: the injurer may fear that in the event of an accident he/she could be hurt as well, or he/she may simply be uncomfortable with the notion of causing bodily harm to another person. In the literature, these are considered additional but not sufficient motives. In the absence of law – and in situations where private bargaining is not possible – economics assumes that the injurer will not reduce his/her driving speed optimally and so an internalisation of the externality does not take place.

Of course, this traditional model of tort law has been widely criticised in the legal literature. From the beginning of the economic analysis of law, traditional tort lawyers have launched several attacks on the law and

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[6] This optimal care is hence to be found where marginal prevention costs equal the marginal benefits in a further reduction of the expected damage. See generally Shavell, above n. 3, as well as S. Shavell, *Economic Analysis of Accident Law* (Cambridge: Harvard University Press 1987), and S. Shavell, *Foundations of Economic Analysis of Law* (Cambridge: Harvard University Press 2004) at 175-288.

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economics movements. Some of these addressed in particular the assumption that potential injurers in an accident setting would alter their behaviour on the basis of exposure to liability. In this traditional legal perspective, tort law would have no deterrent effect at all, but would have as its main goal the compensation of accident victims. Critics also claimed that there was no empirical evidence whatsoever that people would modify their behaviour. Law and economics scholars were forced to admit that the latter point remained a significant weakness of the economics of tort law; notwithstanding some modest successes in specific areas, it remained generally difficult to find strong empirical backing for the notion of behavioural change.[7]

3 Behavioural law and economics: a few findings

3.1 General

Since the early writings of Kahneman and Tversky, a comprehensive behavioural literature has emerged that challenges the assumptions of neo-classic economics. To some extent, the limits of the traditional assumptions (rationality along with the availability of information and the capacity to process it) were well known to law and economics scholars. For example, concepts such as bounded rationality, pointing at the limits of individuals to make rational choices, were well known and were earlier documented in the law and economics literature. However, psychological experiments, both in the laboratory and in real life, have also increasingly challenged a number of the assumptions underlying the economic analysis of accident law, central in this paper. However, since it is neither possible nor meaningful to review the entire related body of literature,[8] within the scope of this contribution, the focus will remain on the consequences of this literature for accident law.

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[7] Not only is this difficult to measure because injurers are often insured (in which case one can only measure the extent to which insurers can control moral hazard) but also because many activities are subjected to extensive safety regulation (whereby it is difficult to distinguish the preventive effects of regulation from the deterrent effect of tort law). Moreover, the empirical evidence available seems to indicate that the deterrent effect depends upon the domain concerned and the actors involved. For a general overview see D. Dewees, D. Duff and M. Trebilcock, *Exploring the Domain of Accident Law. Taking the Facts Seriously* (Oxford: Oxford University Press 1996).

[8] For recent summaries see for example the contributions to P. Slovic (ed.), *The Perception of Risk* (London: Earthscan Publications 2000) and to C.R. Sunstein (ed.), *Behavioural Law and Economics* (Cambridge: Cambridge University Press 2000), as well as a useful summary provided by A.I. Ogus, 'Regulatory Paternalism:

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An overview of all these objections to the rational actor model and the consequences for law and economics is provided by Jolls, Sunstein, and Thaler.[9] I will now provide a brief summary of this literature insofar as it is relevant.

3.2 Bounds to human behaviour

In contrast to the standard economic theory, which assumes that people will maximise their utility, behavioural economics argues that people's behaviour often violates such an assumption. Behavioural economics tries to explore actual human behaviour, by stressing the importance of 'bounds'.[10] The notion 'bounded rationality' is 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 maximisation prediction.[11] In addition to bounded rationality, Jolls, Sunstein, and Thaler also identify bounded willpower and bounded self-interest.

According to Jolls *et al*., bounded willpower is often evident when people make decisions that they know to be in conflict with their long-term interests. However, the authors state that bounded self-interest is at play when people are willing to be treated fairly, and so will treat others fairly as long as it is reciprocal. As a result, in some situations, people are thoughtful towards others, even strangers, or at least behave as if they are.[12] In the literature, two main reasons are indicated for a decision-making that does not maximise expected utility: namely, complexity and ambiguity. In certain complex situations, the limits of human cognitive abilities make it impossible to follow a utility maximising strategy. This is the process that Simon refers to as 'satisficing': namely, people do not choose the option that

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When is it Justified?' in K.J. Hopt and others (eds.), *Corporate Governance in Context. Corporations, States and Markets in Europe, Japan and the US* (Oxford: Oxford University Press 2005) 303-320 and A.I. Ogus, *Costs and Cautionary Tales. Economic Insights for the Law* (Oxford: Hart Publishing 2006) 219-252 as well as M.R.A.G. Wibisana, *Law and Economic Analysis of the Precautionary Principle* (Maastricht: Universitaire Pers Maastricht 2008).

[9] Chr. Jolls, C.R. Sunstein and R. Thaler, 'A Behavioural Approach to Law and Economics' (1998) 50 *Stanford L aw Review* 1471.

[10] See further Wibisana, above n. 8 at 229-230.

[11] See R.B. Korobkin and T.S. Ulen, 'Law and Behavioural Science: Removing the Rationality Assumption from Law and Economics' (2000) 88 *California Law Review* 1075.

[12] Jolls, Sunstein and Thaler, above n. 9 at 1479.

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maximises their utility but rather the one that satisfies their aspiration.[13] In addition to complexity, ambiguity can also lead to suboptimal decision-making. This ambiguity problem plays a particular role when decisions concern the estimation of various likelihoods: for example, that one's house will be damaged as the result of an earthquake.[14]

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 an 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 hugely overestimated as a result of strong fears of a negative outcome or of hopes for a positive one. People tend therefore to focus more on absolute outcomes rather than on the probability that an adverse event may occur.[15]

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. These concerns still fail to recede even after people are provided with information that shows the probabilities of such hazards occurring are very small.

3.4 Availability heuristic

People in general do not use statistics to judge the likelihood of a future event. Instead, they evaluate it on the basis of how often an accident has occurred in the past. The more readily the memory of an accident comes to mind, the more likely it will be considered to occur. This phenomenon is referred to as the 'availability heuristic'. It is a mental shortcut on the basis of which individuals assume that events are memorable precisely because they are common or have recently occurred. However, these estimates based on 'availability' can be biased and largely unrelated to the objective statistical probability of certain events occurring.[16]

The availability heuristic is not only affected by the temporal distance of past events but also by the imaginability of future occurrences.

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[13] H.A. Simon, 'Rational Decision Making in Business Organisations' (1979) 69 *The American Economic Review* 502-503; see also Wibisana, above n. 8 at 230.
[14] Korobkin and Ulen, above n. 11 at 1083.
[15] Wibisana, above n. 8 at 241-242.
[16] See Korobkin and Ulen, above n. 11 at 1087-1090 and T. Kuran and C.R. Sunstein, 'Availability Cascades and Risk Regulation' (1999) 51 *Stanford Law Review* 683.

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Moreover, several studies have shown that risks of dramatic or sensational causes of death tend to be greatly overestimated.[17] Slovic and others argue that the availability heuristic could explain why judged frequencies of highly publicised causes of death (e.g. accidents, homicides, fires, tornadoes, and cancer) are relatively overestimated and underpublicised causes (e.g. diabetes, stroke, asthma, and tuberculosis) are underestimated.[18] Thus, if the media has given prominence coverage to a particular event, individuals may attribute a greater probability to the event recurring than is objectively justified.[19]

One factor contributing to the formation of the availability heuristic is the social amplification risk. Kasperson *et al.* write: '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'.[20] Thus, the experience of risk is not only related to physical harm but is also a product of a social process by which groups or individuals learn to create the interpretations of risk.[21] 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 risk event can first affect the directly concerned victims and then spread outward to other levels and potentially even future generations.[22]

3.5 Status quo bias

Related to the 'endowment effect', the status quo bias has to do with the fact that individuals often place a higher monetary value on items they own than on those they do not yet possess. Many experiments have provided evidence of this phenomenon, which is also described as 'loss aversion'.[23] In addition, experiments show that, all things being equal, individuals prefer a status quo outcome. This for example explains continued risky behaviour, such as

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[17] P. Slovic, 'Informing and Educating the Public about Risk' in P. Slovic, above n. 8 at 184.

[18] P. Slovic and others, 'Risk as Analysis and Risk as Feelings: Some Thoughts about Affect, Reason, Risk, and Rationality', paper presented at the National Cancer Institute Workshop on Conceptualizing and Measuring Risk Perceptions (Washington D.C. 2003) at 4.

[19] See Ogus, above n. 8 at 236 and Wibisana, above n. 8 at 224.

[20] R.E. Kasperson and others, 'The Social Amplification of Risk: A Conceptual Framework' in P. Slovic, above n. 8 at 237.

[21] R.E. Kasperson and others, 'The Social Amplification of Risk: Assessing Fifteen Years of Research and Theory' in N. Pidgeon, R.E. Kasperson and P. Slovic (eds.), *The Social Amplification of Risk* (Cambridge: Cambridge University Press 2003) at 15.

[22] *Id*.

[23] For a summary of the literature see Korobkin and Ulen, above n. 11 at 1107-1112.

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smoking, in which individuals have engaged for a number of years apparently without significant adverse effects.[24] 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.[25]

3.6 Selective optimism and overconfidence

Numerous experiments also provide evidence of people's selective optimism: they tend to generalise information based on highly selective examples that best suit them.[26] Jolls reports that nearly two hundred studies have shown that individuals believe good things are more likely than average to happen to them, while bad things are more likely than average to happen to others.[27] Countless studies have provided evidence of this selective optimism.[28] It seems to be stronger when the individual has a degree of control over the event, as in the case of a car driver: one study showed that 90% of drivers thought they drove more safely than the average driver.[29] This selective optimism has also been shown to be as evident with experts as with laypersons. For example, experiments have revealed a strong self-serving bias on the part of lawyers in their assessment of the chances of winning a lawsuit. As a result, lawyers systematically anticipate their trial prospects as being better than they objectively are.[30] Slovic, Fischoff, and

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[24] Ogus, above n. 8 at 235.

[25] 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; R. Korobkin, 'The Status Quo Bias and Contract Default Rules' (1998) 83 *Cornell Law Review* 608 and R. Korobkin, 'Inertia and Preference in Contract Negotiation: The Psychological Power of Default Rules and Form Terms' (1998) 51 *Vanderbilt Law Review* 1583.

[26] Ogus, above n. 8 at 237.

[27] Chr. Jolls, 'Behavioural Economics Analysis of Redistributive Legal Rules' (1998) 51 *Vanderbilt Law Review* 1653 at 1659.

[28] A good 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 (L.A. Baker and R.E. Emery, 'When Every Relationship is Above Average: Perceptions and Expectations of Divorce at the Time of Marriage' (1993) 17 *Law and Human Behaviour* 439. For a discussion of this and other studies see Korobkin and Ulen above n. 11 at 1091-1093).

[29] See the study by Svenson quoted by Ogus, above n. 8 at 237-238.

[30] Korobkin and Ulen above n. 11 at 1093-1094. This is one explanation for the fact that many more cases than one would be likely to go to trial instead of being settled.

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Liechtenstein also discuss many examples of overconfidence on the part of experts. They refer for instance to studies showing that a reactor safety study 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 they had solved many serious problems during the construction of the Teton dam, which eventually collapsed in 1976.[31] In another paper, the same authors summarise several other studies that identify a number of common ways in which experts may overlook pathways to disaster.[32]

Numerous other studies show 'calibration errors', or mistakes in estimating probabilities. These occur especially when experts need 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 therefore seems to be low.[33]

A particular type of judgement error in probabilistic assessment (also of experts) is the '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 has actually occurred. The hindsight bias plays a role with physicians as well as with judges, and more particularly in tort cases. 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 had additional precautionary measures been taken.[34]

3.7 Critics

This brief introduction to a few cognitive problems that have been identified in the behavioural literature shows that individuals may behave differently from what is assumed on the basis of the utility maximisation hypothesis. However, one problem is that the findings do not always point clearly in one direction with regard to the deviation from the objective standard of cost-benefit analysis. 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

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[31] P. Slovic, B. Fischhoff and S. Lichtenstein, 'Rating the Risks', in P. Slovic, above n. 8 at 109-110.

[32] P. Slovic, B. Fischhoff and S. Lichtenstein, 'Facts versus Fears: Understanding Perceived Risk', in D. Kahneman, P. Slovic and A. Tversky (eds.), *Judgement under Uncertainty: Heuristics and Biases* (Cambridge: Cambridge University Press 2001) 477.

[33] For a summary of these studies see Wibisana, above n. 8 at 264-268.

[34] See the study by Kamin and Rachlinsky discussed by Korobkin and Ulen, above n. 11 at 1095-1096.

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people's bounded rationality and limited capacity to process information, some risks may be systematically underestimated (probability of being the victim of a hurricane or earthquake), whereas, for example, other research shows that because of high publicity concerning the same risks, the availability heuristic could point to an overestimation of the same risks due to 'social amplification'. In addition, probability neglect and the availability heuristic may lead to overpessimism and thus overprecaution, whereas selective optimism and overconfidence could lead to overoptimism and thus underprecaution. In other words, it is not always clear whether the behavioural literature indicates a systematic over- or underestimation of risks.

A second problem is that many studies in social psychology reveal that individuals may act differently than is assumed in traditional economic models, and no alternative integrated theory is available to replace traditional law and economics. Korobkin and Ulen therefore rightly hold that since 'law and behavioural science' still lack a single, coherent theory of behaviour, there is no reason to replace the rational choice theory with an alternative paradigm.[35] This literature therefore does not deny the findings of behavioural economics but is critical of the implication that regulation would be necessary to correct for these human errors. This raises the question of what the implications of the behavioural literature discussed in this section could be for the traditional economic analysis of tort law presented in section 2.

4 Implications for tort law

4.1 General

The overview of behavioural law and economics literature presented in section 3 showed that individuals in an accident setting as well as judges having to examine *ex post* an accident situation may potentially be exposed to a variety of heuristics and biases that may affect the assumptions underlying the traditional economic model of tort law. One concern is how these findings affect a crucial assumption, being that injurers will respond with efficient care to effective standards set by judges (under negligence) or will find by themselves the efficient level of care on the basis of weighing up the costs of prevention and the benefits of reducing the accident risk.[36] The

[35] Korobkin and Ulen, above n. 11 at 1057.

[36] In this paper we disregard situations where victims can also affect the accident risk (bilateral accident) and thus focus merely on unilateral accidents. It may be

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question therefore is how may human errors by potential injurers and judges affect the economics of tort law. One might ask what can go wrong, in the sense of what the deviations are from the standard model and what the implications may be.

Although it seems worthwhile to examine whether and how the traditional model changes under the influence of the behavioural findings, a few warnings should be formulated. First, one might ask whether behavioural studies influence the positive economic analysis of tort law. Hence, one can first examine whether these studies allow one better to explain or to predict the behaviour of potential parties in an accident setting. This still has to be distinguished from potential normative implications. Second, Ogus rightly pointed out that one should be careful with paternalistic interventions based on cognitive biases, since, biases notwithstanding, there may still be welfare maximisation and hence no need for regulatory intervention. Moreover, if such an intervention takes place, the question still arises as to whether the benefits outweigh the costs.[37] Third, Korobkin and Ulen rightly indicated that in some cases more empirical research is needed for policy-makers to be able to make effective use of the insights provided by behavioural literature,[38] and that in other cases the legal implications of a particular behavioural phenomenon may not be distinct.[39] 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. We can refer here to a large body of literature in which these consequences have also been examined.[40]

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clear, however, that victims may also suffer from similar cognitive limitations. Hence, the results would not crucially change in a bilateral setting.

[37] Ogus, above n. 8, 250-252.

[38] For instance, concerning the overconfidence bias (Korobkin and Ulen, above n. 11 at 1092).

[39] More particularly of the hindsight bias (Korobkin and Ulen, above n. 11 at 1097).

[40] Again, given the limited space, I will only address a few consequences. Readers interested in further details can be referred for example to J.S. Johnston, 'Bayesian Fact-Finding and Efficiency: Towards an Economic Theory of Liability under Uncertainty' (1987) 61 *Southern California Law Review* 137; Korobkin and Ulen above n. 11; H.B. Schäfer and F. Müller-Lange, 'Strict Liability versus Negligence' in M. Faure (ed.), *Encyclopedia of Tort Law and Economics* (Cheltenham: Edward Elgar forthcoming) no. 23 and J.S. Teitelbaum, 'A Unilateral Accident Model under Ambiguity' (2007) 37 *Journal of Legal Studies* 431. See also E. Posner, 'Probability Errors: Some Positive and Normative Implications for Tort and Contract Law' (2004) 11 *Supreme Court Economic Review* 125.

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4.2 Efficient care on the part of injurers

Many of the cognitive limitations described in section 3 can influence the care taken by injurers. It is remarkable that some of these limitations suggest that injurers take greater care (overprecaution), whereas others indicate injurers take less care (underdeterrence). Starting with the latter, some have pointed to bounded rationality leading to systematic misperception of individuals with regard to the probability of accidents. One reason is the well-known affect heuristic: if an individual considers a certain activity to be useful and pleasant, the likelihood that he/she will realise that the consequences of the activity are damaging will be lower than if he/she dislikes or disapproves of the activity.[41] The presentation of the facts and social acceptance may also influence the estimation that the activity will lead to damage.[42] Jolls, Sunstein, and Thaler also point to overoptimism as a source of miscalculations of the probability of a negative outcome of certain events. Such overoptimism will lead to an underdeterrence of potential tortfeasors.[43] Especially with respect to automobile accidents, there is overwhelming evidence of the optimism bias whereby drivers underestimate their absolute as well as their relative (to other individuals) probability of being involved in a car crash.[44]

Other or even identical cognitive limitations may lead to injurers taking greater care than would be efficient (overdeterrence). A typical problem leading to potential overdeterrence is the probability neglect: overweighing small probabilities because of a fear of negative outcomes.[45] In focusing more on the outcome than on the probability of such an outcome,

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[41] See for example with respect to smoking P. Slovic (ed.), *Smoking – Risk, Perception and Policy* (CA, Sage: Thousand Oaks 2001).

[42] A summary of this literature is also provided in the inauguration address of W.H. Van Boom, *Structurele fouten in het aansprakelijkheidsrecht* (inauguration address University of Tilburg, 14 March 2003) (The Hague: Boom Juridische Uitgevers 2003) at 9-11.

[43] Jolls, Sunstein and Thaler, above n. 9 at 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).

[44] See also an empirical study showing evidence of this self-favouring bias with drivers by A. Guppy, 'Subjective Probability of Accident and Apprehension in Relation to Self-other Bias, Age, and Reported Behaviour' (1993) 25 *Accident Analysis & Prevention* 375.

[45] Wibisana, above n. 8 at 241-242.

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potential injurers may take excessive care with regard to low-probability, high-damage events.

The same danger exists with the 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.[46] Excessive care can thus be the result.

Moreover, bounded willpower can also explain why in some situations people are – or appear to be – taking precautions with regard to others, even strangers. The importance of this bounded willpower for accident law is clear, and may explain why potential tortfeasors may simply wish to avoid inflicting harm.

Thus far, a problem with the consequences of this literature for injurer behaviour is that the results are multidirectional: problems like overoptimism may lead to underdeterrence, whereas others such as the availability heuristic may have precisely the opposite result.

4.3 Errors of the judiciary

Given that injurer errors can go in both directions, the question is whether similar problems emerge 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 laypersons. For one thing, it is not clear whether judges are really 'experts' in setting a standard of care in a negligence case. They deal with a large number of different cases, and compared especially to corporate defendants it is easy to argue that judges are more likely to misinterpret the efficient care standard than are defendants. There is also convincing evidence that judges are subject to cognitive limitations that influence their judgement. Biases that played a role in the assessment of probabilities and risks for laypersons can play an equal role when similar assessments are undertaken by judges. Hence, the judges may also overweigh small probabilities and fix too high a standard of care for activities that, if they result in an accident, cause considerable damage. The availability heuristic can also influence the judiciary: highly publicised causes of death (through particular accidents) could thus lead to higher estimations concerning the danger of those activities. As a consequence, the due care level set through case-law could be higher than the efficient one and overdeterrence could result.

As discussed above, a well-documented problem, which may play a role in the case of decision-making by the judiciary, is hindsight bias:

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[46] 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, above n. 8 at 308).

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namely, the tendency of decision-makers to attach an excessively high probability to an event simply because it eventually occurred.[47] It is related to the fact that judges will *ex post* always base 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 the injurer did not take sufficient care, while the objective question of whether from an *ex ante* perspective the defendant took efficient care is no longer asked: '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 an *ex ante* basis. Thus, plaintiffs win cases they deserve to lose'.[48]

4.4 Strict liability vs. negligence

Having established that according to the literature human errors may affect the judgement of potential injurers and judges in a tort case, the next question is what might the consequences be both for the economic model of tort law and, more particularly, for the optimal liability rule. To answer this, one could examine whether cognitive problems are more serious with potential injurers than with judges. If that were 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. However, a number of problems with this reasoning exist: first, the behavioural evidence showed that there are problems with both potential injurers and with judges, which can lead to misperceptions and thus to inefficient care standards. There is no *a priori* reason to argue that judges would do better than injurers. Second, even if one were to move to a negligence rule judging that the judiciary is better able to set a due care standard, problems can still arise under negligence, since potential injurers may still have various misperceptions concerning either the actual care they should take or concerning the due care required by the judiciary; these can lead to inefficiencies. Third, it may 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 disregarding that an overwhelming body

[47] Jolls, Sunstein and Thaler, above n. 9 at 15-23 ff; W.H. Van Boom, above n. 42 at 14-15; Korobkin and Ulen, above n. 11, at 1095-1100 and W.K. Viscusi and R.J. Zeckhauser, 'The Denominator Blindness Effect: Accident Frequencies and the Misjudgement of Recklessness' (2004) 6 *American Law and Economics Review* 72.
[48] Jolls, Sunstein and Thaler, above n. 9 at 1524.

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of economic literature has pointed to other advantages of strict liability with respect to internalisation of risks.

Difficulties of course arise in the determination of negligence as well. Consequences can be varied and depend upon whether only the judiciary errs or the potential injurer as well. However, these negligence-standard imperfections are well known in the traditional doctrine and have been described in detail by Shavell. In that respect, the finding of Jason Scott Johnston is also compelling: namely, behavioural problems do not have a clear direction and both under- or overdeterrence relative to the correct application of the cost-benefit standard is possible.[49]

A recent paper by Teitelbaum analyses the unilateral accident model under ambiguity, and refers explicitly to the behavioural literature.[50] He argues that neither strict liability nor negligence is generally efficient in the presence of ambiguity, and that the injurer's level of care decreases with ambiguity when he/she is optimistic and increases when he/she is pessimistic. Teitelbaum argues that in the case of optimism, negligence leads to better results than does strict liability in some cases, and that in the case of pessimism, negligence leads to better results than does strict liability in all cases. On the basis of this, it could therefore be concluded that in the case of ambiguity the negligence role should be preferred. However, 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 differ when biases on the side of the judiciary are also taken into account, such as the above-mentioned hindsight bias. Korobkin and Ulen argue that the hindsight bias casts doubt on the ability of juries and judges to reach a proper determination of negligence, 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, the authors argue that the hindsight bias points towards favouring strict liability.[51]

Looking briefly at how the results of behavioural studies have been incorporated into the literature on tort law and economics, the least one can say is that it has certainly not become easier to identify an efficient liability rule. Johnston indicates that – depending upon the type of bias (leading to optimism or pessimism) – there may be both under- or overdeterrence and hence no clear direction can be provided; Teitelbaum likewise argues that

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[49] Johnston, above n. 40 at 154-164. Johnston does not deal explicitly 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.
[50] J.S. Teitelbaum, above n. 40 at 432.
[51] Korobkin and Ulen, above n. 11 at 1098-1099.

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ambiguity leads to the result that neither strict liability nor negligence is generally efficient, but shows, focusing on precautions taken by injurers, a slight preference for the negligence rule. When, however, one takes the hindsight bias into account as well, as Korobkin and Ulen do, a strict liability rule seems to be preferred. If one were therefore to consider 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 regard to either the injurer or the judiciary. As Korobkin and Ulen indicated, one can justifiably wonder whether sufficient empirical evidence is already available to provide clear guidance with regard to the choice of an efficient liability rule. Current available studies point towards a highly differentiated system, in which the administrative costs may substantially outweigh the benefits in differentiation.[52]

4.5 A case for regulation?

A general finding in the behavioural literature is that potential tortfeasors may respond less appropriately to incentives given by the tort system than is expected by the economic model. In addition, judges may not always be able to set the standards correctly. These errors raise the question of whether – within Shavell's criteria for safety regulation – they constitute arguments for a stronger reliance on regulation than on liability rules.

In such a 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 had they responded rationally to full information.[53] Ogus provides the following criteria to evaluate paternalistic regulation:

- Do plausible traditional justifications (externalities, information failure, inadequate competition) for the measure operate independently of paternalism?
- If not, and taking into account the insights of social psychology, is the regulated activity one in 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 a lower cost by an alternative instrument?[54]

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[52] Confirming Ogus's concern that an intervention based on behavioural studies should only take place when the benefits exceed the costs (Ogus, above n. 8 at 250-252).
[53] *Id.*
[54] Ogus, above n. 8 at 312.

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Many scholars argue that certain behavioural biases can be considered arguments in favour of regulation. For example, Korobkin and Ulen contend that the judiciary's hindsight problem can be an argument in favour of broader *ex ante* regulation of safety by administrative agencies.[55] The authors also defend the mandatory use of seat belts or the installation of airbags in cars as a rational decision by the government to remove safety decisions from individual actors, given cognitive biases.[56] Camerer *et al*. defend regulation as 'asymmetric paternalism', since, on the one hand, a device that would disable a car in the event the driver had too high an alcohol level would regulate the behaviour of those whose driving and decision-making is assumed to be undermined; on the other hand, it would be completely unobtrusive for those who do not need it: namely, the drivers who are not drunk.[57]

However, many may question whether standards set by the government are necessarily a superior response to the tort system, even under bounded rationality. Public and private errors are equally realistic problems,[58] and public choice scholars have demonstrated unequivocally that public regulation always runs the risk of inefficiencies caused by private interests. 'Paternalism has been abused by governments responding to special interests or seeking to aggrandize their own authority'.[59] To counter inter alia this risk, economists have proposed the use of cost-benefit analysis for risk regulation, precisely since regulation also runs a serious risk of simply providing a response to irrational social fears.[60]

In summary, safety regulation can be advanced if there are reasons to believe that the regulator would be better able to make an adequate risk assessment and hence to set standards closer to the efficient care levels than would private parties (under strict liability) or the judiciary (under negligence). Cost-benefit analysis can be used to guarantee that regulators will not be subject to the same cognitive problems as individuals.[61]

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[55] Korobkin and Ulen, above n. 11 at 1099.
[56] *Id.* at 1107.
[57] C. Camerer and others, 'Regulation for Conservatives: Behavioural Economics and the Case for "Asymmetric Paternalism"' (2003) 151 *University of Pennsylvania Law Review* 1211.
[58] E.L. Glaeser, 'Paternalism and Psychology' (2006) 73 *University of Chicago Law Review* 133 at 134.
[59] *Id.* at 135.
[60] See the eight propositions suggested as remedies by C.R. Sunstein, 'Cognition and Cost-Benefit Analysis' (2000) 29 *Journal of Legal Studies* 1065.
[61] See Ogus, above n. 8 at 250-252 and Sunstein, above n. 60 at 1065-1073.

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5 Calabresi on accidents

The starting point for this contribution to honour Guido Calabresi was his own important work on accident law. We showed in section 3 that the fundamental assumptions of the economic models of tort law that have emerged following Calabresi's work have been criticised on the basis of studies in social psychology. In section 4, we indicated that this may to some extent lead to an adaptation of the traditional economic models with respect to tort law, for example as far as the choice between strict liability and negligence is concerned, even though the consequences in the behavioural literature are not entirely clear. I will now examine to what extent Calabresi's views on accident law can be reconciled with certain findings in the behavioural literature. To a degree, this is unavoidably an artificial exercise, since much of the literature discussed in section 3 only emerged years after Calabresi wrote his famous works in the 1960s and 1970s. However, as I will demonstrate below, it is possible to examine whether any general issues resulting from the behavioural literature can be traced back to Calabresi's work, such as the importance of information and the influence of error with regard to the parties and the judiciary.

I will first briefly summarise the main premises in Calabresi's *Costs of Accidents* (5.1). Next I will demonstrate, mostly on the basis of other papers (some of which have been incorporated into *Costs*), to what extent Calabresi can be considered a behaviouralist 'avant la lettre' (5.2).

5.1 The costs of accidents

In his groundbreaking work, the *Costs of Accidents*, Calabresi clearly chooses a normative approach towards the accident problem: first, it must be just or fair; second, it must reduce the costs of accidents.[62] This second goal stresses the preventive function of liability rules and is formulated as the reduction of accident costs in order to increase social welfare.

Calabresi divided accident costs into three categories: primary, secondary, and tertiary. The first relates to the number and severity of accidents. The second concentrates on reducing the societal costs resulting from accidents.[63] The third focuses on reducing the costs of administration

[62] Calabresi, above n. 2 at 24.

[63] To some extent, this can be equalised to the compensation of victims, although Calabresi rightly mentions that it is somewhat misleading (*Id*. at 27).

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related to treatment of accidents,[64] and is thus aimed at lowering primary and secondary costs. For liability law to be efficient, total accident costs (primary, secondary, and tertiary) should be minimised.

Calabresi indicates that primary cost reduction can be achieved through either general or specific deterrence. Within a general deterrence approach, the government can rely on the market to deter potential wrongdoers. When (as a result of liability) an enterprise is held to compensate the costs its activity generates, dangerous activities will become more expensive and the enterprise will, as a result of market forces, have an incentive to increase safety.

General deterrence can therefore reduce primary accident costs in two ways: if an individual has to pay all costs (including accident related) in the event that a dangerous activity is performed, this will in principle lead to a behavioural change whereby a safer activity will be chosen; the second and perhaps more important way is that general deterrence encourages us to make activities safer.[65] Calabresi notes that this assumes the person creating the risk also has information on the costs and benefits of preventive measures. General deterrence, Calabresi argues, thus creates a market for developing cost-saving substitutes and leads to a minimisation of accident costs, thanks to market forces.[66]

Calabresi argues that primary accident costs can also be reduced through specific deterrence. At its extreme, specific deterrence suggests that all accident costs-related decisions should be made collectively, through a political process. In that case, it is society that decides collectively the extent to which each activity should be allowed and the way in which it should be carried out.[67] Calabresi advances many arguments as to why in some cases specific deterrence may be preferred to general deterrence. One could be that individuals do not know what is best for themselves; another might be that accidents could involve non-monetisable costs or that moral judgements are involved. Moreover, general deterrence through the market cannot effectively reach certain categories of activities. For all of these reasons relating to the limits of the market mechanism (through general deterrence), specific deterrence may intervene with prohibitions and restrictions, limitations on specific activities, and penalties in the case of non-compliance.[68]

Calabresi indicates that in the general deterrence point of view the question is which part of accident costs have to be allocated to an activity that caused the harm; in a specific deterrence approach, the question is which

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[64] *Id*. at 28.
[65] *Id*. at 73.
[66] *Id*. at 74-75.
[67] *Id*. at 95.
[68] *Id*. at 95-129.

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regulation is indicated to deter a specific dangerous activity. In practice, however, there is a combination of specific deterrence and a market control of accidents through general deterrence.[69]

The crucial question of how accident costs have finally to be allocated is analysed on the basis of the concept of the 'cheapest cost avoider'. Within the market mechanism (general deterrence), an initial 'rough guess' has to be made: for instance, ruling out as potential loss bearers those activities that could reduce the costs being allocated only at what would obviously be too great an expense.[70] Next, the second guideline is to seek the maximum degree of internalisation of costs: for example, due to insufficient sub-categorisation, as a result of transfer or inadequate knowledge. This means that in general Calabresi holds that an externalisation of costs from pedestrians or drivers to taxpayers in general should be avoided unless it can take place at relatively lower administrative costs.[71]

Calabresi provides a few further guidelines in the search for the 'cheapest cost avoider'. One is obviously that if finding or allocating cost to the cheapest cost avoider is more expensive administratively, the cost saving achieved by the seemingly better allocation may not be worth the administrative costs borne to find it, since total costs have to be minimised.[72] Another guideline is that costs should also be allocated so that the likelihood of errors in allocation will be corrected in the market. This criterion assumes that despite transaction costs a tendency exists for the market to find the cheapest cost avoider and to influence him/her by bribes. Hence, if there is uncertainty about who is the cheapest cost avoider, accident costs should be charged to the person who can enter into transactions more cheaply: what Calabresi refers to as 'the best briber'.[73]

Moreover, Calabresi indicates that the market mechanism under general deterrence has the advantage that the decision can be made empirically by trial and error. The individuals who decide most accurately will benefit most in the market. The great advantage of the general deterrence of the market is, in Calabresi's words, that it is 'a highly effective trial and error device'.[74] Here Calabresi indicates a substantial disadvantage of specific deterrence under the collective decision-making process. The trial and error method is not possible in the same way, as the market can do so under general deterrence and, moreover, errors in the case of specific

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[69] *Id*. at 113.
[70] *Id*. at 140.
[71] *Id*. at 144-150.
[72] *Id*. at 143-144.
[73] *Id*. at 150-152.
[74] *Id*. at 186-188.

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deterrence (for example in creating inaccurate subcategories) can result in a remaining wrong allocation that cannot be corrected through the market. Once a wrong decision has been made under specific deterrence (regulation), a new decision will be possible to correct the earlier one.[75]

Costs of Accidents is devoted extensively to the optimal way in which, using the notion of the cheapest cost avoider, society can minimise the total sum of accident costs, either through general or specific deterrence.

5.2 Calabresi as behaviouralist 'avant la lettre'?

It may appear odd to look for traces of a behavioural approach in Calabresi's work, given that he wrote most of his well-known articles and the *Costs of Accidents* long before behavioural law and economics had developed. Nevertheless, it seems possible to link various elements in Calabresi's work to notions of behavioural law and economics. A few points may illustrate this. Already in his first publication in 1961 Calabresi developed the idea of the use of the market to obtain an optimal allocation of resources: the use of price theory would drive unsafe products and activities out of the market. However, Calabresi is relativistic about this argument and holds 'that people themselves do not understand how much they should spend, "for their own good", on housing and medical care as against such goods as television sets. To this extent of course, the basis of the allocation – of – resources justification is weakened'.[76] Here one recognises an implicit reference to cognitive biases or at least to bounded rationality. He continues: 'Perhaps, the postulate that people know better than anyone else what is best for themselves ought to be abandoned'.[77] However, recognising the limits of the price system, Calabresi maintains that it still functions remarkably better than an alternative whereby a central agency would control the production of services and goods.

In his subsequent publication (in 1965), he again implicitly recognises the limits of the utility maximisation hypothesis by arguing that 'in a growing area we are becoming convinced, whether rightly or wrongly, that individuals do *not know what is best for themselves*'.[78] This quote is followed by a footnote (45):

> The importance of this trend can easily be exaggerated by looking at those areas of the economy where advertising plays its most significant role. There it is easy, though certainly not always correct, to assume that the choices made by individuals

[75] *Id*. at 181-186.
[76] Calabresi, above n. 1 at 531.
[77] *Id.* at 531-532.
[78] G. Calabresi, 'The Decision for Accident: An Approach to Nonfault Allocation of Costs' (1965) 78 *Harvard Law Review* 743.

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are irrational and, more important, that the individuals will all too soon regret having made them. But the area of final consumer choices, even if it were as irrational as we sometimes think, is only a small part of the picture. If we consider all the decisions at the production level which are made by individuals operating through the market mechanism, it is much easier to conclude that individual choosers can still do better for themselves than anyone else.

Here one clearly recognises that Calabresi is aware of the limits of individual decision-making but is at the same time cautious in realising that alternatives such as government regulation may not necessarily do much better.

In this and subsequent publications, Calabresi devotes considerable attention to the optimal liability rule as developed in further detail in his *Costs of Accidents*. In his 1965 *Harvard Law Review* article, he examines inter alia why bargaining between parties may in some cases not provide an optimal allocation and how in that specific case liability should then be allocated. Taking the example of industrial accidents, he argues that employers are in many cases better informed than employees, which, on the one hand, may inhibit a bargain from occurring and, on the other hand, can provide an argument to place the liability on the better informed party.[79]

The notion of looking at a variety of practical elements in order to determine the 'cheapest cost avoider' in real-case scenarios was developed in detail in the *Costs of Accidents*, discussed above, but can also be found in Calabresi's *Yale Law Journal* paper on a test for strict liability in torts from 1972 (written together with Jon Hirschoff). They argue that the choice between different liability regimes should 'depend not on their *theoretical* ability to optimize accident costs given certain assumptions, but on the degree to which the particular assumptions required by each device actually do obtain'.[80] 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 search for the cheapest cost avoider. Elsewhere in the paper it is argued that the question of who should bear the liability should be answered on the basis of 'who can best make a cost benefit analysis and act

[79] *Id*. at 727-729.
[80] G. Calabresi and J.T. Hirschoff, 'Towards a Test for Strict Liability in Torts' (1972) 81 *Yale Law Journal* 1059.

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on it, viewed in realistic terms'[81] and 'who is better able to choose to avoid that risk by altering behaviour should the risk appear too great'.[82]

Calabresi's model for allocating liability thus allows taking into account the cognitive abilities of all parties involved in the accident setting in a differentiated manner, which precisely results from the behavioural literature as well. 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',[83] even though he also sees the clear disadvantage of such a detailed differentiation, being that 'the administrative costs of making such individualized judgements would presumably be too great'.[84]

The relevance of errors with either the regulator (in a fault regime) or the injurer (in a strict liability regime) was subsequently also used as an important determinant to choose between both liability regimes in his 1975 paper 'On Optimal Deterrence and Accidents'.[85] The relevant question in this respect is, so Calabresi holds, not so much what the correct decision is but rather 'who is best suited to make the cost-benefit analysis between accidents costs and accident avoidance costs? In other words, it would ask who would bear the incentive *to decide correctly*'.[86] Again giving considerable scope for incorporating results from social psychology, he adds that this decision 'is a matter of empirical judgements, not theory'.[87]

We argued above that behavioural studies as well as neoclassic theory provide arguments for regulation when both injurers and the judiciary may lack the necessary information for an appropriate cost-benefit analysis in an accident setting. These arguments can clearly be found in Calabresi's work as well, and are referred to as the need for specific deterrence rather than general deterrence, as was previously explained in the discussion on costs of accidents. In his 1968 paper on the Coase Theorem, Calabresi already argued that if, for example, we were to be sure

> that rubber bumpers are always the cheapest way of minimising the sum of car-pedestrian accident costs and the costs of avoiding such accidents, it seems likely that the cheapest way of getting rubber bumpers is by a law that requires them, rather than by liability rules.[88]

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[81] *Id*. at 1064.
[82] *Id*. at 1066.
[83] *Id*. at 1067.
[84] *Id*. at 1068.
[85] See more particularly G. Calabresi, 'Optimal Deterrence and Accidents' (1975) 84 *Yale Law Journal* 660 at 660-662.
[86] *Id*. at 666.
[87] *Id*. at 667.
[88] G. Calabresi, 'Transaction Costs, Resource Allocation and Liability Rules – A Comment' (1968) 11 *Journal of Law and Economics* 67-73.

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Even though, as indicated above, in his *Costs of Accidents* various arguments are provided for where specific deterrence (regulation) may be preferred to general deterrence (liability rules), at the same time he recognises the potential weaknesses of regulation and more particularly the possibility of regulatory error. This is seen by Calabresi as a strong argument in favour of strict liability. Where regulatory error (e.g. overestimating prevention costs) could lead to a failure not to impose liability on the injurer under the fault system 'in strict liability systems, unlike the fault system and its "mirror image", regulator error affects accidents in an unbiased way'.[89]

In summary, it may be clear that the balanced approach to the accident problem proposed in the *Cost of Accidents* and Calabresi's many other publications do indeed 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, the flexible approach inherent in Calabresi's model where the decision on liability is not fixed *ex ante* but depends upon many elements (also of empirical nature), including the capacity of individuals and judges to process the information necessary for an efficient cost-benefit analysis in an accident setting, may well be appropriate to take the new insights resulting from social psychology into account in accident law.

6 Concluding remarks

Conclusions about what attention has been paid to the implications of behavioural law and economics for the economics of tort law and to the relevance of Calabresi's work in that respect are unavoidably ambiguous in various ways. First, the results seen in the behavioural literature for the economic models of tort law are not self-evident. At first glance, the findings in the behavioural literature suggest important changes to traditional models. Indeed, the assumptions underlying the economics of tort law assume that potential injurers as rational decision makers have the ability to process information concerning probability of an accident and expected damage in relation to the costs of preventing the accident. Behavioural literature suggests that much can go wrong in the way potential injurers process this information, being subject to a variety of heuristics and biases.

However, a problem with this strand of the behavioural literature is that the direction of the biases is not always clear. Some biases pointed in the direction of injurers being overcautious (and thus being inefficiently overdeterred), whereas others point to injurers systematically neglecting specific risks and thus taking too few precautions (leading to

[89] Calabresi, above n. 85 at 669.

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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 on the part of the judiciary. The result therefore is that findings in the behavioural literature present an extremely nuanced and differentiated picture, whereby the liability rule would depend upon the type of biases and whether they occur with regard to the parties in the accident setting (injurer or victim) or with the judge. Even if one already assumes that behavioural literature findings are sufficiently clear cut to warrant an adaptation of traditional models, it is not obvious in which direction that adaptation goes. Hence, if a number of different nuances are taken into account, the behavioural literature is only to a given extent able to provide a better explanation of the behaviour of potential parties in an accident setting than are traditional economic models.

Interestingly, Calabresi's view on accident law might fit well here. But this presents me with a second ambiguity: the question of whether Calabresi's ideas fit into the behavioural literature (as he suggested to me in Sicily) is relevant only to the extent that one accepts that traditional models need to be adapted to these findings, which is, as I have just argued, not so self-evident. Critics have criticised Calabresi's approach as being vague and providing little guidance to the policy-maker by using broad concepts such as 'the least cost avoider'. Admittedly, Calabresi's approach is more differentiated and flexible than some of the formal models of tort law that were subsequently developed by hardcore economists in the 1980s. However, with a display of goodwill toward our *Doctor honoris causa*, one can argue, as I have done in section 5.2, that Calabresi's flexible approach has precisely the advantage that it allows one to take into account all kinds of cognitive limitations, errors, and information problems, as did Calabresi himself explicitly in many of his publications in the 1960s and 1970s. A review of these publications has shown that he was well aware of cognitive limits: for instance, concerning the ability of parties to assess how much they should spend 'for their own good'. At the same time, he also comes to a balanced conclusion with regard to the normative consequences of these limits, and argues, for example, that these problems are no reason to abandon the price system.

Of course, it would be unfair to other scholars in tort law and economics to argue as if Calabresi were the only one to have pointed to possible cognitive problems. For example, shortcomings of the negligence standard (errors in factual or efficient care on the side of the potential injurers or judges) had been identified and discussed in detail by Shavell, and were incorporated into the economic analysis of tort law. Moreover, mainstream economists had also generally acknowledged the problem of

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'bounded rationality', although mainly as an indicator of the parameters beyond which traditional analysis could not go.[90]

One could hold that the implications of the behavioural literature for the traditional economic analysis of accident law are therefore modest: 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 in the behavioural literature. Moreover, the literature is divided on the findings of behavioural studies with relation to the traditional test as regards negligence and strict liability. Perhaps, as was also suggested by Korobkin and Ulen, further empirical research is necessary before one can decide to adapt traditional models. Moreover, in that case there is 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 findings in social psychology.

As mentioned in the introduction, Guido Calabresi himself suggested to me the topic for this contribution, by maintaining that many of the ideas of behavioural law and economics were already implicit in his writings in the 1960s and 1970s. I have demonstrated that this claim is to a certain extent correct. However, when rereading Calabresi's publications prior to writing this paper, I noticed again that – and this is probably far more important than stressing that behavioural insights were already present in Calabresi's early work – his ideas radically changed the way lawyers and policy-makers subsequently thought about accident law. Just to refresh our memories:

- He showed that 'our society is not committed to preserving life at any cost'.[91] He thus reminded us of the simple economic wisdom that 'we use relatively safe equipment rather than the safest imaginable because – and it is not a bad reason – the safest cost too much'.[92] This remains an important lesson even today, for example, for those who argue that the environment should be protected at the highest level possible;
- He taught that achieving deterrence in order to prevent accidents is a different goal from compensation or spreading loss;[93]
- He taught many lawyers the important lesson that tort law is an overly expensive and badly suited instrument to achieve the compensation of victims: 'if compensation were the only goal, then by far the most effective and efficient method of accomplishing it

[90] Ogus, above n. 8 at 233.
[91] Calabresi, above n. 2 at 17.
[92] *Id.* at 18
[93] Already in his risk distribution and the law of torts, above n. 1 at 529, but again recently in G. Calabresi, 'Towards a Unified Theory of Torts' (2007) 1 *Journal of Tort Law* 1 at 8.

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> would be through a system of general social insurance, which would externalize the costs of accidents from any market decisions'.[94] Again, this is still an important lesson today for the many lawyers who claim that the central goal of tort law would be victim compensation.

The theories of Guido Calabresi, a pioneer in the domain of accident law, have not only constituted the basis for the economic analysis of tort law but have also dramatically changed the way in which many think about the accident problem. His ideas are still clearly of considerable significance for many of today's scholars and policy-makers.

[94] Calabresi, above n. 78 at 744, but also Calabresi, above n. 1 at 534.