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# Principles of Risk Imposition and the Priority of Avoiding Harm

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- <sup>1</sup> In one of his columns, the economist Paul Krugman remarked that “liberals don’t need to claim that their policies will produce spectacular growth. All they need to claim is feasibility: that we can do things like, say, guaranteeing health insurance to everyone without killing the economy.”<sup>1</sup> Krugman’s belief that providing everyone with health insurance is desirable unless doing so would “kill the economy” expresses a common belief. Some goods should be provided to everyone, even if their provision comes at a cost in economic efficiency. The goods in question are essential to leading decent, independent lives and their provision therefore has a special priority. Physical safety is, like health, a strong candidate for inclusion on a list of the essential conditions of a decent and independent life. Accidental injury can impair basic powers of agency as much as poor health can. Unsurprisingly, assertions that safety has priority over ordinary “needs and interests” are commonplace in popular discourse. In commenting on self-driving cars, for instance, the editors of *Consumer Reports* remark that they “support [...] any new technology that advances the needs and interests of consumers, but at CR, we’re always going to make safety our priority.”<sup>2</sup>
- <sup>2</sup> Because safety has a claim to be an essential condition of effective agency one might expect to find a vigorous debate in the legal literature on risk and precaution over whether or not safety should be prioritized over efficiency. Prominent federal statutes take this very position, enjoining either that activities be made “safe” or requiring that the risks of certain activities be reduced as far as it is “feasible” to do so. By “feasible” they mean exactly what Krugman means. The risks in question should be reduced as far as possible without “killing the activity” in question. A chorus of contemporary commentators insists, however, that there is no debate to be had. Safety- and feasibility-based risk regulation are simply irrational. Jonathan Masur and Eric Posner, for example, write that feasibility analysis “does not reflect deontological thinking ... [does not] reflect welfarism in any straightforward sense,” and “no attempt to reverse engineer a theory of well-being that justifies feasibility analysis has been successful.”<sup>3</sup> This criticism of

feasibility analysis is a particular manifestation of a general thesis. Efficiency is the only plausible standard of precaution, and its handmaiden cost-benefit analysis is “the only game in town for determining appropriate standards of conduct for socially useful but risky acts.”<sup>4</sup>

- 3 Professors Masur and Posner’s skepticism that feasibility analysis is a serious alternative to cost-benefit analysis, and Professor Fried’s assertion that cost-benefit analysis is the only game in town when it comes to legal standards governing the appropriate level of precaution, are hardly outlier opinions. Cass Sunstein, easily the most influential American legal academic now writing on risk, asserts that “[u]ncontroversial” considerations “suggest” that “[i]t is not possible to do evidence-based, data-driven regulation without assessing both costs and benefits, and without being as quantitative as possible.”<sup>5</sup> Cost-benefit analysis is indispensable to thinking rationally about risk and regulation.<sup>6</sup> Unless and until we embrace cost-benefit analysis, our thinking about risk and precaution will be ruled by rank sentimentality and cognitive error. The most recent Supreme Court decision on point asserts that—absent specific statutory instruction to the contrary—regulatory agencies must engage in cost-benefit analysis the moment that they contemplate regulating a harmful substance. It is irrational even to *contemplate* reducing harm without considering costs.<sup>7</sup>
- 4 To be sure, these claims are sometimes developed in ways which are plausible. Early in the rise of law and economics in the American legal academy, for example, Guido Calabresi developed a capacious conception of the mode of analysis which sought to incorporate a whole range of values, and which sought to assign special weight to “justice constraints.”<sup>8</sup> For all of Calabresi’s influence and importance, however, in the American legal academy law and economics has not followed in his footsteps. By the time Louis Kaplow and Steven Shavell published their influential *Fairness versus Welfare*,<sup>9</sup> the law and economics community had largely coalesced around the idea that welfare is the master value and efficiency its legal expression. Among philosophers, there is a lively philosophical debate over whether contractualism—the most prominent philosophical alternative to consequentialism—can “make the numbers count” in the right way, or deal adequately with cases where only future lives are put at risk.<sup>10</sup> This philosophical debate, however, has had almost no impact on discourse in law. Within the legal academy, the claim that “cost-benefit” analysis is the “only game in town” is a way of saying that welfare is the master value and efficiency, its handmaiden, is the master test. For all its currency this claim is implausible.
- 5 Cost-benefit analysis, conventionally conceived, is not rationality incarnate; it is efficiency embodied. Cost-benefit analysis has its home in a framework which supposes that welfare is the ultimate or master value and that promoting welfare is the proper end of political and legal institutions. The distinctions among persons disappear because the task of law and morality is to bring into existence states of the world in which there is as much welfare as possible. Cost-justified precaution is efficient precaution. It prescribes that risks to health and safety should be managed by minimizing the combined costs of avoiding and suffering the illnesses and injuries in question, thereby maximizing the net benefit that we extract from the activities responsible for the illnesses and injuries at issue. Acting efficiently is, to be sure, presumptively desirable. Efficiency is a value—something whose realization is presumptively good—but acting efficiently is not rationality incarnate. Efficiency is one value among many. Other values also bear on the desirability of various risk-reducing measures. Precautions may be fair or unfair as well

as efficient or inefficient; they may respect or disrespect people's rights; they may enable or disable desirable forms of choice; they be sensitive or insensitive to the distinctive values realized by some activity (some sport or some line of work for instance); and so on.

- 6 Efficiency's relative importance as a value, moreover, is debatable. In lay language, inefficiency is wastefulness. Wastefulness may be an intrinsically bad thing, but it is not the worst thing in the world and its avoidance is not the best thing in the world. The more precise articulation of waste avoidance as wealth-maximization is no doubt useful to the economic analysis of legal regimes, but it does not transform the avoidance of waste into a more important value. As Ronald Dworkin forcefully demonstrated decades ago, wealth itself is not a value.<sup>11</sup> Recognizing this, academic champions of efficiency have come to defend wealth-maximization not as an important value in its own right, but as a kind of false target for welfare. Wealth-maximization is the proper end for legal institutions to pursue, but the value which justifies making efficiency the master criterion for evaluating most legal regimes is welfare.<sup>12</sup> The best division of institutional labor prescribes that legal institutions other than tax ought to maximize wealth, and the tax system ought to (re)distribute wealth in the way prescribed by some preferred social welfare function.<sup>13</sup> Welfare, for its part, is taken to be not only a value, but *the* value. Other things are good only insofar as they promote welfare.
- 7 The claim that welfare is the master value by which all laws and institutions are to be measured is plausible, but it is hardly uncontroversial. Philosophical and political liberalism have long denied that welfare is a master value, and have long asserted that values are irreducibly plural.<sup>14</sup> Liberalism supposes that people have their own, diverse conceptions of happiness and that the pursuit of those conceptions is best left to persons themselves. People, not the state, are primarily responsible for their own welfare. The basic role of the state, on a liberal view, is to establish the institutional and material conditions of effective agency so that people may pursue happiness as they conceive it. On a liberal view, securing the conditions of effective agency is a matter of justice, and the claims of justice have priority over the claims of efficiency. This is hardly a novel thought. Indeed, the most prominent liberal theory of justice in the twentieth century has made it famous.
- 8 Safety is not a prominent subject of famous theories of justice but it is a natural candidate for special priority. We regard safety as a *prima facie* or *pro tanto* value. We don't need to invoke efficiency to explain why we want our cars, our schools, our air and our drinking water to be safe. Safety secures the physical and psychological integrity of the person and that integrity is a precondition of effective agency. Safety thus has a claim to being especially important, and its special importance presumably means that it is worth securing at some cost in economic efficiency. Because our legal and political discourse is divided between competing moral conceptions—so that efficiency is not universally regarded as the master value for all law and public policy—it is surprising to be told that cost-benefit analysis is the only game in town. Cost-benefit analysis expresses one point of view, not the only possible point of view. Philosophical and political liberalism expresses another point of view and its point of view gives us presumptive reason to suppose that standards of precaution should prioritize safety. Moreover, standards of precaution other than cost-benefit analysis are common in our law. Federal statutory standards governing health, environmental and safety regulation often insist that some activity be made “safe,” or that some risks be reduced to the point where further

reduction would be “infeasible.” The only question is whether the theory supports our practices.

- 9 Champions of cost-benefit analysis are correct on their own terms. Within the framework of cost-benefit analysis, taking more than cost-justified precaution is flatly irrational. However high a price we set on avoiding serious physical injury, illness, and premature death we should still trade the benefits of averting those harms off against the costs of obtaining them in a way which maximizes benefit and minimizes costs. When we press beyond the point of cost-justified precaution, the cost of avoiding harm is greater than the benefit of doing so. Taking more than efficient precaution makes us less wealthy. That squandering of wealth leads inexorably to a diminution in social welfare.

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These terms, however, are debatable. In insisting that all good and bad things are fungible at some ratio of exchange and that rationality consists in maximizing value, cost-benefit analysis contradicts our common sense moral convictions by rejecting the proposition that the avoidance of harm does and should have special priority.<sup>15</sup> The asymmetry of harm and benefit is a firmly entrenched feature of both our moral intuitions and our law. Non-consequentialist moral theory lends support to our moral convictions and legal commitments. Broadly speaking, the conflict is between an economic version of consequentialism and legal norms which express deontological commitments.

- 11 The supposition “at the heart of deontological (or non-consequentialist)” moral theory is that the “subject matter of morality is not what we should bring about, but how we should relate to one another.”<sup>16</sup> On such a view both the distinction between persons and the relations among persons are central. The fundamental moral questions posed by issues of risk and precaution are questions about what people owe to each other, both in way of freedom to impose risks of harm on others in the pursuit of their own ends, and in the way of precaution against risks of harm imposed upon them by other people going about their own business. Questions about risk and precaution are questions about the terms on which risks may be imposed by some and on others. The claims of persons (abstractly conceived as representative members of classes of potential injurers and victims) come to the fore. Putting persons and their essential interests as agents in the moral foreground casts the harm-benefit asymmetry in a favorable light. When we focus on the essential conditions of effective agency, harms and benefits are not symmetrically important. Physical harms—death, disability, disease, and the like—rob us of normal and foundational powers of action. They are bad for us no matter what our ends. Few benefits, by contrast, comparably augment our basic powers of agency. The value of a benefit turns on whether it does or does not further the ends of the person in question. This a more contingent matter. Extraordinary hand-eye coordination is indispensable for an elite tennis player but largely wasted on a law professor. Unsought benefits, moreover, usually diminish our autonomy by imposing upon us. Benefits thrust upon us in the name of our own welfare can be positively disempowering.
- 12 Because serious physical harm severely impairs basic powers of human agency, whereas most benefits do not comparably enhance our powers of agency, we have reason to assign special priority to the avoidance of harm. Because deontology takes persons and their claims against one another as fundamental, and because liberal deontology makes the conditions of effective agency a concern of the state, the framework brings the special badness of harm into focus. Physical harm is something that befalls particular persons. It is presumptively and especially bad for them because it cripples capacities and powers on

which the pursuit of all of their ends depend. The welfarist underpinnings of cost-benefit analysis, by contrast, obscure harm's special significance because they treat harm as just another cost in an overall social calculus. Our law is torn between standards of cost-justified precaution and norms of safe and feasible precaution because our law is torn between two moral outlooks.

- 13 The paper proceeds as follows. Section 1 summarizes the three standards of precaution and the differences that divide them. Section 2 focuses on the importance of the distinction between persons and the harm-benefit asymmetry, elaborating on the points made in the preceding paragraphs. In addition to treating costs and benefits as symmetrically important, cost-benefit analysis models social choice on individual choice. This commitment, too, is problematic. When some people have their lives devastated by harms issuing out of risk impositions— while others profit from the imposition of those very same risks—it is a mistake to model social choice on individual choice. We must take the distinction between persons seriously and adopt principles which are justifiable from the standpoints of both the potential victims and the potential beneficiaries of the practices in question. When physical harm is at issue, treating costs and benefits as symmetrically important fails to register the values at stake.

## 1 Three standards of precaution

- 14 In legal discourse, the claim that cost-benefit analysis is the only plausible way to think about risk and precaution is articulated as a criticism of two other standards of precaution—namely, the “safe level” and “feasibility” standards.<sup>17</sup> Federal statutory standards governing health, environmental and safety regulation often insist that some activity be made “safe,” or that some risk be reduced to the point where further reduction would be “infeasible.” The regulation of air, food, and water quality is the principal habitat of the “safe-level” standard, and the regulation of occupational health and safety is the principal habitat of the feasibility standard. The three standards identify distinct levels of permissible risk imposition. Normally, they stand in linear, vertical relation to one another, with the safety standard tolerating the least risk and the cost-justification standard tolerating the most.<sup>18</sup>

### 1.1 Safe, feasible and cost-justified precaution

- 15 The two standards of most interest to us—the safety and feasibility standards—deploy a relatively well-integrated set of concepts. The concepts of “safe level,” “feasible risk reduction” and “significant” risk that form the core of both statutory standards are terms of art. The feasibility standard, for its part, is further broken down into technological and economic prongs. The legal regimes that the standards establish need to be understood in terms of these concepts; in relation to one another; in relation to the idea of cost-justified risk reduction; and in light of their usual domains of application.

#### 1.1.1 The safe-level standard

- 16 The Food Quality Protection Act of 1996 embodies the safe-level standard.<sup>19</sup> It requires that pesticide residue on fresh and processed foods be reduced to a “safe” level.<sup>20</sup> “Safe,” in turn, means “there is reasonable certainty that no harm will result from aggregate

exposure to the pesticide chemical residue, including all dietary exposures and all other exposures.”<sup>21</sup> This standard is made even more stringent by instructions to regulators to set limits that provide for an additional margin of safety in light of the special susceptibility of infants and children to harm from toxic substances.<sup>22</sup> Pesticide residue on food is thus acceptable only to the extent that it is reasonably certain to harm no one—not even those unusually vulnerable to harm. Applying the safe-level standard therefore does not require any inquiry into the costs of risk reduction. All that it requires is a determination of the level at which the risk created by exposure to the regulated substance ceases to be significant.

- 17 Among the three standards, the safe-level standard tolerates the least risk. Safety-based regulations require risk to be reduced to a point where no “significant risk” of devastating injury remains. This may well require moving *beyond* the point of cost-justified precaution (and beyond the point of feasible precaution, too). If efficient precaution is taken and significant risk still remains, the safe level standard requires further reduction.<sup>23</sup> The standard may therefore require precaution that presses beyond the point of maximum net benefit, as cost-benefit analysis conceives that point.

### 1.1.2 The feasibility standard

- 18 The feasibility standard is at least as salient in federal risk regulation as the “safe-level” standard. The Clean Air Act, for example, provides that standards for hazardous air pollutants “shall require the maximum degree of reduction in emissions” that the EPA, “taking into consideration the cost of achieving such emission reduction” determines to be “achievable.”<sup>24</sup> Feasible risk reduction does not require the elimination of all significant risk. It is less stringent than the safety standard, but generally more stringent than cost-justified precaution. Feasible precaution calls for reducing an activity’s risks as far as possible consistent with the long-term flourishing of the activity. Because it requires that significant risks be reduced until either (1) they are insignificant, or (2) further reduction would jeopardize the long-run health of the activity whose risks they are, feasible risk reduction may require pressing precaution beyond the point where a dollar more spent on the prevention of harm yields more than a dollar’s worth of harm prevented, and to the point where further risk reduction would endanger the activity.

### 1.1.3 The cost-benefit standard and its claims

- 19 The basic idea of cost-justified risk imposition is easy to state, perhaps deceptively so. Cost-justified precaution requires risks to be reduced to the point where the costs of further precautions exceed their benefits. Cost and benefit, for their part, are all-encompassing concepts. In a well-known defense of cost-benefit analysis, the economist Robert Solow explained that “the cost of the good thing to be obtained is precisely the good thing that must or will be given up to obtain it.”<sup>25</sup> “Cost,” then, is anything given up to obtain something else. “Benefit” is the flip side of the coin—anything worth attaining whose attainment requires giving something up. An ideal cost-benefit analysis takes all costs and all benefits into account and identifies the point at which costs and benefits are balanced so that net benefit is maximized. In practice, almost all cost-benefit analyses take more restricted sets of costs and benefits into account. In the context of accidental injury, for example, the criterion of cost-justification is usually said to require minimizing the “sum of precaution, accidental harm, and administration costs.”<sup>26</sup> For



present purposes it will do to say that cost-justified precaution holds that risk should be reduced to the point of maximum net benefit, economically conceived. That point is the point at which a dollar more spent avoiding harm yields less than a dollar's worth of harm avoided. In general, cost-justified precaution is the least stringent of the three standards of precaution.

## 1.2 Do the standards really identify different levels of precaution?

- 20 The safety and feasibility standards were born in the 1960s and 70s, in the last great flowering of liberal legal reform. They were and are championed by political liberals. They have their roots in the founding of the Environmental Protection Agency in 1970 and the Occupational Health and Safety Administration in 1971. They dominated the regulatory landscape into the 1980s, and they received important legislative reaffirmation during the 1990s—as the Food Quality Protection Act of 1996 itself shows.<sup>27</sup> Early in the 1980s, however, the political right began championing cost-benefit analysis and cost-justified precaution as its preferred alternative to safe and feasible risk-reduction. In 1982, the Reagan Administration put into place an executive order requiring cost-benefit analysis for all “significant” federal regulations unless conducting such analysis was prohibited by law—if, for example, the authorizing statute itself forbade consideration of cost.<sup>28</sup> Since the early 1980s the two approaches have been engaged in a prolonged tussle.
- 21 This tussle is worth continuing only if the standards really do identify different levels of required precaution. It is plain from what has been said so far that the standards express different normative judgments. The following examples show, I hope, that these three standards identify different levels of precaution in important cases. The circumstances to which the safety, feasibility and cost-justification standards apply in the examples that I have chosen differ from the circumstances contemplated by federal health and safety statutes in some ways. The differences in circumstances of application, however, no doubt has its disadvantages, but it also has an advantage. The three standards of precaution are discernible across domains, notwithstanding the ways in which they are reshaped by the demands of different institutional domains. Their persistence across diverse contexts suggests that the normative convictions they express are robust.

### 1.2.1 The safety standard: consumer expectations

- 22 In the United States, the two most common tests of product design defectiveness are the risk-utility test and the consumer-expectation test. Law and economics scholars usually take the risk-utility test to be an application of cost-benefit analysis to product design.<sup>29</sup> By contrast, in some applications, the consumer-expectation test works as a “safe-level” standard. Whereas the risk-utility test focuses on product design from the perspective of a product engineer, the consumer-expectation test focuses on product performance from the perspective of the user. Sometimes people expect products to be safe—not perfect, but safe. And sometimes a product which passes muster under the risk-utility test is not safe. *Green v. Smith & Nephew AHP, Inc.*, illustrates this kind of circumstance nicely.<sup>30</sup> Plaintiff Green worked as a medical technologist in a hospital.

Her job required her to wear protective gloves while attending patients, up to 40 pairs of gloves per shift. She wore powdered latex gloves manufactured by [the defendant. After a period of prolonged use] Green experienced increasingly severe



health problems – cold-like symptoms, wide-spread rash, acute shortness of breath. She was hospitalized four times. In 1991 Green was diagnosed with latex allergy. Given her allergy, Green must avoid contact with latex. So she had to change jobs and must limit the items she buys, things she eats, and activities she pursues. On account of the allergy, Green developed asthma.<sup>31</sup>

- 23 Exposure to latex proteins “sensitizes” some people to latex. Subsequent exposure of a sensitized person to latex may produce progressively worse allergic reactions including irreversible asthma and life-threatening anaphylactic shock (which Green suffered). Since latex allergy is caused mainly by use of latex gloves, it disproportionately afflicts health care workers. According to the evidence that Green put on at trial, the frequency of latex allergy among health care workers in the United States is 5 to 17 percent. At the time that Green became sensitized to latex the medical community was unaware of the possibility of latex allergy. Because latex allergy was unknown until the use of latex gloves became widespread, if Green’s claim were judged by the risk-utility test it would most likely have failed.<sup>32</sup> The cost of discovering the defectiveness of latex gloves years before that defect manifested itself in health injuries to regular users was surely high. Indeed, it might have been impossible to discover the hazardous effects of long-term use of latex gloves in any way other than through widespread use of such gloves over a prolonged period of time.
- 24 When Wisconsin evaluated the gloves under the consumer expectation test, however, the plaintiff’s claim prevailed. The consumer-expectation test measures product defectiveness by asking if a product is “dangerous to an extent beyond that which would be contemplated by the ordinary consumer.”<sup>33</sup> That defendant’s latex gloves were defective under the expectation test seemed self-evident to the court. The users of defendant’s gloves reasonably expected that they would not suffer injury from normal use of the product. Consequently, the court did not bother to state the relevant expectation precisely.<sup>34</sup> It does not seem difficult, however, to do so. All of us reasonably expect that wearing ordinary clothing will not put us at significant risk of serious physical harm. Analogously, health care workers in Green’s position reasonably expect that wearing protective gear would not put them at *significant* risk of disabling physical harm.
- 25 Generalizing, we may say that clothing is a simple and familiar example of a product that we normally expect to be safe. In saying that, we mean that we believe that the clothes we ordinarily wear do not put us at significant risk of physical harm. The question of whether this expectation is cost-justified never arises.

### 1.2.2 The feasibility standard: rescues

- 26 The literature on “statistical lives” is haunted by the apparent irrationality of many rescues.<sup>35</sup> Money seems no object when miners are trapped in a mine, or when children are trapped in a burning building. From an economic perspective this seems foolish and extravagant. The rational way to budget our “rescue money” is to spend it in the way which maximizes the number of lives saved with the least sacrifice of other objectives. Lives are lives and the extra money spent rescuing identified persons might be better spent on safety measures that would save more lives. This, of course, is simply an application of the standard argument for cost-justified precaution to the special case of rescues.<sup>36</sup> When actual lives are endangered, however, we think it would be unseemly, and probably morally wrong, to undertake a cost-benefit analysis of the value of the lives at stake and the cost of saving them. We rescue the victims if we can, and rescuers often

take great risks upon themselves in the course of rescues and attempted rescues.<sup>37</sup> Generally speaking, our rescue practices appear to be governed by a norm of feasibility not by a norm of efficiency. A particularly striking case in point is the military tradition of undertaking rescues to recover the *corpses* of slain soldiers. In the introduction to his book on the American war in Vietnam, Philip Caputo observed:

Two friends of mine died trying to save the corpses of their men from the battlefield. Such devotion, simple and selfless, the sentiment of belonging to each other, was the one decent thing in a conflict noted for its monstrosities.<sup>38</sup>

- 27 It is hard to believe that the actions Caputo so admires were cost-justified. Losing a life to save a corpse seems like a bad trade. But it also seems correct to say that the economic mind set of cost-benefit analysis is out of place here. There is something morally grotesque about trying to figure out if losing one's life trying to rescue a corpse is a potential Pareto-improvement or not. Rescuing the bodies of one's fallen comrades is about solidarity and sacrifice, not about improving one's own welfare. It is about the realization of values taken to be of paramount importance. Therein lies its rationality.
- 28 The rescue of corpses on the battlefield is, of course, an extreme example, but it teaches important lessons about less extreme cases. For one thing, all rescues involve the affirmation of a common value. Solidarity is word—and the value—that comes to mind. The plight of trapped miners differs from the plight of fallen comrades, but it too implicates solidarity. We are all vulnerable to accidents and premature death. Honoring the value of solidarity does not deny the value of efficiency; it merely asserts that solidarity matters more in the general context of rescues. In the very special context of the military, solidarity is even more important. The goods intrinsic to military excellence can only be realized if solidarity is valued very highly. There is nothing irrational about this. It is eminently rational to believe that some very valuable human goods cannot be realized unless we recognize that “no man is an island,” and when the bell tolls for one of us, it tolls for all of us.
- 29 It is, no doubt, romantic to extend the ideal of solidarity from the battlefield to the ordinary workplace, but it is also a mistake not to recognize that even military rescues are governed by a standard of feasibility. It is heroic to attempt to recover the bodies of your fallen comrades only if there is some chance of succeeding. Without that possibility, an attempted rescue may be foolish or tragic (or both), but it is not noble or heroic. Rescue is governed by a norm of possibility.

### 1.2.3 Cost-justification and commensurability: private necessity

- 30 The flip side of the coin that cost-justified precaution is *not* the proper principle for regulating serious harms to persons is that the criterion of cost-justification is a proper criterion for regulating harm to goods which are fungible and replaceable. The doctrine of private necessity, articulated in the famous case of *Vincent v. Lake Erie*, illustrates this point nicely.<sup>39</sup> There are two issues in *Vincent*. The first is whether the ship owner should be given a privilege to tie up at the plaintiff's dock in order to avoid near certain destruction at the hands of a sudden and fierce winter storm. The second is whether such a privilege should be conditional. If the privilege is conditional, the defendant must make good any harm that it does to plaintiff's dock in the course of saving its ship. The court answers both questions affirmatively.

- 31 *Vincent* is a case where efficient precaution is the proper standard of precaution. The dock and the ship are fungible pieces of property. Their value is their use or consumption value. Moreover, the metric of money is well-suited to measuring both the damage done by bashing the dock and the damage avoided by keeping the ship out of the storm. The rational course of action in *Vincent* is to minimize combined harm and maximize combined benefit. Additionally, the question of who should bear the cost of the ship's salvation—the ship owner or the dock owner—can be addressed after the harm has been done. The court concluded (rightly, I think) that fairness required the ship owner to bear the costs of its ship's salvation. That fair distribution could be effected after the dock was damaged simply by requiring the defendant to pay appropriate money damages to the plaintiff. As we shall see, matters are different when serious harm to persons is involved because such harm is not fully repairable. Fairness must be done *ex ante*.
- 32 The standards applied in these examples value the avoidance of harm differently. The application of the consumer-expectation test to latex gloves in *Green* is the most stringent. *Significant* risk of harm to normal users is unacceptable. Latex gloves are defective because they precipitate severe allergic reactions in a significant number of users. By contrast, the basic commitment of the feasibility standard in rescue cases is save life if it is possible to do so. The norm of cost-justification, implicit in *Vincent*, assigns no priority to avoiding harm. It trades harm off against other goods in a way which maximizes net benefit. In short, the safety standard insists on the lowest level of risk; the cost-justification standard accepts the highest level; and the feasibility standard falls in the middle. None of the standards insists on absolute safety. All three standards specify permissible tradeoffs. They vary significantly, however, in the tradeoffs that they license.

## 2 Normative commitments

### 2.1 The use value of persons

- 33 Let us return to, and retrace, earlier points. For our purposes, the important issue is not exactly how cost-benefit analysis is practiced, but why the cost-justified level of risk imposition is claimed to be the correct level of risk imposition. The argument is simple. When we minimize the combined costs of preventing accidental harms (precaution costs) and paying for those harms that we do not prevent (accident costs), we maximize net benefit (benefit minus cost). We diminish net benefit if we take either more or less precaution. If we take more precaution, the increased marginal spending on precaution costs exceeds the increased marginal savings in accident costs. If we take less precaution, the marginal savings in precaution costs are exceeded by the marginal increases in accident costs. This is why law and economics scholars like Masur and Posner conceive of the cost-justified level of precaution as *the* rational level of precaution. The safety and feasibility norms are fundamentally irrational because they prescribe inefficient levels of precaution. Safety may be precious but it comes at a cost and its value is not infinite. The benefits of achieving a particular level of safety must therefore be traded off against the costs of doing so. The rational way to trade costs off against benefits is to balance them so that we maximize net value and thereby make ourselves as well off as we can be.<sup>40</sup> Pressing precaution beyond the point of cost-justification yields less value not more value. Preferring less value to more value is simply illogical.<sup>41</sup>

- 34 This claim is sometimes presented as a matter of mere common sense,<sup>42</sup> but it is in fact the child of a theory. That theory is deeply intuitive in some contexts and a profound affront to our considered convictions in others. Cost-benefit analysis of risks to health and safety is an attempt to extend a market mode of valuation and choice to areas where actual markets fail—where actual markets either do not exist or are incomplete and imperfect. By name, there are no markets in people’s lives, and the markets that do exist are, at best, badly incomplete.<sup>43</sup> Even so, we might think about risks to life, in market terms. Indeed, Thomas Schelling founded the modern approach to the valuation of human life by observing that we can view the question of “what it is worth to reduce the risk of death” as a “consumer choice.”<sup>44</sup> “We nearly all want our lives extended and are probably willing to pay for it.”<sup>45</sup> Schelling was quite right to point out both that we can do this and that doing so seems quite natural and appropriate in many contexts. In the context of purchasing a new car, for example, it seems eminently sensible to ask if some new safety device is worth its cost, or if our money would be better spent elsewhere.
- 35 When we think of risk and precaution as “consumer choices” we compare costs and benefits and seek to maximize net benefits. Pricing various costs and benefits makes our thinking more rigorous and precise, as long as it can be done credibly. Moreover, we can proceed this way not only when we are making individual decisions, but also when we are making collective ones. In deciding whether or not some automobile safety improvement—backup cameras which avert a certain number of deaths per year, say—is worth installing, we can construct a value of life figure (e.g., \$5,000,000), and then estimate how many lives the safety device would save.<sup>46</sup> That benefit—the monetary value of the lives saved—is then compared to the cost of the safety device to see if the installation of the safety device is net beneficial or not. Conceptually, the lives of potential victims (ideally, as valued by the victims themselves) are commodities, legitimate objects of use and consumption. Lives are goods whose value is determined by what people (including those people whose lives they are) are willing to pay for them; they are properly exchanged for other goods at appropriate rates of exchange; and they are properly sacrificed when the cost of saving a life exceeds the benefit doing so.
- 36 This extension of the consumer choice model from individual to social decision is, however, far from innocuous. A market conception of value assumes that everything has a price—explicitly or implicitly<sup>47</sup>— and that the *value of everything is its price*. On a market conception of value, prices are not an attempt to track the inherent value of the goods priced. On the contrary, value is *conferred* by the preferences for which prices are proxies. Prices reflect the value that would-be purchasers place on goods. Things with prices, moreover, are all substitutable for one another at some ratio of exchange. “[E]conomics ... envisages rational man as seeking many goals, all substitutable at the margin. On the margin, economic man is prepared to trade off some freedom for some security, some privacy for some wealth, some freedom for some paternalism, and vice versa ...”<sup>48</sup> There is always some rate of exchange at which a rational person is willing to accept less of some good in exchange for more of another. By extension, there is always a rate of exchange at which a rational society, economically conceived, is prepared to trade off the life of one of its members for enough of some other good. The value of everything is its price and everything that we might gain or lose when we impose risks on one another is fungible at the right price.
- 37 Practitioners of cost-benefit analysis are often quick to acknowledge that the conceptual and practical problems of pricing lives and other nonmarket goods are substantial. The

normative implausibility of assuming that human lives are goods whose value is properly fixed by a price mechanism are less frequently noted. Yet it is surely counter-intuitive normatively to assert that people's lives have no intrinsic value, and that the only value persons have is the value conferred by expressed demand to use and consume their lives. The assumption of fungibility is equally counter-intuitive. We regard our lives as distinct from each other's, and as unique.

- 38 The safety and feasibility standards make sense only against the backdrop of a different conception of value and justification. The natural habitat of those norms is a moral outlook which recognizes the intrinsic value of persons; which takes the distinctions between persons and the relations among them as fundamental; and which denies the fungibility of lives both with each other and with an indefinite list of other goods. From one angle, this denial rests on a claim about people's interests. The safety and feasibility standards presume that the people have an especially urgent interest in safety, because the physical integrity of one's person is an essential precondition of effective agency and a decent life. From another, more illuminating, angle, the safety and feasibility standards rest on an assertion about value. That conception of value has more in common with Kant's famous claim that rational beings have dignity and that beings which have dignity are "above all price, and therefore [admit] of *no equivalent ...*"<sup>49</sup> than it does with the conception of value implicit in cost-benefit analysis.
- 39 The claim that rational beings are "above all price" is a senseless statement from an economic point of view.<sup>50</sup> Kant's point, though, is not that life has infinite value *within* an economic framework but that we should not understand the value of rational agency in economic terms. Within the price system, value is conferred by the expression of preferences through the medium of money. Prices reflect use or consumption value to would-be users and consumers. Nothing—not the Mona Lisa, not the right to vote, not persons themselves—has intrinsic value. In a market, the "price" of a person's life is fixed by the demand of others for that life and the cost to the person whose life it is of giving it up. The objection to this mode of valuation is that human lives have intrinsic value by virtue of their rational nature and we must treat them accordingly. Persons are ends in themselves, not objects of consumption for others. Their lives command respect. Unlike commodities, human lives are neither available for consumption by others, nor interchangeable at an appropriate rate of exchange. Each of us has only one life to live. From our separate perspectives, other people's lives are not substitutable for our own. Because human lives are unique and command respect, it is a mistake to govern risks to human life by the metric of the market. Respecting the distinctive value of human lives is a desideratum that acceptable principles of risk imposition must meet.
- 40 One way of articulating the demands imposed by the intrinsic (rational) value of human lives is to say that it requires treating people "only in ways that would be allowed by principles that they could not reasonably reject insofar as they, too, were seeking principles of mutual governance which other rational creatures could not reasonably reject."<sup>51</sup> This is a demanding standard of justice, and it may be that none of our non-ideal norms of risk regulation can meet this standard. Even so, it provides a backdrop against which we can understand the safety and feasibility standards as plausible attempts to articulate reasonable terms of risk imposition.

## 2.2 From efficiency to fairness

- 41 Implicit in both Thomas Schelling's observation that we can view the question of "what it is worth to reduce the risk of death" as a "consumer choice," and in his general thesis that "the life you save may be your own," is an invitation to think about matters of risk and precaution not only in the mode of market valuation but also as individual choices.<sup>52</sup> Consider the purchase of a new car. It seems perfectly prudent for a prospective purchaser to evaluate the desirability of purchasing an optional accident avoidance system by comparing the value of the accidents avoided to the value of the other goods one might purchase with the money it costs to add the option. In other cases, however, treating safety decisions as wholly individual would strike us as wildly inappropriate. Imagine for example, a peculiar person who is attracted to the idea of exposing himself to the level of risk involved in climbing K2, but utterly averse to the pain, suffering and intense exertion of Himalayan mountaineering. To tailor his life to his special taste for both risk and indolence, he hits on the idea of rigging up his car with an external gas tank so that even a minor fender bender might prove fatal. Because this way of pursuing his preferences for his own life seriously endangers others, it is implausible to think that the matter should be settled solely by reference to his peculiar preferences for risk and exertion.
- 42 The cost-benefit analysis of risk of death is far from indifferent to the distinction between these cases. It is keenly aware that the second case involves a major negative externality, whereas the first does not. But it responds to the difference between them in a distinctive way. Cost-benefit analysis instructs us to think about circumstances where some individuals' actions negatively impact the lives of others by incorporating the benefits to some and the costs to others into a single calculus of risk and benefit. In doing so, cost-benefit analysis models social decision on an intuitively appealing conception of individual rationality. In many circumstances, the prudent thing for each of us to do is to balance the costs and benefits of alternative courses of action and choose the action that is most net-beneficial. The extension of this conception to the circumstances of social choice, where costs and benefits fall on different people, is much less attractive. By combining all costs and all benefits into a single calculus of risk, cost-benefit analysis eclipses "the distinction between persons."<sup>53</sup>
- 43 When we take the distinction between persons seriously, the proper test of principles of risk imposition becomes not whether they maximize net benefit, but whether they are justifiable to those whose lives they govern. More particularly, taking the distinction between persons seriously in the context of accidental risk imposition directs our attention not to overall welfare, but to equal rights and interpersonal fairness. As important recent work in private law theory has insisted,<sup>54</sup> persons have a deep and fundamental right to their own bodies. With respect to their own bodies, persons are sovereign and the relations with others must be matters of equal rights. Each of us is the lord of our physical persons and equally so. This idea of persons as small-scale sovereigns applies directly to rights whose nature is to give persons control over prized zones of discretion, as the tort of trespass gives the owners of real private property control over who enters onto their land. When risk impositions are stake, however, the idea of individual sovereignty cannot be so directly applied. Risk imposition is irreducibly social.



In the modern world especially, risks are the inevitable byproducts of basic productive activities.

- 44 Consequently, notwithstanding important libertarian arguments to the contrary,<sup>55</sup> risk imposition cannot be governed by a norm of individual consent. Unlike normal entries onto real property, exposure to the risks imposed by others is normally involuntary. It is a fact of social life as we know it. Risk impositions must, therefore, be governed by a norm of interpersonal fairness. The terms on which risks are imposed must be justifiable to both those who impose them and those upon whom they are imposed, when each of these is understood as classes and articulated as the idea that principles of risk imposition must be justified from the basic “standpoints” of those affected.<sup>56</sup> Fairness comes to the fore because equal rights to the liberty and integrity of one’s person are at stake and those rights must be reconciled—fairly. Contractualism develops the idea of fairness in a particular way, a way in which ideas such as hypothetical agreement and justifiability to each affected standpoint play central roles. For present purposes it will do to understand fairness in a more general way—as a distinct domain of political morality, different from both the domain of rights and the domain of efficiency. Efficiency is primarily concerned with overall welfare; rights are primarily concerned with the claims of individual persons. Fairness is concerned with the distribution of burdens and benefits—“with how well each person’s claim is satisfied compared with how well other people’s [claims] are satisfied.”<sup>57</sup> Here, the claims are claims of equal right. Fairness looms large when the imposition of risk is at issue, both because we cannot make the terms of risk imposition a matter of individual consent and because risk impositions pit the claims of those who impose the risks and stand to benefit from them against those who are exposed to and endangered by those risks. Treating people fairly generally requires us to align burden and benefit proportionally.
- 45 In thinking about the fair distribution of risk, precaution and harm, it is important to distinguish between harms that are repairable and those that are not. When harms are fully repairable, as they are in *Vincent v Lake Erie*, we can achieve efficiency *ex ante* and fairness *ex post*. Damaging the dock to save the ship is efficient; it minimizes the total property damage done by the storm. Requiring reparation after the fact is fair; the ship owner who benefits from saving the ship also bears the cost of its salvation. Matters are different when the harms suffered by one individual are serious and irreparable impairments of normal agency, and even death. Fairness cannot be achieved after these risks have ripened into injury. It must be done *ex ante*, by ensuring that the terms on which the risks in question are imposed are justifiable to those on whom they are imposed. When the burdens of risk imposition are borne by some people in the form of serious, irreparable harm, and the benefits of imposing those risks are reaped by others, the distinction between persons looms especially large. A single person may rationally choose to bear some burden to achieve an end she values. It is eminently rational for a single person to settle on a level of precaution that maximizes her net benefit, *ex ante*. A plurality of distinct persons, however, lacks the unity necessary to make the imposition of significant harm on one person straightforwardly offset by the conferral of benefits on other people.
- 46 When risk imposition is interpersonal, risks of severe, irreparable injury ripen into harms which devastate the lives of some people while the activities responsible for those injuries redound to the benefit other people. This inequity cannot be justified by treating benefits to some and devastating harms to others as if they were benefits and harms



being borne by the same individual and maximizing overall benefit to the population as a whole. The gains to some may be insufficient to justify the harms to others. Reasonable principles of risk imposition must be justifiable both to those who stand to gain and to those who stand to lose. Reasonable principles of risk imposition seek to safeguard the essential conditions of rational agency for every person, so far as possible. Securing such protection may well conflict with promoting overall welfare. The claims of those whose lives are at risk of accidental destruction and devastation at the hands of valuable activities may require that those who reap the benefits of the risky activities at issue to accept standards of safety which require more than efficient precaution. The safety and feasibility principles address risks which ripen into harms which inflict enduring and incurable impairment on those they injure. Their justification lies in the strength of the claims that those who stand to suffer such injuries have, and in the priority we reasonably place on the avoidance of harm.

## 2.3 Autonomy and the asymmetry of harm and benefit

- 47 Harm has no special significance in cost-benefit analysis, and its avoidance has no special priority. Harm is just one possible cost in a calculus of cost and benefit, and costs and benefits are minuses and pluses on the same scale. “From an abstract perspective there would seem to be little reason for harms and benefits to be treated differently. Decades of cost-benefit analyses suggest that the two categories are interchangeable: reducing by one dollar damage that would otherwise occur is equivalent to providing a dollar’s worth of new goods or services.”<sup>58</sup> This claim of symmetry is true to cost-benefit analysis, but at odds with our ordinary intuitions and our law. In both morality and law our obligations to avoid harming others are stronger than our obligations to benefit them. We can be compelled to refrain from battering our neighbors, but we cannot be compelled either to love or to help them. Tort is robust whereas restitution is anemic. The American Constitution contains a taking clause, but not a “givings” clause.

### 2.3.1 Autonomy and asymmetry

- 48 For cost-benefit analysis, the harm-benefit asymmetry is a puzzle at best and an irrationality at worst. If avoiding a dollar’s worth of damage “is equivalent to providing a dollar’s worth of new goods or services,” then we ought to treat harms and benefits symmetrically.<sup>59</sup> If we take off the lenses of cost-benefit analysis, however, we can see the sense in the asymmetry. Harm is a morally- freighted word. It is presumptively wrong to harm someone and presumptively bad to suffer harm. In most circumstances, it is not presumptively wrong to fail to benefit someone. Benefits are presumptively good things, but they are also often trivial good things for which we have no use. Harms impair essential conditions of human agency. Physical harms—death, disability, disease, and the like—rob us of normal and foundational powers of action. Physical harm comes close to being unconditionally bad.<sup>60</sup>
- 49 Few benefits, by contrast, are unconditionally good. Benefits enhance lives, but their power to do so usually depends greatly on the details of the life in question. Extraordinary visual-spatial processing skills, for example, are of great value to football quarterbacks and of little use to accountants. Unusually low levels of anxiety may be indispensable to elite mountaineers and an impediment to a journalist who needs to take a “do or die” attitude towards a deadline. Whether some benefit—great wealth, or great

musical talent, or great athletic skill, or great mathematical brilliance, for example—plays a valuable role in someone’s life depends heavily on her aspirations and projects. Even great wealth is not an unalloyed good. Great wealth is necessary to major philanthropy, but it may impair the pursuit of authentic relationships. Nor should the capacity of wealth and its pursuit to get in the way of pursuing valuable ends be underestimated. It is well-known that winning the lottery is anything but an unalloyed good.<sup>61</sup> Being born rich may undermine drive and achievement.

- 50 Harms of the sort that concern us here and benefits stand in very different relation to autonomy because they stand in very different relation to our wills. Harms compromise our autonomy by impairing our normal powers of human agency. Benefits enhance our lives only if they are congruent with our wills. To thrust an unsought benefit upon someone and demand compensation from them for the value conferred is to impose upon them.<sup>62</sup> Unsought benefits stand in the same relation to our wills as harms do. They subject us to conditions which we have not chosen; they sever the link between our wishes, our wills and our lives and enlist us in other people’s projects. If I play beautiful music outside your open bedroom window and then stick you with a bill for my services, I determine the use to which you must put some of your time and some of your money. You are presumptively entitled to determine those things and your ability to do so is an important aspect of your autonomy.

### 2.3.2 Harm as impairment

- 51 The claims that harms impair autonomy—and that the conferral of benefit does not necessarily enhance autonomy—rest on conceptions of harm and benefit. The concept of a benefit, for its part, is broad, straightforward and relatively uncontroversial. A benefit is an advantage; something that promotes or enhances well-being.<sup>63</sup> The philosophical literature on “harm,” by contrast, is divided between dueling conceptions. It may be that harm is not a unitary phenomenon. Be that as it may, the argument being developed here draws on a conception of harm as a condition of impairment.<sup>64</sup> In contrast to the more prominent interest account of harm, the impairment account focuses on the condition or state itself, not on its relation to an antecedent or alternative condition. Suffering excruciating pain, for example, is harm—even if the alternative is death and even if you prefer agonizing pain to death. Core harms in this conception are conditions of impairment, conditions which compromise normal functioning. Blindness, for example, is a harm because sight is a normal human power, a part of normal human functioning. This is true even if the person in question is born blind and so never suffered the loss of sight—never underwent any worsening of position.
- 52 The concept of an “impaired condition” is a broad one. Anything that can function normally can have its proper functioning impaired. You can harm a toy robot in this sense, by breaking its motor. Harm in this broad sense need not impair autonomy; many things that are not autonomous have functions that can be impaired. The core cases that concern law and morality—cases such as physical disabilities, broken, deformed and lost limbs, chronic pain and serious developmental disabilities—constitute a narrower set of impaired conditions. Broken bones, severed limbs, disabilities of sight and hearing, diseased organs and disfigured body parts all compromise the capacities through which we act. Those capacities play central roles in normal human lives. When we are seriously ill—or disabled or in serious pain—we are denied our normal lives. These core harms compromise *basic powers of normal human agency*. They rob people of normal and essential

powers through which they shape their lives and their worlds in accordance with their wills.<sup>65</sup> The will looms large here because it is at the center of our understanding and experience of ourselves as agents. We draw upon our wills when we act and the exercise of our wills makes us aware of our own persons as beings capable of bringing possibilities into existence by choosing to do so. I can, for example, bring words into existence on a page by typing on a keyboard. Physical harms, chronic pain, and developmental disabilities deprive us of normal forms of mastery over ourselves, our experience, and some portions of the external world by driving a wedge between our wills and our lives. They thrust upon us “conditions that generate a significant chasm” between our wills and our experiences.<sup>66</sup>

- 53 One point in favor of the “impaired condition” conception of harm is that it maps remarkably well onto one of the basic features of that part of American tort law which addresses accidental injury. Tort law distinguishes between a broad conception of tortious wrongdoing as conduct, which invades “legally protected interests” (or rights), and a narrower conception of physical harm as the suffering of an impaired condition.<sup>67</sup> The *First Restatement of Torts*, for example, defined bodily harm as “any impairment of the physical condition of another’s body or physical pain or illness.”<sup>68</sup> The *Second Restatement* refined this definition. “Bodily harm” was defined as “any physical impairment of the condition of another’s body” and “an impairment of the physical condition of another’s body [exists] if the structure or function of any part of the other’s body is altered.”<sup>69</sup> The *Third Restatement* now defines “physical harm” as “the physical impairment of the human body (‘bodily harm’) or of real property or tangible personal property ... [such impairment] includes physical injury, illness, disease, impairment of bodily function, and death.”<sup>70</sup> Serious physical impairment deprives people of normal lives, a point explicitly recognized in statutes and cases. Michigan’s codification of the standard common law rule in the automobile accident context, for example, defines “serious impairment of bodily function” to mean “an objectively manifested impairment of an important body function that affects the person’s general ability to lead his or her normal life.”<sup>71</sup> A body of case law grappling with the slowly unfolding consequences of exposure to asbestos overwhelmingly holds that identifiable subclinical damage to human cells will not support a tort claim. “The threat of future harm, not yet realized, is not enough.”<sup>72</sup> Functional impairment must be shown.<sup>73</sup> Without such impairment there is no physical harm even though there are very real financial and psychological costs imposed by subclinical cellular damage caused by exposure to asbestos.<sup>74</sup>
- 54 Because physical capacities play central roles in normal human lives, physical harm is the central case of harm under the impaired condition conception.<sup>75</sup> Blindness is, for example, serious harm because sight is a normal human capacity and its loss usually diminishes a person’s life. Being blind denies someone access to an important range of normal human activities. Other things equal, a person whose sight is normal has access to a richer life than a blind person does. A broken leg is a serious harm because a person whose leg is broken is unable to engage in a range of normal activities, beginning with walking. Loss of a leg is a more serious harm than a broken leg, because loss of a leg is permanent whereas a broken leg, properly treated, will heal.<sup>76</sup> On an impaired-condition conception, then, the gravity of harm is usually a function of the importance to the victim’s life of the capacity that the harm impairs and the duration of the impairment.
- 55 When harm is conceived of as an impaired condition—and physical impairment is considered the core case—harm delineates a comparatively narrow domain of special

concern. Harm so conceived is much narrower than cost. Cost is any value given up in order to obtain some good. It encompasses any disadvantage, anything which diminishes well-being. Ordinary losses—athletic, financial and romantic—are costs, but not harms.<sup>77</sup> Ordinary losses make their victims worse off than they would otherwise be, but they do not leave their victims with permanent physical or psychological damage. The prospect of loss to others does not usually give rise to strong reasons to avoid inflicting such loss. The prospect of harm does. A person is, after all, at liberty to beat a competitor out for a job by being better qualified, but she is not at liberty to break that competitor's arm. In competitive circumstances, risk of loss is usually inseparable from the good that the competition seeks to realize. Races that cannot be lost are not worth winning, and markets in which firms cannot fail do not realize the benefits of economic competition. And, in sports, business and love, the risk of loss is accepted when the enterprise is taken up. Losses suffered in these arenas cannot usually be counted as harms. This is so even though it is not always worse to suffer harm than loss. Most of us would rather, for instance, break our pinkies than see our business bankrupted by a competitor. The point is that it is presumptively wrong to do harm, whereas it is not presumptively wrong to inflict loss. It is not presumptively wrong for one businessman to drive another out of business, fair and square, but it is presumptively wrong for one businessman to break another's finger. Absent some further condition—such as a right to, or a legitimate expectation of, some benefit—losses are not harms.<sup>78</sup>

- 56 Harm's special significance, it seems, is a consequence of its intimate connection to autonomy. There is nothing special about harm from an efficiency perspective; harms are simply one kind of cost. Yet, harm does have special significance in our ordinary moral thinking and in our law. To understand harm's special significance, we need to step outside the framework of cost-benefit analysis and adopt a framework which takes our separateness and independence as persons as fundamental, and which understands us as agents who have a fundamental interest in authoring our own lives. Harm has special significance because harms compromise our autonomy by impairing our normal powers of human agency. Benefits, for their part, do not stand in the same relation to autonomy. Benefits enhance our lives only if they are congruent with our commitments. Unsought benefits imposed upon us diminish our autonomy by enlisting us in other people's projects.

### 2.3.3 Tying the threads together

- 57 Taking the distinction between persons and the priority of avoiding harm seriously, and situating them within the larger philosophical framework where they are at home, puts us in a position to understand the logic at work in the safety and feasibility norms.
- 58 The safety and feasibility norms speak to the problem of how to trade safety off against other goods. They address the question of when some people are justified in imposing risks of harm on others because they stand to benefit from so doing. The measure of their success is whether they register the disproportionate importance of avoiding harm in a persuasive way. When we consider significant risks of serious harm, fairness forbids the unrestricted aggregation that is the hallmark of cost-benefit analysis. What it requires is that we compare the gains to those who stand to gain to the burdens to those who stand to lose.<sup>79</sup> Some gains—some benefits—are not comparable to serious harms. When serious harm is risked something of comparable importance must sit on the benefit side of the scale. Not all benefits will do. An example of Scanlon's brings this out.<sup>80</sup> Scanlon supposes

that a piece of transmitting equipment has toppled and pinned a television technician helping to broadcast a live sporting event to which tens of millions of viewers are glued. The technician is in agonizing pain and serious risk of further harm, including death. The only way to save the technician's life is to interrupt the broadcast for thirty minutes, by which time game may have ended. Unrestricted cost-benefit analysis holds that, if enough people stand to be disappointed by the termination of a television show, terminating the life of a television technician may be preferable to terminating the broadcast of the show. The net benefit to all of the viewers (measured by what they would be willing to pay to have the broadcast continue) might easily exceed the net loss to the technician (measured by what he would be willing to pay to have the transmission interrupted).

- 59 Our moral sensibility balks at the conclusion that net social benefit is dispositive in this case. We take the distinction between persons seriously. Taking that distinction seriously brings issues of interpersonal fairness to the fore. Although the number of viewers may be vast, the harm to them is not morally comparable to the harm that the technician stands to suffer. No amount of inconvenience and disappointment distributed across a population of distinct persons sums to the moral equivalent of subjecting someone to unendurable pain. Consequently, we should not decide how to proceed by measuring the victim's preference for having her agony alleviated in dollars and then comparing that sum to the price that the viewers would pay to have the broadcast continue. The cost to the technician and the benefit to the viewers are not substitutable at some ratio of exchange. The benefit to the viewers is, comparatively speaking, trivial and the harm to the technician is devastating. Aggregating harms and benefits does not make moral sense when the harms and benefits are not comparable.
- 60 Health and physical integrity are kinds of primary goods. Safety secures the physical integrity of the person against harm. Values, for their part, are plural and incommensurable. The point of protecting the essential conditions of agency for each person is to enable people to shape their own lives in accordance with their aspirations. Within a framework that prioritizes the protection of each person's essential interests, the attraction of the "safety" norm is evident enough. Just as efficient precaution is the first-best standard of precaution for economic theory, the "safety" norm is the first-best level standard of precaution for the contractualist form of liberalism we have invoked. Safety, like health, is a precondition of effective agency and the best social world is a social world which is safe for everyone.
- 61 To be sure, we might think that the first-best social world is a world of "no risk", not a world in which "significant" risks have been eliminated but "insignificant" ones live on. On plausible assumptions about the nature of our world, however, a world of "no risk" is not a world worth having. So far as risk is concerned, our predicament is that liberty and security conflict.<sup>81</sup> Perfect safety is unattainable. Risk of physical harm—diminished security—is the byproduct of action. Diminished liberty is the price of increased security. We cannot farm, build, drive, fly, eat and drink, or mill cotton and refine benzene without taking and imposing risks of devastating injury. Foregoing all activity would itself be a short path to death, and even if death could somehow be avoided, foregoing all activity would cripple the pursuit of our aims and aspirations as surely and severely as devastating physical injury does. A world in which no one moves is a world in which few, if any, aims, ends, and aspirations can be realized, and few, if any, lives can be led. We must therefore bear the level of risk that we might call the background level of risk.

- 62 Background risks are worth bearing because eliminating them does even more harm to our ability to lead the lives we wish to lead than bearing background risks does. This is true even though the risks are sure to result in some devastating injuries. The background level of risk must be accepted despite the fact that level results in some devastating injuries, because some risk of devastating injury is the price of activity and activity is worth having. Without a “significance” requirement, one essential condition for leading a worthwhile life—the freedom to act in the world—would be destroyed in the name of another essential condition, namely, safety. The elimination of *all* discernible risk requires the elimination of all discernible activity. And the elimination of all discernible activity is a cure worse than the disease it treats.
- 63 If this broad account of our predicament is correct, the safety norm with its “significance” requirement is the first-best norm for the regulation of risk because it secures for each person the lowest level of risk compatible with adequate freedom for the pursuit of diverse ends and aspirations. The feasibility norm presents a more difficult case. It sacrifices safety in order to secure some other good. In theory, health and safety should only be sacrificed in order to promote some even more urgent interest. Within the framework sketched by this paper, trading health or safety off against other goods requires making judgments of urgency (or need) not preference (or want). Those who demand more (or less) safety must show that their claims are more pressing than the claims they purport to overcome. The feasibility norm discharges this responsibility by embodying a general judgment of value, namely, that the continuation of the activity responsible for the risks in question is more important than reduction of risk to the “safe” level. The feasibility norm prescribes that risks should be reduced only to the point where further reduction would jeopardize the long-run survival of the activity responsible for the risks at issue.
- 64 In the domain of its original formulation, the feasibility norm addressed basic industrial activities (milling cotton, refining petroleum) that were taken to be so deeply embedded in the economy that their elimination was unthinkable. The plausibility of the norm, in this or any other application, depends on the persuasiveness of the judgment that the value secured by the long-run flourishing of the activity in question is greater than the value secured by reducing risk to the “safe” level is. The answer to that question depends on the context at hand, and lies beyond the scope of this paper. Here, we can say only that the measure of the feasibility norm’s success is whether, in some particular domain of its application, it registers the priority of avoiding harm properly, and retreats from the “safe level” of risk only in pursuit of some greater value.

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## NOTES

1. Krugman 2015.
2. Plungis 2017: 15 (discussing autonomous vehicles).
3. Masur & Posner 2010: 707 and 709.
4. Fried 2012: 231.
5. Sunstein 2010: 20 (“it would be premature to say that CBA has received the kind of social consensus now commanded by economic incentives and deregulation of airlines, trucking and railroads. I believe that CBA should command such a consensus, at least as a presumption, and that the presumption in favor of CBA should operate regardless of political commitments.”). See also Sunstein 2002a; Sunstein 2014; Sunstein 2015 (praising the Supreme Court’s decision in *Michigan v. EPA* “as a ringing endorsement of cost-benefit analysis by government agencies.”).
6. See Sunstein 2002b.
7. See *Michigan v. EPA*, 135 S.Ct. 2699, 2707-08 (2015).
8. Calabresi 1970: esp. at 24–26. See also Calabresi 1980 and Dworkin 1980a.
9. Kaplow & Shavell 2002.
10. The contemporary debate arises out of Scanlon’s discussion of aggregation in Scanlon 1998: 229–41. For an instructive recent discussion see Frick 2015. Professor Fried is an important contributor to this debate. See Barbara Fried 2012.
11. Dworkin 1980b.
12. Kaplow & Shavell 2002 assumes both that welfare is the touchstone of economic analysis and that welfare is the only ultimate value. Most proponents of cost-benefit analysis identify it as welfarist. See e.g., Livermore & Revesz 2014: 1190. (“Cost-benefit analysis ... places both costs and benefits along a common metric and supports the standard that maximizes net benefits (the difference between benefits and cost). As practiced in the United States ... cost-benefit analysis is grounded on a welfare economic conception of social good ...”); Schuck 2014: 45 (“CBA is a welfarist decision-making tool, focusing on the actual consequences of policies for human well-being.”).
13. Kaplow & Shavell 2000.

14. For discussion of the diversity of valuable things and criticism of the idea that welfare is a master value, see Scanlon 1998: 79-143.
15. Shiffrin 2012.
16. Kumar 2012: 150 (quoting Korsgaard 1993).
17. Livermore & Revesz 2014 refers to what I call “safe level” analysis as “health-based analysis.” I shall sometimes refer to the “safe-level” standard as the “safety” standard.
18. It is debatable whether this relation is necessary. Arguably, there are circumstances where it is not cost-justified to engage in an activity in the first place and where the activity is also governed by feasibility analysis. In this circumstance, feasible precaution will be less protective of safety than cost-justified precaution. None of the circumstances discussed in this paper fit this template. Examples that might fit the template involve freely chosen, but very risky activities. Some people might argue that it is foolish to engage in some such activity (e.g., in “free solo” rock climbing). At the same time, it will be true that the risks of such activities cannot be reduced to insignificance because that would destroy the value of the activity.
19. The Food Quality Protection Act of 1996, Pub. L. No. 104–170, 110 Stat. 1489 (codified as amended at 7 U.S.C. § 136, and in scattered sections of 21 U.S.C. (2000)). Clean air statutes also incorporate safety-based regulation. The Clean Air Act, Pub. L. No. 101-549, 104 Stat. 2399 (codified as amended at 42 U.S.C. §§ 7401–7671 (2000)).
20. 21 U.S.C. § 346a(b)(2)(A)(ii).
21. *Id.*
22. § 346a(b)(2)(C)(ii)(II).
23. Efficient precaution is taken when the marginal cost of the next increment of precaution would exceed its marginal benefit (i.e., when a dollar more in precaution would yield less than a dollar’s worth of harm avoided).
24. 42 U.S.C. § 7412(d)(2). This requirement is part of the 1990 Amendments to the Clean Air Act. Feasible risk reduction is a statutory standard in the Occupational Health and Safety Act of 1970, and it is in this context that it has received its most extensive application and articulation.
25. Solow 1981:40. This is basic idea of cost is often called “opportunity cost.”
26. Cooter & Ulen 2016.
27. Only two of “ten major regulatory statutes enacted in the 1960’s, 1970’s and 1980’s [...] expressly authorize the balancing of benefits and costs for core agency actions.” Cannon 2010: 426.
28. Exec. Order No. 12,291, 3 C.F.R. 127 (1982) (repealed 1993). The courts have long held that the major environmental and occupational safety statutes forbid consideration of cost. In 2001, a unanimous Supreme Court held that the EPA “may not consider implementation costs” in setting ambient air quality standards under the Clean Air Act. *Whitman v. American Trucking Associations*, 531 U.S. 457 (2001). Writing for the court, Justice Scalia observed: “Were it not for the hundreds of pages of briefing respondents have submitted on the issue, one would have thought it fairly clear that this text does not permit EPA to consider costs in setting standards [...] The EPA [...] is to identify the maximum airborne concentration of a pollutant that the public health can tolerate, decrease the concentration to provide an ‘adequate’ margin of safety, and set the standard at that level.” *Id.* at 465. *Entergy Corp v. Riverkeeper, Inc.*, 556 U.S. 208 (2009) may represent a slight retreat from this position. See Cannon 2010.
29. See *e.g.*, Schwartz 1988; see also, Schwartz 1992.
30. *Green v. Smith & Nephew AHP, Inc.*, 629 N.W.2d 727 (Wis. 2001).
31. Keeton, Sargentich & Keating 2004: 975-76. See also, *Green*, 629 N.W.2d at 732 (summarizing the facts of Ms. Green’s case).
32. The outcome under the risk-utility test depends greatly on whether that test is applied with foresight or hindsight. The trend is to apply the test with foresight. For an example of a case with

virtually identical facts where the court refused to apply the expectation case and refused to impose liability under the risk-utility test *see Morson v. Superior Court*, 90 Cal. App. 4th 775 (2001).

33. *Green*, 629 N.W.2d at 735.

34. The *Green* opinion would have been better if the court had discussed just what kind of expectation was disappointed by the product failure. Not every consumer expectation is reasonable. On the one hand, some expectations are mere wishful thinking. It would, for example, be wishful thinking to expect that no user would ever have an allergic reaction to a product. Idiosyncratic reactions exist. A one-in-a-billion susceptibility to illness does not impugn a product's safety under the expectation test. We take the one-in-a-billion reaction to reflect a rare sensitivity on the part of the victim. What's surprising and disappointing about latex gloves is that *so many* users (5 to 17 percent) suffer severe harm. On the other hand, it asks too much to expect consumers to form expectations about underlying mechanisms of possible product malfunction. The *Green* court agreed with the defendant that "most consumers ... generally do not have expectations about ... technical or mechanical design aspects of the product." It disagreed over whether such expectations are necessary. What it found necessary was a secure and reasonable expectation about product performance.

35. The term "statistical lives" was coined by Schelling 1984. Schelling distinguished statistical lives from "identified" ones. Identified lives are actual persons who will live if certain steps are taken and die if they are not. Statistical lives are abstract lives; they are the lives that will be saved down the road if some precaution is taken, or some safety program is implemented. Statistical lives are not identifiable at the time a precaution is taken, and may remain unidentifiable even after a precaution has been implemented and has saved lives. The term was coined by Schelling, but the phenomenon had been recognized before it was named. See Calabresi 1965.

36. The questions raised by the distinction between "statistical" and "identified" lives in the rescue context are multiple and difficult. For one thing, if we suppose that even the best of precautions will not prevent all accidents, it may be eminently rational in even a cost-benefit sense to commit ourselves in advance to rescue practices which look extravagant at the time we undertake them. For another, *contra* Schelling, the distinction between identified and statistical lives may make a major moral difference. Obligations may be owed to actual persons, but not to theoretical constructs. See Frick 2015. These complexities are beyond the scope of this paper.

37. Rescues give the question of appropriate precaution a particular posture. The question is not what risk some people may impose on others, but what costs—including risks of death—rescuers may reasonably take upon themselves to save the lives of others. The important common law case *Eckert v. Long Island RR* has this posture. Here, too, the court's analysis of whether the rescue was prudent appears to be governed by a norm of possibility or feasibility. *Eckert v. Long Island RR*, 57 Barb. 555 (N.Y. 1870).

38. Caputo 1977: vii. I owe the Caputo example to MacLean 1994: 172. A more recent example can be found in *Black Hawk Down* (book written by Mark Bowden in 1999, film released in 2001). During the Battle of Mogadishu in 1993 the United States sent soldiers to rescue the crews of downed Black Hawk helicopters, notwithstanding the enormous risk involved. A number of soldiers have been posthumously awarded the Medal of Honor—the highest military honor in the United States—for sacrificing their own lives in such rescue attempts.

39. *Vincent v. Lake Erie Transp. Co.*, 124 N.W. 221 (Minn. 1910). In *Vincent*, a ship was lashed to a dock to avoid being cast out to sea in a storm. The ship's otherwise trespassory entry onto the plaintiff's property was held to be privileged under the doctrine of necessity, but the privilege was held to be conditional. Defendant was allowed to dock without permission but had to repair the damage it did to the dock.

40. Orthodox cost-benefit analysis embodies the Kaldor-Hicks or potential Pareto-superiority criterion of efficiency. That criterion maximizes net benefit. See Adler 2007.

41. The proposition that it is irrational to act in ways which do not maximize net benefit is a piece of the thesis of Kaplow & Shavell 2002: xviii. They write “[u]nder any method of evaluating social policy that accords positive weight to a notion of fairness, there must exist situations in which all individuals will be made worse off.” Maximizing net benefit makes it possible for everyone to be better off than they would be in a world with less net value. There is more value to go around.
42. See *e.g.*, Shuck 2002; Frank 2000 (noting that many find it “hard to imagine” that anyone could disagree with the “commonsensical” principle that we should take only those actions whose benefits exceed their costs).
43. As has long been recognized. See Calabresi 1970: 205–08.
44. Schelling 1984: 113, 114, 115. See also, Schwartz 1991.
45. *Id.*
46. See Viscusi & Gayer 2016.
47. In the context of health and safety regulation, orthodox cost-benefit analysis recommends monetizing all of the costs and all of the benefits of a regulation in order to compute net benefit. Heterodox forms of cost-benefit analysis make various allowances and adjustments. See, *e.g.*, Adler & Posner 2006.
48. Demsetz 1982: 44.
49. Kant 1785. In *The Basic Liberties and Their Priority*, Rawls explains that the priority of the basic liberties rests in part on the premise that not all interests are fungible at some ratio of exchange. RAWLS 2001.
50. See *e.g.*, Calabresi 1970: 17 (listing the preservation of life “at all costs” as the first of four “myths” that “will make our analysis difficult if not cleared up.”)
51. Scanlon 1998: 106.
52. See Schelling 1984: 113, 114, 115.
53. This, of course, is a longstanding criticism of utilitarianism, the parent philosophy of cost-benefit analysis. See Rawls 1999: 24.
54. See generally, Ripstein 2016.
55. Nozick 1974: 54–87.
56. See Kumar 2012.
57. Broome 1991: 94–95. See also, Frick 2015. See also, Waisman 2014; Simons 2008.
58. Gordon 1992: 451.
59. Gordon 1992: 451.
60. In some cases, the physical harm suffered may avoid a greater physical harm. In others, the harm may enable the realization of some value or good to whose realization the harmed person is deeply committed. These are exceptional cases, however, and even in these cases the harm suffered is still, in itself, bad. A broken arm may be worth suffering if it avoids death by drowning, but it is still a harm.
61. See, *e.g.*, Brickman 1978.
62. See, *e.g.*, Fennell 2014 (discussing forced ownership of property by the government).
63. See, Shiffrin 2012.
64. Preeminently, this conception is advanced by Thomson 1990: 262–68, and by Shiffrin 2012. See also Thomson 2011. A third conception of harm, championed by Matthew Hanser, takes harms to be events that injure basic human goods, not the ensuing conditions of impairment. Basic goods are “those goods [the] possession of which makes possible the achievement of a wide variety of the potential components of a reasonably happy life [...] [The] basic goods [...] include certain fairly general physical and mental powers and abilities. The power of sight, for example, is a basic good for human beings.” Hanser 2008: 440–41.

65. See Shiffrin 2012: 383. In sharpening the concept of harm in this way Shiffrin is, in part, criticizing Raz's conception as too broad. See Shiffrin 2012: 389, n. 48. By contrast, she is further articulating Thomson's conception, though Thomson might not accept the sharpening. See Thomson 1990: 227–48, 250–51, 253–71; Thomson 2011.

66. Shiffrin 1999.

67. See, e.g., *Restatement (Second) of Torts* §§ 7, 15 (1965).

68. *Restatement (First) of Torts* § 15 (1934).

69. *Restatement (Second) of Torts* § 15 cmt. a (1965). Section 7 distinguishes “bodily harm” from “injury” with “injury” covering cases in which a “legally protected interest” is invaded, but no harm is done. A harmless trespass would be an injury in this sense. *Id.* at § 7.

70. *Restatement (Third) of Torts: Liability for Physical & Emotional Harm* § 4 (2010). The *Third Restatement* extends the idea of harm as an impaired condition to include the impairment of property. The philosophical conception of harm is concerned only with harm to persons. The question of how to account for the importance of property damage to tort is peripheral to the concerns of this paper. Offhand, the easiest way to make the extension would appear to be to draw upon the fact that we have rights in property. Those rights give rise to claims against others that they not damage our property, and make impairment of our property a harm to us.

71. MCL 500.3135(1) (“A person remains subject to tort liability for noneconomic loss caused by his or her ownership, maintenance, or use of a motor vehicle only if the injured person has suffered death, serious impairment of body function, or permanent serious disfigurement.”). A recent Michigan Supreme Court case, *McCormick v. Carrier*, 795 N.W.2d 517 (Mich. 2010), applies this concept of impairment in an instructive manner. Plaintiff's foot was broken and bruised when defendant's truck ran it over. The foot healed, though it continued to ache occasionally. With the healed foot the plaintiff could perform the same work he performed prior to the injury but the post-injury foot hampered his fishing and other recreational activities. The court found impairment because plaintiff's ability to lead his normal life was adversely affected.

72. *Burns v. Jaquays Mining Corp.*, 752 P.2d 28, 30 (Ariz. Ct. App. 1987) (quoting Prosser & Keeton 1984: 165, § 30). Pleural thickening, a condition in which the lining of the lung thickens, may be the most common form of cellular damage which does not, by itself, count as physical harm. Because the harms of asbestos exposure are progressive, pleural thickening is a harbinger of asbestosis and mesothelioma.

73. In addition to *Burns*, *id.*, illustrative decisions include *Owens-Illinois, Inc. v. Armstrong*, 604 A.2d 47 (Md. Ct. App. 1992); *In re Hawaii Federal Asbestos Cases*, 734 F.Supp. 1563 (D. Haw. 1990). *Verbryke v. Owens-Corning Fiberglas Corp.*, 84 Ohio App.3d 388 (1992) holds that pleural thickening does constitute bodily harm, but it is abrogated by *Ackison v. Anchor Packing Company*, 120 Ohio St.3d 228 (2008).

74. Medical monitoring costs, for example, are very likely to be incurred if a patient presents with subclinical damage from asbestos. The psychic costs are even larger. Persons afflicted by such changes live under swords of Damocles that are beginning to drop. This is a real and serious psychic burden, as the U.S. Supreme Court notes in *Norfolk & W. Ry. Co. v. Ayers*, 538 U.S. 135, 150 (2003) (“In the course of the 20th century, courts sustained a variety of other “fear-of” claims. Among them have been claims for fear of cancer. Heightened vulnerability to cancer [...] must necessarily have a most depressing effect upon the injured person. Like the sword of Damocles, he knows it is there, but not whether or when it will fall.”) (Internal quotations and citations omitted).

75. Psychological harm follows not far behind. Impaired psychological capacities wreak similar havoc with normal lives. Child sexual abuse, for instance, usually leads to serious harm because it usually damages the capacity to trust other people and so impairs the formation of normal and valuable human relationships. Disfigurement is, intuitively, a core case of harm, but not an easy



case to explain. The role of normal human appearance in social relations probably explains the importance of disfigurement as a harm. Goffman 1963: 41–104.

76. In *Davis v. Consolidated Rail*, 788 F.2d 1260 (1986), Judge Posner remarks that “the loss of a leg is a terrible disfigurement, especially for a young man” even if the victim “is able to walk with the aid of prosthetic devices, to drive, to work, and in short to lead almost a normal life.” Precisely because the idea of harm as impairment is not a part of the economic theory to which Judge Posner subscribes, this appeal to ideas of disability and disfigurement is revealing. *Id.* at 1263.

77. Influential psychological research by Daniel Kahneman and others has shown that people’s ordinary judgments about gains and losses violate the prescriptions of expected utility theory because people treat financial losses and gains differently. See Kahneman 1991. There is an obvious resemblance between the asymmetry of harm and benefit in law and morality and the asymmetry of gain and loss in observed human behavior. It is therefore tempting to regard the harm-benefit asymmetry as an instance of a more general psychological aversion to loss. That temptation should be avoided. The two asymmetries are importantly different. Harms generally result in impaired conditions whereas losses generally do not. Moreover, insofar as the take home lesson of the psychological research is that people make irrational judgments, that lesson is at odds with the argument developed here. The argument developed here is that people have good reasons—rooted in considerations of autonomy—to treat harms and benefits differently.

78. See Fennell, 2014, and accompanying text.

79. This involves evaluating risk impositions from “representative standpoints” and considering the “generic reasons” relevant to those standpoints. See Kumar 2015a and 2015b. The presumptively relevant standpoints are the standpoints of potential injurers and victims. Often these standpoints must be revised and refined to analyze a particular circumstance well.

80. See Scanlon 1998: 235.

81. For these purposes, liberty is the freedom to impose risk on others and security freedom from harm arising out of risk imposed on us by others.

## ABSTRACTS

Standards which prescribe more than efficient precaution against physical harm and health injury are commonplace in American environmental, health and safety regulation. Yet these standards are now routinely decried as irrational. Welfare, we are told, is the ultimate and only value and it prescribes efficient precaution. This paper argues that, in both law and ordinary moral reasoning, the avoidance of harm has priority over the provision of benefit. Harm avoidance has a justified priority but that priority is rooted in the value of autonomy, not in the value of well-being. Serious physical harms impair the pursuit of a wide range of human ends and aspirations, and deny normal human lives to those whose powers are impaired. Only some gains and some values are important enough to justify the imposition of “significant risk” of devastating physical injury. The judgment here is not one of cost and benefit, but of comparable value.

## INDEX

**Keywords:** harm, cost, loss, impairment, agency, autonomy, avoidance, efficiency, feasibility, precaution, risk, safety, welfare, cost-benefit analysis, priority of avoiding harm, risk regulation

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