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Lewis A. Kornhauser
New York University

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Incentives, Compensation, and Irreparable Harm

Lewis A. Kornhauser[*]

1. Introduction

Many individual, organisational and corporate activities impose a risk of harm on individuals, their property, or the environment generally. Society regulates these risks in a variety of ways. This Chapter focuses on the use of *ex post* liability rules that impose liability on one or more actors deemed 'responsible' for the harm. In domestic legal systems, *ex post* liability rules typically regulate the basic relations between private individuals; intentional torts, accidents between strangers, and most contractual relations are governed by *ex post* liability rules. *Ex post* regulation of harm might play an equally significant role in international legal contexts as, in many international law contexts, institutions for the creation and implementation of *ex ante* regulatory instruments are scarce and underdeveloped.[1]

I shall distinguish three aspects of the assignment of responsibility.[2] First, the law determines

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[1] I make the distinction between *ex ante* and *ex post* as it is used by economic analysts of law. Nollkaemper and Jacobs (P.A. Nollkaemper and D. Jacobs, 'Shared Responsibility in International Law: A Conceptual Framework' (2013) 34 MIJIL 359 at 365) elide three different senses to this distinction, only one of which corresponds to the distinction as used in the text. Each sense identifies a different decision that might come before (*ex ante*) or after (*ex post*) a relevant event. In each case, the relevant event is the realisation of the harm that gives rise to the dispute. Economic analysts consider the relevant decision to be the regulatory action of the government. When regulation is *ex post*, harm is a necessary condition for government application of a rule; this idea is central to Nollkaemper and Jacobs. They use the same terms, however, to mark two different distinctions. On occasion, the *ex ante/ex post* distinction refers to the timing of the creation (or recognition) of the defendant's legal obligations. Common law rule-making is often regarded (and criticised) for creating obligations after the agent has acted and caused a harm whereas, when legislators enact a statute, it imposes obligations going forward. The distinction relied on the text is independent of this distinction; the timing of the regulatory action of the government is independent of the manner in which an obligation is created. Finally, the terms occasionally mark a distinction between rules that create incentives for agents looking forward and rules that resolve disputes. As defined in the text, however, *ex ante* and *ex post* regulation both create incentives for agents looking forward. The legal rule places a contingent price on risk-creating actions. When a risk is realised and harm occurs, the agent pays; *ex ante*, when making her decision, the agent weighs the *expected* costs she will face – the costs of an injury weighted by the probability that her action will lead to injury.

[2] Again, Nollkaemper and Jacobs use the term 'responsibility' slightly differently. They distinguish responsibility from reparation. Responsibility for them encompasses more than causal responsibility, the first aspect of assignment

what I shall call *causal responsibility*; it identifies which actor or actors created the risk. Second, the law assigns what I shall call *legal responsibility* for the harm; it identifies those actors who must 'remedy' the harm. Finally, the law determines *financial responsibility* for whatever remedy the law provides.

These three forms of responsibility are related in complex ways. First, the complexity arises in part from the tension between two distinct motivations for a liability regime. On the one hand, the law, through the liability regime, may seek to mitigate the risks that led to the harm. This aim is forward looking; society wants agents to take actions that reduce the risks and hence, on average, the realised harms from these risks. I shall sometimes call this aim, *deterrence*[3] and sometimes the *incentive* aim.

On the other hand, a liability regime seeks to compensate the 'victim' of the harm. This aim is backward looking. A liability regime accomplishes this compensation by 'shifting' the realised harm from the 'victim' to one or more legally responsible agents. I shall call this aim *compensation*.

Society has other means, both legal and non-legal, for achieving the twin aims of compensation and deterrence. *Ex ante* regulation through licensing, taxing of inputs, command and control regulations, product standards, and markets in tradable permits, to name a few, are *ex ante* tools that regulate or deter actions that impose risks. In most instances, these regulatory techniques complement rather than replace regulation through *ex post* liability rules, though, as noted above, they typically require a strong institutional basis for their successful creation and implementation.

The law also may *shift* the burdens created by the realised harm. More precisely, society may *spread* the risk through insurance or other mechanisms. Insurance requires the bearer of financial responsibility to have made a prior premium payment in exchange for the right to indemnification from the insurer for the loss. Other mechanisms typically spread losses among taxpayers by

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of liability discussed in the text, but falls short of a duty to repair or compensate. By contrast, their idea of reparation apparently includes the other two aspects of responsibility discussed above: the obligation to remedy and financial responsibility for that remedy. Ibid., at 412.

[3] In many ways, this term is misleading as it may suggest that society seeks to *eliminate* the risk when, in fact, society definitely does not aim at risk elimination. A more precise statement of the social attitude towards a risk requires that we articulate the social objective function which will generally involve multiple goods, some of which are promoted by activities that carry the risk and some of which are lost when the risk is realised.

providing ‘social insurance’ to the individual financially responsible.

A second source of complexity in the relation among the three types of responsibility arises from the nature of the harms that risky activities cause. Much of the legal literature treats harms in an undifferentiated way and understands the aim of compensation as one of ‘making the victim whole’. This approach only makes sense for certain types of harms, specifically monetary losses (or losses of property) and certain types of what I shall call ‘transient personal injury’. In these instances, the victim can in fact be made whole, at least in the economist’s sense of delivering a bundle of goods that makes the victim, from her own perspective, as well off after suffering the harm as she would have been had the harm not occurred. Harms for which an agent can be made whole I shall call ‘monetary harms’ or ‘financial harms’.[4]

Not all harms however are financial harms. Some harm is *irreparable*. Irreparable harms cannot be shifted or spread. The victim alone bears them; as a consequence, I shall argue, deterrence should play the dominant role in the assignment of legal responsibility and the determination of the extent of financial responsibility.

The harm to an agent who loses her eyesight in an industrial accident cannot be shifted to the employer or the supplier of the equipment that caused or contributed to the accident. Though the agent receives ‘compensation’, she remains blind.[5] Similarly, when a nuclear power plant discharges significant radioactive materials into the environment and contaminates water and soil so that it is not fit for human habitation, no monetary transfers may repair the damage. It will thus be useful in what follows to distinguish two aspects of a damage award: compensatory damages and risk-reducing damages.[6]

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[4] When harm is purely financial, there is a sense in which there is no victim. The action of one or more agents causes a loss; the liability rule then identifies who must bear that loss. The legal rule thus, in some sense, identifies the ‘victim’ by assigning responsibility for the financial loss. As the next paragraph indicates, not all injuries are, like financial losses, transferable.

[5] Of course, the law might shift the pecuniary losses of income to the employer or supplier, or spread that pecuniary loss through disability insurance. After this monetary transfer, however, the agent remains blind and she cannot be compensated *ex post* for that loss. She cannot be ‘made whole’ under any reasonable understanding of that term. Notice that an agent might purchase insurance against loss of eyesight, if such a market existed, but the face value of that purchase does not reflect the value to her of her eyesight. Insurance merely transfers income from the state of the world in which the agent has sight to the state of the world in which she is blind. She will transfer income from one state to the other until the marginal value of money in the two states is equal.

[6] Damages for torts in the United States fall into three legal categories: pecuniary damages; pain and suffering; and punitive damages. Pecuniary damages encompass all pecuniary harm: damage to property, medical expenses, and

When a single tortfeasor causes a financial harm, a standard liability rule can fully satisfy both the compensation and the deterrence aims.[7] When a single tortfeasor causes an irreparable harm or when multiple tortfeasors cause any harm, irreparable or not, the compensatory aim may conflict with the deterrence aim. So, for example, in the case of monetary harm only caused by multiple tortfeasors, a rule of strict liability satisfies the compensation aim but it will distort the incentives of at least one of the tortfeasors.[8]

This Chapter uses the economic analysis of law to illuminate the relations among the three allocations of responsibility: causal responsibility, legal responsibility, and financial responsibility. Section 1 offers a brief introduction to the economic analysis of liability rules. It emphasises the role of irreparable injury in structuring the effects of these liability rules on deterrence and compensation. Sections 2 and 3 use the insights of this economic analysis to reflect on the assignment of responsibility to international governmental organisations (international organisations or organisations). The activities of international organisations present a particularly interesting setting in which to examine these liability issues, as many such activities impose irreparable injury. Section 2 discusses abstract features of international organisations. Section 3 considers two stylised examples, patterned on two actual incidents. First, the actions of the United Nations Children's Fund (UNICEF) in funding the construction of wells in Bangladesh that were tainted with arsenic; and second, the introduction of cholera into Haiti by the United Nations Stabilization Mission in Haiti (MINUSTAH). In this Chapter, I largely ignore the actual *ex post* liability legal regime governing international organisations.[9] Rather I sketch the

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lost wages. When personal injury is transient, 'pain and suffering' might be interpreted as 'compensatory' in the sense of compensating the agent for welfare losses suffered from personal injury; On this account, a plaintiff who has suffered a broken arm, incurs welfare losses for the periods during which her arm has not reached its healthy state; we can imagine that a transfer of some finite sum in each period she is 'not whole' would provide the plaintiff with an equivalent amount of well-being she would have had in the healthy state. A permanent personal injury such as blindness or death, however, presents a different situation. It is not clear that any finite sum could compensate the victim for her lost welfare; we require a different approach to calculating pain and suffering. From an economic perspective, that approach would set damages so as to create optimal incentives on the defendant to reduce risk to the socially optimal level. We might understand punitive damages similarly. Notice that these risk-reducing damages operate like a fine or a tax; the economic account requires some justification for transferring these amounts to the victim. See A.M. Polinsky and Y.-K. Che, 'Decoupling liability: optimal incentives for care and litigation' (1991) 22(4) RAND JE 562.

[7] This claim rests on a characterisation of the victim as the party on whom the loss 'initially' fell. The requisite rule is then one of strict liability.

[8] Again, this claim rests on some non-legal basis for the identification of the victim.

[9] As laid down in the Articles on the Responsibility of International Organizations, ILC Report on the work of its sixty-third session, UNGAOR 66th Sess., Supp. No. 10, UN Doc. A/66/10 (2011) (ARIO). See for a comprehensive

underlying economics of various doctrines that apply to private actors and in many contexts to sovereign governments, and that might be applied to international organisations.

2. Economic analysis of joint and several liability

This section outlines the economic analysis of accident law. The first subsection sets out the basic elements in the context of an accident caused by the actions of a single agent. The second subsection considers the more complex case in which the accident arises from the actions of two agents, on one of whom the loss initially falls. The third subsection uses these concepts to analyse the case in which the accident arises from the actions of two or more agents, none of whom initially bears the loss. The final subsection briefly discusses vicarious liability which may be understood as a form of joint and several liability.

2.1 The (second) simplest tort

Economic analysis of accident law emphasises the deterrent function of liability rules. It begins from an assumption that the legal rules are instruments designed to further social objectives. Typically, analysts assume that society seeks to maximise social welfare but little in the argument turns on the content of the social objective.[10]

Within this framework, analysts investigate how individuals respond to legal rules in general and liability rules in particular. Liability rules create incentives; rationally self-interested individuals make socially desirable decisions only if they see the full costs and benefits of their actions. Imposing liability for harm caused thus may improve decision making from a social perspective as, otherwise, the decision-maker may fail to see the full costs of her decisions.

Accidents arise in myriad ways. The simplest accident is an act of god in which the harm an

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assessment of these rules P.A. Nollkaemper and I. Plakokefalos (eds.), *Principles of Shared Responsibility in International Law: An Appraisal of the State of the Art* (Cambridge: CUP, 2014).

[10] The analysis, that is, assumes that the law is an instrument for achieving certain aims and that agents respond to the incentives created by the legal rules. A liability rule thus puts a 'price' on specific conduct; that price reflects the value of the harm incident to the conduct undertaken.

individual suffers results from purely non-human causes. Such accidents are rare, if they exist at all, as human agency can mitigate almost any risk. Typical natural disasters such as earthquakes, hurricanes and floods cause harm to individuals who have chosen to build on or near seismic faults, in flood plains, or in regions historically subject to such threats. Moreover, they could have constructed structures more resistant to earthquake shocks or wind and water damage. In any case, in these instances, where human agency plays no role in the causation of the harm, deterrence is not possible. Compensation, of course, is possible but an insurance scheme rather than a liability scheme is the appropriate institutional response.

Consider, then, the next simplest accident situation in which the actions of a single agent determine the likelihood that the accident occurs. Suppose that the harm caused by the accident falls on a passive third party. In this context, the society wants to assign causal, legal, and financial responsibility to the same agent, the one whose actions determine the likelihood that the harm will occur. A rule of strict liability accomplishes this end.[11]

A simple example may clarify the argument. Suppose a single defendant, when he undertakes an action, may do so with more or less care. For simplicity, suppose that the defendant may take an action that yields her a benefit of 125; when acting she may take either no care (at a cost of zero) or 'full care' at a cost of 5; if the defendant takes no care the probability of an injury is .7 while if she takes full care the probability of an accident falls to .1. When an accident occurs it causes pecuniary losses of 100 to a third party (whom we shall call plaintiff). Under a rule of no liability, a self-interested agent takes no care as she then receives a net return of 125 though she causes expected losses of 70. She takes no care because, under a no liability rule, she does not bear the loss. Under a rule of strict liability by contrast she takes full care, garnering a net benefit of 110: 125 in gross benefits from the activity less the cost 5 of taking care and less the expected losses of 10.[12]

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[11] A rule of negligence that set the standard of care appropriately would also achieve the social objective. The rule of negligence, however, assigns legal and financial responsibility not to the agent who caused the harm but to the victim.

[12] Of course the agent does not realise benefits of 110. When, with probability .9, the harm is not realised, the agent realises benefits of 120; but, with probability .1, the harm is realised and the agent receives benefits of 20, her benefit of 125 less the cost 5 of care and less the harm 100. This example illustrates the 'problem of social cost'. R. Coase, 'The Problem of Social Cost' (1960) 3 JLE 1 famously argued that the assignment of the liability rule did not affect the efficient allocation of resources (though it might affect the distribution of wealth) when frictionless bargaining among parties was possible. Such bargaining might seem plausible in the stylised example in the text but, in real

Two complications arise in this context; both concern the appropriate extent of financial responsibility. Common law liability regimes typically equate the extent of financial responsibility with the amount of harm caused. This measure of financial responsibility may be inadequate if the policymaker pursues an objective function different from the maximisation of social welfare or if the injurer causes irreparable harm.

Consider the first complication. Assume that the harm is purely financial. When society seeks to minimise the social costs of accidents – the costs of preventions plus the expected harm – (or to maximise the social benefits of engaging in the activities that (jointly) cause the harm), a rule of strict liability with the amount of financial responsibility set equal to this amount induces agents to adopt the socially appropriate level of care.

When society pursues a different objective, however, the law cannot align all three assignments of responsibility. Suppose, in an extension of the prior example, that society seeks to minimise not the social cost of accidents but the probability that the accident will occur (conditional on the activity taking place at a fixed level). In the extension the agent can make care expenditures of 5 as before and reduce the probability of an accident to .1 or she can make care expenditures of 10 and reduce the probability of an accident to .08. Under a rule of strict liability the agent will choose to expend 5 on care as this maximises her private expected return, which is, as before, 110. But if society seeks to minimise the probability of an accident, conditional on allowing the activity, then it should use a negligence rule with a standard of care set at 10. If the agent meets the standard of 10, her expected, indeed certain, return is 115 and the passive victim suffers an expected loss of 8; the agent's return exceeds the maximum return she can receive for being negligent, which is 110. If we fix financial responsibility equal to the harm caused, then the optimal rule is a negligence rule with the standard of care set appropriately.[13]

A negligence rule potentially separates causal responsibility from legal and financial responsibility. When the agent meets the standard of care and an accident happens, the agent is causally responsible for the harm, but she is neither legally nor financially responsible for the

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world situations, such bargaining is often infeasible.

[13] In this stylised model, we index the standards of care by the cost of taking care. Then the standard should be set at a cost equal to the minimum of expected total social cost. This standard minimises the probability of an accident as, for any higher standard, it is cheaper for the agent to be negligent. She thus acts as she would under a strict liability rule and adopts the social cost minimising level of care.

harm.[14] Negligence rules highlight the tension between the social aims of deterrence and compensation; in this context, society cannot simultaneously deter and compensate through the tort system alone. The deterrence objective requires that the agent be able to avoid financial responsibility by taking socially desirable actions but, when the agent escapes financial liability, that liability must fall on the victim or be socialised through an insurance scheme.

The second complication arises when the harm is irreparable. Even if the causal agent is legally and financially responsible, the victim cannot be made whole. This conclusion is apparent when the irreparable harm is death. Clearly, no amount of compensation to the decedent's heirs can compensate the decedent for her loss of life. This conclusion holds even though the decedent herself purchased life insurance as the amount of life insurance purchased bears no relation to the decedent's valuation of her life. Indeed, the amount of insurance that an agent purchases against the risk that causes the irreparable harm does not reflect her valuation of the harm. Insurance transfers money from the agent in one state of the world to the same agent in another state of the world; that is from the agent in the unharmed state to the agent in the harmed state. An agent makes such transfers only if additional money would be (marginally) more valuable to her in the harmed state than in the unharmed state. Putting to one side the bequest motive, money has no value to a deceased agent; her marginal utility of money is zero and she has no reason to buy insurance. Indeed, an agent without a bequest motive would like to transfer money from the deceased state to the living state as money has no value to her when dead; she would like to sell today any prospective wrongful death claims that she might acquire tomorrow.

To understand this claim requires a model of personal injury.[15] Consider an individual who cares about both her wealth and her 'health'. Irreparable injuries such as blindness, paraplegia, or death reduce her level of 'health'. Given a state of health, the individual always prefers more wealth to less. Similarly, given a level wealth, the individual always prefers to be healthier than less

[14] A rational agent, faced with these incentives, would choose to meet her standard of care when the standard is set 'optimally'.

[15] More formally, assume that the agent has preferences over her wealth w and her health h. Under suitable assumptions, these preferences may be represented by a utility function $u(w, h)$. Suppose that (w, h) represents the agent's initial endowment of wealth and health. Suppose the agent suffers a personal injury so that her health status falls to a level $h' < h$. Presumably, her preferences reflect a positive valuation of health; that is, for any level of wealth v, the agent prefers (v, h) to (v, h'), or in utility terms, for all v, $u(v, h) > u(v, h')$. Moreover, when $h = d$, where d is death, her level of wealth does not affect her well-being; she is indifferent between (v, d) and (v', d) for any v and v'. Obviously, then, for $h = d$, there is no amount of wealth w' such that $u(w', d) = u(w, h)$. Clearly, this same inability to compensate may occur for other types of personal injury.

healthy.

Insurance permits the individual to transfer wealth from a healthy state to a less healthy one. She pays a premium in the healthy state. In the event she becomes unhealthy, the insurance company pays the policy amount. Health insurance, for example, pays the individual's medical costs in the event she becomes unhealthy and disability insurance delivers a stream of payments in the event of disability. Life insurance pays the face value of the policy to beneficiaries in the event of the individual's death.

The insurance payments, however, do not 'make the individual whole'. The insurance company cannot restore the individual's health; or, put differently, the individual cannot 'transfer health' from her healthy to her less healthy state. Insurance against blindness transfers money from the state in which the individual is sighted – she pays a premium – to the state in which she is blind. After the insurance payment, the individual still cannot see.[16]

Thus, in this model, an individual purchases insurance against the risk of a specific personal injury when her marginal utility of money in the injured state is higher than her marginal utility of money in the healthy state. An individual insures to some extent against blindness because the marginal value of money in the blind state is higher than in the sighted state; with that money the individual can purchase 'substitutes' for her sight: seeing eye dogs, individuals to read to her, braille lessons, a chauffeur to drive her, etc.[17]

If the marginal value of money is identical in the two states, she will not purchase any insurance. A common object may, for example, have sentimental value to the agent. The object is easily and cheaply replaced but the value attaches to the particular token of the object the agent has. If the

[16] It is not clear what 'making whole' means when the harm is irreparable. It might meant that the agent should receive sufficient compensation to make her welfare in the harmed state equal to her welfare in the unharmed state: i.e., choose damages d so that $u(v + d, h') = u(v, h)$. Two comments about this formula are important. First, d may not exist; there may be no amount of money that, in the state h' restores the agent to her pre-injury level of well-being. When h' is death, this observation is straightforward. Second, the amount d of compensation does not quite place the agent in identical positions as neither her marginal utility of money nor her marginal utility of health will be identical in the harmed and unharmed states. That is, a monetary windfall would be less valuable to her in the harmed state than in the unharmed state; conversely, additional irreparable harms may have different effects on her in the two states.

[17] Of course, her expenditures in some areas may be less than they were when she was sighted. She will spend less money on entrance fees to art exhibits and perhaps movies. But she may attend more concerts or buy more songs from iTunes. Whether the marginal utility of money is higher in the less healthy state will depend on how these increases and decreases net out.

object is lost, however, she has no reason to change the extent or pattern of her expenditures. Though she might insure for the replacement value of the object she would not insure for its sentimental value.

The fact that an agent might not purchase any insurance or very little insurance does not indicate that the agent places a low value on the adverse event. As noted, an agent may not purchase any insurance that pays out only on her death. We should not conclude from this fact that she places a low value on her life. Paying a premium now to have money when she is dead is simply undesirable; she would rather spend money to reduce her risk of death.

All irreparable injuries share this feature; insurance can only transfer wealth from the agent in the healthy state to the agent in the 'injured state'; but if money is less valuable to the agent after suffering the irreparable injury than before, she will have no reason to transfer income to the injured state. Thus, when activities create risks of irreparable injury, the deterrence and compensation motives separate. Should the third party be held liable, the agent would receive a damage award but this award would not compensate her for her loss.[18] Nevertheless, society has a reason to hold third parties responsible for the personal injuries to which their actions contribute, as reducing the risk of personal injury generally (and hence the amount of personal injury that occurs in society) is important.[19]

2.2 Two-actor accidents

Most accidents occur in more complex environments in which more than one agent makes decisions that causally affect the outcome. In these contexts the conflict between deterrent and compensatory aims of the law are stronger. In this section, I briefly consider the next simplest situation in which the actions of two agents causally contribute to the creation of a risk that, if realised, will impose harm on one of the two agents.

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[18] As we saw, in the case of death, there is no amount of money that will restore the dead agent to the level of well-being she had when alive. In less extreme cases, compensation increases the injured agent's well-being but it does not make her 'whole' in the sense of putting her in a position identical to her pre-injury state.

[19] Society, of course, might mitigate these risks through mechanisms other than liability rules. The account thus far does not explain why victims of personal injury should receive compensation beyond the (possibly substantial) pecuniary losses that they incur.

Consider an accident between strangers. A and B each engages in an activity that each might pursue with more or less care. An accident may result from their activities; the probability that an accident occurs depends on A's choice *a* of care and B's choice *b* of care. The accident causes harm to one of the parties, say B. To begin, assume that the harm is only financial.

The analysis has begun with an assignment of causal responsibility; each agent's action contributes to the risk of harm and each is thus causally responsible. How should legal and financial responsibility be allocated? If the assignment of responsibility is not contingent on the level of care of at least one of the parties, the deterrence aim of a liability rule cannot be fully met.[20] Consider three different, 'absolutist' rules: legal and financial responsibility on A (strict liability), legal and financial responsibility on B (no liability), and A and B equally responsible (the sharing rule). Under rules of strict liability or no liability, only one agent bears the full costs of her decision making: A under strict liability and B under no liability. The non-responsible agent is thus irresponsible and takes too little care.[21] Under a sharing rule, each bears only part of the loss and consequently each takes too little care; accidents happen too frequently.[22]

A negligence rule that conditions the legal and financial responsibility of A on her choice of care level can, when standards of care are set appropriately, induce both parties to take the socially optimal levels of care.[23] Similarly, a rule that conditions the legal and financial responsibility of B on his choice of care can also induce both parties to take optimal care. Negligence rules like these 'show' the full cost of an agent's decision to *each* agent. Suppose, for instance, that A faces a negligence rule. The agent whose responsibility is conditioned on her choice sees the cost of

[20] Again, I ignore other legal routes to inducing appropriate care choices.
[21] This conclusion depends on the technology of accident prevention. If the choices of each party are alternatives: only one of them need to take care to prevent it, then, to maximise social welfare, only one of them should take care. But this technological structure is unusual. In most instances, the socially optimal decisions require each to take care. Under a rule of strict liability A takes too much care and B too little, while under no liability A takes too little care and B too much.
[22] S. Shavell, *The Economic Theory of Accident Law* (Cambridge, Massachusets: Harvard University Press, 1987) provides an introduction to the economic analysis of accident law. The models he develops focus on pecuniary loss not personal injury. He identifies the set of rules that minimise social costs when agents choose only care levels. When agents choose both care and activity levels – not only how carefully they drive but also how many miles per unit time, no liability rule achieves the first-best; Shavell identifies the structure of analysis for determining which liability rules are second-best.
[23] B's legal and financial responsibility is thus similarly conditioned on A's choice of care level. If A is non-negligent, then B bears financial responsibility for the harm; if A is negligent, A bears financial liability for the accident.

being negligent, while the other agent directly bears those costs when the first is non-negligent.[24]

Thus, under negligence rules, causal responsibility will always diverge from legal and financial responsibility. The deterrent and compensatory aims are also in tension. Under a negligence rule, financial responsibility falls on only one party.

When potential harm includes irreparable injury, the agent has an incentive to take care to reduce the risk of personal injury to herself even if a liability rule assigns liability to another party. In some, symmetric instances, the drivers on a freeway for example, both parties face a risk of irreparable harm; this symmetry may induce each agent to take adequate care when faced with only paying pecuniary damages equal to the financial harm.[25] When the risk of irreparable injury is asymmetric, however, the agent who faces no risk of irreparable must bear, or at least face, financial responsibility that exceeds the financial harm if her care decisions are appropriately to reflect the risk of injury her decisions impose on the victim, the agent who suffers irreparable harm.

Even in simple environments, then, devising liability rules that simultaneously create appropriate incentives for multiple actors requires that responsibility be allocated so that each agent 'sees' all the costs and benefits that her actions impose on all other parties. Typically, allocations that create appropriate incentives will allocate legal and financial responsibility differently.

This complex coordination problem is made more difficult when one accounts for the possibility of settlement. Plaintiffs and defendants bargain in the shadow of the law and it is the shadow, not the law itself, that determines each agent's incentives. Defendants in determining how much care to take, that is, do so in light of the amounts they expect actually to pay, rather than the amount the law requires in the event they lose the litigation.

[24] These conclusions should be hedged by suitable caveats. The negligence rules minimise social costs relative only to certain decisions. If both agents choose activity levels as well as care levels, for example, no rule can induce both parties to adopt the care levels and activity levels that maximise social welfare.

[25] J.H. Arlen, 'Reconsidering Efficient Tort Rules for Personal Injury: The case of Single Activity Accidents' (1990) 32 WMLR 41.

2.3 Joint and several liability

In many circumstances, a harm results to a third party because of the actions of multiple agents.[26]

Complex risks of this sort may be governed either by a regime of several-only liability or a regime of joint and several liability. Under several-only liability, each responsible agent is legally and financially responsible only for 'her share' of the harm. Under joint and several liability, each potentially responsible agent is legally and financially responsible for the entire harm.

Regimes of joint and several liability are complex and different regimes allocate legal and financial responsibility among causally responsible agents in radically different ways. To begin, however, it is useful to contrast regimes of joint and several liability with a regime of several-only liability. Under several-only liability, each tortfeasor is responsible for the wrong that she caused; the regime thus presupposes that the court can distinguish the wrongs caused by each tortfeasor from the wrongs caused by other tortfeasors.[27] When the wrong is indivisible, however, the wrongs are not easily assignable to tortfeasors; in these cases a regime of joint and several liability applies.[28] In these cases, joint and several liability reallocates the risk of the insolvency of one or more defendants as well as the costs of collection of damages. More importantly, as will be explained later, the value of a claim under joint and several liability is at least as great as, and often exceeds, the value of parallel claims under several-only liability.

Regimes of joint and several liability are complex along several dimensions. I discuss three dimensions: contribution, claim reduction, and allocation of orphan shares. In a regime of no

[26] For a survey see L.A. Kornhauser, 'Economic analysis of joint and several liability', in J.H. Arlen (ed.), *Research Handbook on the Economics of Torts* (Northampton: Edward Elgar, 2013), 199.

[27] The next sentence specifies the claim in this sentence to a particular way in which the wrongs for which different tortfeasors are responsible are indistinguishable. It focuses on indivisibility of the harm. But sometimes the 'harms' are indistinguishable in the sense that plaintiff cannot identify which defendant harmed her. Each defendant created an identical risk but we cannot tell which risk was realised. Some US courts have applied joint and several liability to these cases under the rubric enterprise liability. See *Sindell v. Abbott Laboratories*, 26 Cal. 3d 588 (1980), cert. denied 449 US 912 (1980) in which the California Supreme Court held liable all firms that marketed diethylstilbestrol (DES) even though plaintiffs (in a class action) were unable to determine whose DES pill that she had consumed. These cases present a different set of issues than those discussed in the text. Vicarious liability, discussed below, presents a third set of issues.

[28] L.A. Kornhauser, 'An Economic Analysis of the Choice Between Enterprise and Personal Liability for Accidents' (1982) 70 Cal LR 1345 provides an example. Suppose A fires a shotgun at P and injures P's arm, while B fires a pistol at P and injures P's leg. These harms are 'divisible'; several-only liability allocates the arm injury to A and the leg injury to B. Suppose, on the other hand, that A and B fire identical weapons at P, with both bullets killing him. P's death is an indivisible harm and the courts impose a regime of joint and several liability on both A and B.

contribution, a plaintiff who prevails at trial against multiple tortfeasors chooses from which tortfeasors to collect her award. Should she collect the entire award from a single defendant, that defendant bears the entire cost. By contrast, under a regime of joint and several liability with contribution, the defendant from whom the plaintiff has collected her award has a right of action for the allocated shares of the other defendants against whom the plaintiff has prevailed.[29] A regime of joint and several liability with contribution thus assigns responsibility among multiple tortfeasors based on its determination of an allocable share.

How is the allocable share determined? Are not 'indivisible harms' unallocable?[30] The division of financial responsibility apparently contradicts the underlying condition that joint and several liability applies only when harm is indivisible. But this contradiction is apparent rather than real. There are two cases. First, suppose both A and B are legally responsible for P's death. The harm, death, is unitary; each was causally responsible for exactly the same harm (on the assumption that the action of each was sufficient to cause her death). In these instances, shares are typically allocated *pro rata*, i.e. responsibility for the award is divided equally among the responsible defendants.

Second, suppose, by contrast, that each agent's action is necessary to cause the harm but neither is sufficient. In these instances, shares may be allocated in proportion to some measure of the defendants' causal responsibility for the harm or, under a negligence regime, proportional to each's fault. CERCLA,[31] the United States (US) statute governing responsibility for resolving contamination of soil and groundwater caused by the release of hazardous waste into the environment, illustrates a complex variant of this class of harms. It allocates responsibility in proportion to the amount of wastes released. For simplicity, assume that each responsible party deposited the same toxic chemical at a waste site; any amount released into the environment would have caused harm but the amount of harm increases with the total amount of waste deposited. If the marginal cost of remediation is increasing in the total amount of contaminant deposited, then we cannot allocate this marginal increase to one or the other agent; proportional

[29] Under some regimes with contribution, the paying defendant may have a claim against settling defendants as well.
[30] We might also ask whether indivisible harms are irreparable. Indivisibility and irreparability characterise harms along two different dimensions. Indivisibility concerns the relation of the harm to those causally responsible for it while irreparability concerns the nature of the harm itself. Defendant 1 who cuts off V's arm and defendant 2 who severs V's leg have each inflicted an irreparable harm on V, but the harms are divisible.

sharing seems appropriate.[32]

Claim reduction determines the effect of the plaintiff's settlement with one defendant on her remaining claims against litigating tortfeasors. Claim reduction rules vary across jurisdictions. Some jurisdictions have adopted a *pro tanto* set-off rule that reduces the plaintiff's claim against litigating defendants by the amount of the settlement reached with another defendant. Other jurisdictions have adopted an *apportioned* set-off rule that reduces the plaintiff's claim against litigating defendants by the settling defendant's allocable share of the claim.

Rules governing claim reduction and contribution play a significant role in structuring the choice between settlement and litigation; that choice, in turn, determines the final allocation of financial responsibility for damages created by the liability regime. Interestingly, when all (solvent) parties settle, each defendant pays the same amount in settlement regardless of the size of her allocable share.

The final element of a regime of joint and several liability that I shall discuss allocates the burden created by the insolvency of some, but not all, defendants. Under a rule of legal contribution, the party from whom the plaintiff chooses to collect her judgment bears responsibility for all orphan shares. Under an equitable rule, solvent parties divide the burden of orphan shares in proportion to their own allocable shares. Under a legal rule, the solvent party from whom the plaintiff has chosen to collect the judgment bears the entire burden of the orphan shares.

It is (relatively) straightforward to see the extent to which joint and several liability serves the social aim of compensation. It distributes financial responsibility among the legal responsible defendants. As a consequence, other defendants bear the risks of insolvency of some of the defendants.[33]

Understanding the incentive effects of joint and several liability, however, is much more

[31] Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 USC sections 9601-9675 (CERCLA).

[32] In this example, generators are the only defendants. The site owner (and transporters) are, under the statute, also responsible.

[33] This statement is not strictly true. As discussed below, the value of a claim under joint and several liability exceeds the value of parallel claims under a regime of several-only liability. As the number of solvent, responsible defendants declines, however, the value of the claim under joint and several liability decreases and approaches the value of the claim against a single defendant. In one sense, then, plaintiff bears part of the risk of insolvency of a defendant

complex. This complexity arises from several sources. First, the value of litigation depends on the degree of correlation among the plaintiff's prospects for success in the litigation against the various defendants. Second, the price that the liability rule places on an agent's behaviour depends on the settlement process. Finally, the impact of insolvency is difficult to untangle.

To begin simply, however, observe that the incentive and compensation aims of the rules will again be in tension. Even when the plaintiff is passive, the presence of multiple defendants reproduces the difficulties that arose in the two agent accident case discussed above. The legal rule has to 'show' the full cost of the harm to each agent. Yet the compensation criterion restricts recovery to the amount of the financial harm. A negligence rule can accomplish this feat, but, again, in equilibrium, no rational defendant will be negligent and financial responsibility will fall on the victim. By contrast, under strict liability, the victim will be compensated but each defendant will take too little care as she does not see the full cost of her actions.[34]

Of course, as noted earlier, when there is irreparable harm, limiting financial responsibility to financial harm implies that the defendants will take too little care even under a negligence regime. Financial responsibility has to be increased beyond the level of financial harm to induce parties to take appropriate care.

Let us return now to the more interesting aspects of the incentive effects of joint and several liability. Suppose that there are exactly two defendants, R and C, who have caused the plaintiff harm. The plaintiff's prospects of success against R may be more or less correlated with her prospects of success against C. Contrast, for example, an antitrust action grounded in conspiracy with an unusual tort to be described shortly. In the antitrust case, the plaintiff only prevails against R if she prevails against C; her prospect of success against R is perfectly correlated with her prospect of success against C. If the plaintiff prevails against R she prevails against C and if the plaintiff loses to R she loses to C. This perfect correlation results from the elements of proof against each relies on identical evidence.

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because that insolvency decreases the value of her claim.

[34] See L.A. Kornhauser and R.L. Revesz, 'Sharing Damages Among Multiple Tortfeasors' (1989) 98 YLJ 831. They note that, one can reproduce the negligence result under a more complex strict liability regime that mirrors the negligence regime but simply shifts the default bearer of liability.

In *Boca Grande Club v. Florida Power and Light*[35] by contrast, the plaintiff's prospects of success against R and C were independent. The plaintiff's husband and son, both inexperienced sailors, had rented a yacht from the Boca Grande club. The yacht's high mast struck a cable slung by Florida Power and Light from a bridge. Husband and son were both electrocuted. The plaintiff alleged that the yacht club negligently rented inexperienced sailors an inappropriate boat and that Florida Power and Light negligently let is power cable hang too low. To prevail against the Yacht Club, the plaintiff must rely on completely different evidence than she must rely on to prevail against Florida Power and Light. Knowledge of the outcome of the plaintiff's suit against the yacht club tells us nothing about her prospects of success against the power company.

When the plaintiff's prospects of success against the two defendants are perfectly correlated, the expected value of litigation against both is identical to the expected value of litigation under a regime of several-only liability. If, for example, the plaintiff's prospect of success against the pair is .5 and the claim is for USD 1,000,000, then the expected value of her claim is USD 500,000. When plaintiff's prospects of success are independent, however, the expected value of the plaintiff's claim under joint and several liability exceeds the expected value of the parallel claims under a regime of several-only liability. Suppose that the plaintiff's prospects of success against each defendant is again .5. Under several-only liability, the value of her claim is again USD 500,000. Under a regime of joint and several liability, by contrast, the expected value of her litigation is USD 750,000 because, to receive the full amount of USD 1,000,000, she need prevail against only one of the two defendants and this event happens with probability .75.[36] This heightened probability of success has important consequences for settlement negotiations. In general, for two defendants, we know that the value of the claim to a plaintiff is at least as great as the value of the corresponding claims under several-only liability.[37]

[35] *Boca Grande Club Inc. v. Florida Power & Light Company Inc.*, 511 US 222 (1994); the facts appear in the opinion of the lower court, 990 F. 2d 606 (11th Cir. 1993).

[36] She loses both law suits with probability .5x.5 = .25 so her probability of prevailing against at least one defendant is .75.

[37] The claim was first proven in L.A. Kornhauser and R.L. Revesz, 'Multi-Defendant Settlements: The Impact of Joint and Several Liability' (1994) 23 JLS 41, at 73-5. For a survey of the relevant literature see Kornhauser, 'Economic analysis of joint and several liability', n. 26. The claim is true for all degrees of correlation in plaintiff's prospects of success except when the prospects of success are perfectly correlated and the regime includes the apportioned rather than the pro tanto set-off rule. Note that the value of a claim is always at least as great as the expected value of litigation, but it may be higher because the plaintiff may be able to extract additional funds through settlement. We know much less about settlement behaviour when there are more than two defendants though it

It is important to note that settlement, under a rule that allocates legal responsibility proportionally to fault or cause, allocates financial responsibility differently than it would be allocated if the case were litigated to a conclusion. Thus, if both defendants settle, they settle for equal amounts regardless of the size of their relative shares. If, in equilibrium, the plaintiff settles with one defendant and litigates with the other, she settles with the defendant responsible for the larger share.

These settlement behaviours bear on the assessment of the fairness of a liability regime as well. Often, analysts assess the fairness of a regime in terms of the formal allocation of legal and financial responsibility by the legal rule. The actual allocation, however, is mediated by settlement and settlement amounts are not, under joint and several liability, necessarily proportional to the shares that would be allocated were a dispute litigated to a conclusion.

Further, the assessment of fairness depends on one's reference point. Under joint and several liability, an agent with a very small allocated share of financial responsibility bears a large share of financial responsibility if agents with more significant allocable shares are insolvent.[38] From the perspective of the defendant, its disproportionate financial liability is unfair; but the injured plaintiff is the other alternative bearer of financial responsibility.

2.4 Vicarious liability

Vicarious liability imposes liability on a principal for those wrongs of her agent that were done in the course of the agent's employment. The law thus allocates responsibility among at least three parties: the injured plaintiff, the defendant-agent and the defendant principal. Specifically, vicarious liability allows the plaintiff, when the defendant-agent is legally and causally responsible, to collect her award from the principal rather than the agent. The principal may then seek indemnity from the agent if the agent is solvent and if the employer so chooses. In the event

remains true that the expected value of litigation under joint and several liability exceeds the expected value of litigation under several-only liability and hence that the value of a claim under joint and several liability is at least as great under joint and several liability.

[38] The text assumes a regime that has a rule of contribution. If the regime does not permit contribution then an actor with a small allocable share may bear the entire financial responsibility if the plaintiff chooses to enforce the entire judgment against that defendant. Any unfairness here results from the bar on contribution.

of the full or partial insolvency of the agent, then, vicarious liability shifts pecuniary losses and risk-reducing damages to the principal rather than the plaintiff.

Vicarious liability thus apparently separates legal responsibility from causal responsibility. In principle, the principal may have taken no action beyond hiring the agent. The assignment of legal and financial responsibility in the absence of causal responsibility thus rests on the fact that the principal has benefitted from the agent's actions and not that the principal has otherwise acted wrongly. On the other hand, the assignment of legal and financial responsibility may rest also on a recognition of the difficulties that a plaintiff would face in establishing the causal responsibility of the principal.

Nevertheless, the shadow of causal responsibility lurks behind vicarious liability. The principal, after all, may take greater or less care when hiring individuals and it has supervisory authority over the agent and determines the incentive structure within which the agent acts. More concretely, the principal assigned the agent the task in the accomplishment of which she caused the plaintiff's injury. The principal typically structures that task and supervises the agent her duties. The principal may have failed to exercise due care in any of these tasks.

Vicarious liability thus has incentive effects that may induce principals to reduce risks appropriately. We may approach this argument in two ways. First, the principal may have available *ex ante* or even *ex post* incentive mechanisms not available to state law. The employer might screen its agents more carefully, supervise them more intensively, or adopt back-up systems that eliminate or mitigate risks caused by a single agent. An employer might be held responsible under a negligence standard for failure to take some of these actions; but proof of the agent's negligence might be more direct and less costly than establishing negligence on the part of the principal.

Vicarious liability is a form of joint and several liability. Its justification rests on one of the two standard justifications for joint and several liability: it shifts the risk of insolvency of the defendant-agent from the plaintiff to the defendant-principal. This justification treats the principal as an insurer of the agent on the grounds presumably that the agent's wrong occurred in the course of her employment and hence worked to the benefit of the principal.

3. Responsibility of international organisations

A large number of international and supra-national organisations undertake daily myriad tasks. These tasks often seek to accomplish much good but, in the pursuit of that good, they can cause significant harm; we thus all have an interest that these organisations pursue these tasks carefully. In this, international organisations do not differ from multinational corporations, not-for-profit organisations or governments, the former of which, at least, are subject to liability for wrongs they commit.

In this section, I pursue three tasks. First, I sketch the law governing international organisations. Second, I identify some differences between international organisations and private actors that might bear on the desirability of imposing liability on them for wrongs. Finally, I briefly characterise different classes of actions that an international organisation might undertake and that might merit different treatment.

3.1 The law governing liability of international organisations

This Chapter addresses the liability regime governing international organisations as defendants. The situation of an international organisation that is a defendant differs from that of an individual defendant in two important respects. The international organisation is a corporate, sovereign entity.

The legal regime governing the responsibility of international organisations for wrongs to others is, in one sense, complex and, in another sense, quite simple. Complexity arises from the multiple, potential sources of law under which an international organisation might be responsible. International organisations do not operate on 'international' territory; they operate, as multinational corporations do, on the territory of many different nations in each of which they might, in principle, be governed by domestic law. By treaty and by statute, however, international organisations are generally immune from suit. In the United States, the scope of that immunity is quite broad, though controversial. The International Organization Immunities Act of 1945 granted many international organisations the same status as foreign states.[39] The Foreign Sovereign Immunities Act of 1976 more clearly defined and restricted the extent of immunity of sovereign states;[40] but the extent to which it modified the immunity enjoyed by international organisations is controversial.[41]

In addition, international organisations are subject to international law and may not violate its norms. The nature and extent of these obligations are controversial; the United Nations (UN) General Assembly's adoption of the International Law Commission's Articles on the Responsibility of International Organizations (ARIO)[42] has not lessened the controversy.[43] The ARIO envision a legal regime that has the basic elements of vicarious liability,[44] joint and several (or, at least, shared) responsibility,[45] and piercing the corporate veil to hold member states responsible.[46]

From a practical perspective, however, the legal regime governing the liability of international organisations is relatively simple: international organisations are immune from suit under domestic law and, typically, under international law no court may have jurisdiction. Given the lack of a forum in which to hold them accountable, international organisations are legally and financially responsible only for those wrongs for which they choose to be responsible; and in many contexts the extent of liability is on their own terms. Typically, international organisations establish internal procedures to process grievances from employees and third parties, but these fora are not obviously impartial and may deny claims that, to outsiders, appear valid.[47]

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[39] International Organization Immunities Act of 1945, 22 USC section 288a(b): '[i]nternational organizations, their property and their assets, wherever located, and by whomsoever held, shall enjoy the same immunity from suit and every form of judicial process as is enjoyed by foreign governments, except to the extent that such organizations may expressly waive their immunity for the purpose of any proceedings or by the terms of any contract.'

[40] Foreign Sovereign Immunities Act of 1976, 28 USC 1602 et seq.

[41] Contrast *Brzak v. United Nations*, 597 F. 3d 107 (2d Cir. 2010), cert. denied 131 S. Ct. 151 (2010) which held that the Foreign Sovereign Immunities Act did not affect the absolute immunity of the UN granted by the Convention on the Privileges and Immunities of the United Nations, to which the US is a signatory, with *OSS Nokalva, Inc. v. European Space Agency*, 617 F. 3d 756 (3d Cir. 2010) holding that the restrictions on sovereign immunity of states applied to international organisations as well. For an account of the state of US law, see A.I. Young, 'Deconstructing International Organization Immunity' (2012) 44 Geo JIL 311.

[42] ARIO, n. 9.

[43] For a taste of the controversy see issue 1 of volume (2012) 9 of the IOLR.

[44] Article 6 ARIO, n. 9.

[45] Article 48 ARIO, n. 9.

[46] Articles 58-62 ARIO, n. 9.

[47] The claim of Haitian cholera victims, discussed in section 4 below provides an example.

3.2 Incentives and accountability in international organisations

International organisations are not typical collective entities that function within a complex liability regime. They are neither natural persons nor for-profit corporations. They typically have beneficent missions. They sit outside domestic governments. Further, neutral fora for adjudication and resolution of claims against them are at best rare and at worst non-existent. How do these features bear on the assignment of responsibility to them?

Under the common law, charitable institutions and governments long benefitted from immunity from suit for their wrongful acts. Two related arguments for a time sustained this legal regime; both focus on the not-for-profit nature of these entities. First, both charitable enterprises and governments act, at least in principle, for the public benefit. Imposition of liability would obviously increase the cost of providing these public benefits and, presumably, decrease their supply. If charitable organisations were liable for wrongs that they negligently caused, the argument goes, individuals would be less likely to engage in charitable endeavours. Similarly, if governments were liable for wrongs that they negligently caused, the government would either limit the extent of its activity or abandon it.

A conclusion that the cost should not be imposed, however, does not follow from the claim or even the fact that tort liability would reduce the supply of charitable endeavours. The provision of public benefits, just as the provision of private benefits, might impose external costs – costs not seen by the decision maker; if those external costs exceed the public benefits then it is socially better that the provision of benefits not occur. Similarly, if those external costs can be reduced or eliminated by the delivery of the benefits in a more careful way, then society would be better off if more care were taken; the net social benefits delivered by charitable organisations would increase. A liability regime that internalised those external costs and induced better, more careful policies from charitable organisations and governments would thus be socially beneficial.

The second justification for immunity rests on the assumption that charitable organisations, governments and their agents will not respond to economic incentives created by liability rules. This assumption seems unwarranted, or, at least, no more warranted than a similar assumption about for-profit enterprises and their agents. Not-for-profits and governments operate within budgets that require the organisation to make trade-offs about different uses of its funds and limit the scale of its activities. These resource allocation decisions parallel those made in for-profit organisations; well-run not-for-profit organisations make these decisions in a manner consonant with economic theory. Better government and better provision of public benefits by charitable organisations should thus result when a liability rule forces the organisation to include the external costs in its decision.

These immunities have eroded,[48] at least in the United States, for charitable institutions and for local governments though not for 'sovereigns' so that these entities now face substantially the same liability regime as private principals and agents.[49]

One other issue arises. Liability often arises substantially after an agent has acted wrongfully. Soil contamination from releases of hazardous waste into the environment may occur decades after the waste was deposited. The agents who undertook the wrongful acts may have left the principal's employ; indeed the long time horizon implicated in these decisions may render it difficult to transmit appropriate incentives to the agent. Vicarious (or direct) liability of the government may seem unfair because the state population may have changed radically over that time; the citizens who benefitted from the action will not be the set of citizens who must pay the damages. In the private context, this problem is mitigated by the existence of securities markets; the shareholders who incur the liability purchased the shares in a competitive market that should have priced the expected liability. No such pricing mechanism exists for individuals immigrating to a jurisdiction. International organisations, however, are more similar to governments than to publicly traded corporations.

International organisations differ from sovereign governments in one other important respect. Sovereigns, at least those in democratic states, are accountable to the electorate. If the government persistently ignores the external costs and benefits of its actions and acts inappropriately, the electorate will punish these actors at the polls. International organisations, by contrast, are not politically accountable.

Not-for-profits are not politically accountable either. Many not-for-profits are essentially self-

[48] This erosion has occurred both through judicial decision and statutory innovation.
[49] Sovereign immunity, however, has not eroded for the United States and its states. Typically, however, these governments enact statutes that partially waive immunity from suit. In some instances, not-for-profits are liable only for gross negligence.

perpetuating managers of assets. Each may face a market test in the sense that each has to raise money to underwrite its operations. But this market is very thinly tied to performance as a glance at the ratio of administrative expenses to total budget would suggest. It is even more thinly tied to performance on specific projects. Imposing legal and financial responsibility imposes a very minimal form of accountability on these organisations.

3.3 A taxonomy of tasks

Individuals, corporations, not-for-profits, governments and international organisations undertake a wide range of activities. Some activities occur in the ordinary course of living or business. An agent of the entity, in the course of her employment, drives from point A to point B. Her vehicle might strike a pedestrian. Both the agent and the entity should take care in these contexts.

But bureaucracies also plan, adopt, and execute policies. The Federal Tort Claims Act, the statute that waives the sovereign immunity of the United States, does not waive immunity for policy decisions, a category that, as the examples below suggest, is difficult to describe. One might ask whether policy decisions should benefit from protection from immunity. Many policy decisions are made in an environment rife with uncertainty both about the underlying nature of the crisis to be resolved or activities to be regulated and about the best solution to these problems. In these contexts, many policies will fail but we might nonetheless not want to stifle policy responses. On the other hand, we want policy makers to take reasonable care in the formation of policy. The arguments for liability for wrongs incident to day-to-day tasks apply equally to policy decisions. The policy maker should take into account the potential adverse consequences that her decisions may have. For-profit entities face liability for similar policy decisions. If a corporation creates an innovation and introduces it to the market, it will be responsible for any harms the product causes.

4. Two examples

Two examples may help make concrete the nature of the inquiry that might arise were international organisations subject to legal responsibility for their actions. As such agencies often act together and through agents issues of joint and several liability as well as vicarious liability will arise.

4.1 Poisoned wells

Until the early 1970s, surface water from lakes, ponds and rivers constituted the primary source of drinking water in (what is now) Bangladesh. These sources were often contaminated with water-borne diseases that were killing roughly 250,000 children a year.[50] To solve this problem UNICEF spearheaded a project to provide groundwater from tube wells in Bangladeshi villages. In fact, UNICEF funded the first 900,000 tube wells dug in Bangladesh.[51] The World Bank also contributed funding. Many of these wells, however, are contaminated with arsenic and have led to the largest mass chemical poisoning in history.[52]

Controversy exists both as to when authorities knew or should have known of the contamination. UNICEF claims that, at the time of their initial funding, no one suspected that ground water in Bangladesh might be tainted. Geochemists, however, dispute that claim, contending that testing for arsenic would have been reasonable and inexpensive.[53]

International agencies claimed to have learned of the problem in 1998. Workers at the Dhaka hospital in Bangladesh, however, treated cases of arsenic poisoning among Bangladeshis in the early 1980s and claim to have notified authorities in 1985.[54] Saha reported a case of arsenic poisoning in West Bengal in 1983.[55] One activist sampled well water in 1988 and had it analysed

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[50] F. Pearce, 'Who is to blame for Bangladesh's arsenic poisoning?', The Courier UNESCO, January 2001, 10, at 10.
[51] Ibid.
[52] Ibid., UNICEF's representative in Dhaka estimates that they will have *identified* all the contaminated wells by 2030, ibid, at 11. The standard for arsenic in drinking water in the US is 10 micrograms per liter; in India and Bangladesh, the standard is 50 micrograms per liter. Actual concentrations in groundwater in Bangladesh appears to be roughly 180 micrograms per liter. P. Ravenscroft, W.G. Burgess, K.M. Ahmed, M. Burren and J. Perrin, 'Arsenic in groundwater of the Bengal Basin, Bangladesh: Distribution, field relations, and hydrogeological setting' (2005) 13 Hydrogeo J. 727, at 728, 733-34. The standard in the US was 50 micrograms per liter until 2001. United States Environmental Protection Agency, 'Arsenic Rule', see water.epa.gov/lawsregs/rulesregs/sdwa/arsenic/regulations.cfm.
[53] Pearce, 'Who is to blame for Bangladesh's arsenic poisoning?', n. 50, at 11.
[54] Ibid.; also M. Mushtaque and R. Chowdhury, 'Arsenic Crisis in Bangladesh,' Scientific American (August 2004), at 87.
[55] K.C. Saha, 'Melanokeratosis from arsenical contaminated tubewell water' (1984) 29 Ind J Dermat 37.

by a Belgian firm; that analysis found arsenic.[56] Similarly, the World Bank claims that no groundwater was tested for arsenic until 1993; yet one engineer based in Dhaka contends he found arsenic in the wells in the late 1980s.[57] More broadly, authorities in neighboring West Bengal in India, in the same watershed as Bangladesh, knew of arsenic contamination by 1991.[58]

Contaminated water is generally drawn from wells that have a depth of 30 to 70 meters. Water above 20 meters and below 200 meters has concentration levels that meet health standards. Knowledge of the extent and nature of arsenic levels in ground water might thus have led either to no use of contaminated aquifers (and a concomitant drive to purify surface waters) or to exploitation of even contaminated aquifers in a safer manner.

A complex social process led to the poisoning of a vast population. To allocate responsibility requires that we unravel this complex process. UNICEF and the World Bank funded the digging of tube wells in Bangladesh. But other individuals and agencies participated in this endeavour as well. Most obviously, the government of Bangladesh knew of the project and has primary responsibility for the assurance of water quality in its territory. In addition, various other foreign aid institutions participated in funding the preliminary (and subsequent) engineering studies. These of course were conducted by consultants. The wells themselves were dug by contractors. All of these agents causally contributed to the harm.

Millions of Bangladeshis suffered an irreparable harm to their health and welfare. In addition, these individuals require new sources of untainted water. How should responsibility be allocated among the parties who causally contributed to this public health disaster? The issues raised are complicated in part because the government of Bangladesh was in part causally responsible for the mass disaster as it neither had provided clean water nor tested groundwater for high concentrations of arsenic. Bangladesh should thus be a co-defendant partially responsible.[59]

If this were a domestic tort, we would ask what duties were owed to the affected population and when. Clearly, someone should have tested the water for arsenic at some point. The question is:

[56] Pearce, 'Who is to blame for Bangladesh's arsenic poisoning?', n. 50, at 11.
[57] Ibid.
[58] Ravenscroft et al., 'Arsenic in groundwater of the Bengal Basin, Bangladesh', n. 52, at 728.
[59] One might argue, however, that the World Bank and other development agencies were digging the wells precisely because of the inadequacies of the government of Bangladesh.

when? Testing should have occurred once relevant officials knew or should have known two facts: first, that arsenic levels in drinking water were a public health hazard; and second, there was some chance that groundwater in Bangladesh was contaminated. All relevant actors should have known at the time UNICEF initiated funding that arsenic in drinking water was dangerous. After all, arsenic was a known poison. Moreover, in 1975, the US Environmental Protection Agency had issued a rule permitting concentrations of no more than 50 micrograms per liter.[60]

Whether the testing should have occurred at the time the project was initially conceived thus depends on when the relevant parties had or should have had knowledge of a possibility of arsenic in the ground water. Such knowledge might have arisen either from direct knowledge of the presence of arsenic in the water or from indirect knowledge inferred from observed instances of arsenic poisoning (which should then have prompted water testing).[61] The first cases of arsenic poisoning were observed in hospitals in the area in the early to mid-1980s. The number of cases proliferated. By 1998, the international organisations had acknowledged the existence of a public health crisis and turned to remediation.

The date at which we determine the wrongdoing occurred determines the set of wrongdoers that should be held legally responsible. Suppose that agents should have known that tests of water quality were appropriate by 1980. Then the set of legally responsible wrongdoers would consist of the financing agents that included UNICEF and the World Bank,[62] various governmental organisations and consultants who performed or failed to perform tests, and arguably various agencies of the Bangladeshi government.

Financial harm here consists of the costs of remediation which, in this instance, would require the provision of safe drinking water for the affected areas. Irreparable harm includes both the death

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[60] See United States Environmental Protection Agency, 'Arsenic Rule', n. 52.

[61] In the early 1990s, an engineer employed by the British Geological Survey (BGS), under a grant from the UK Overseas Development Agency, surveyed the water quality in the aquifers in Bangladesh to determine whether it was toxic to fish or humans. The engineer took water samples from roughly 150 tubewell sites. The water was analysed but not tested for the presence of arsenic. The BGS published a report in 1992; that report outlined the results of the study that concluded that, on the basis of the tests done, the sampled water was safe to drink. The report was distributed to, among others, officials in the Bangladeshi government. Roughly 700 individual Bangladeshis, all suffering from arsenic poisoning brought suit against the British Geological Survey and the governmental body of which it was a part. The suit was dismissed for failure to state a cause of action on the grounds that the defendants had no duty to the plaintiffs. See *Sutradhar v. Natural Environment Research Council* [2004] EWCA Civ. 175; [2004] PNLR 30 (and judgment of the House of Lords upholding the lower court decision, see [2006] UKHL 33).

[62] Other wells may have been financed by national development aid agencies. The British agency, for example,

and disability of a large percentage of the Bangladeshi population and damage to local ecosystems. These harms are preventable, but not compensable and financial responsibility has to be set so as to give appropriate incentives to agents to reduce the risk of their occurrence.

If financial responsibility is apportioned, apportionment might correspond to the relative degree of causal responsibility. One might measure this causal responsibility by reference to the number of wells financed by each agency and/or by the number of wells in the untested or faultily tested (arsenic tainted) aquifer. The financing agents should be held jointly and severally, causally, and legally responsible because their financing decisions were directed at digging these wells in the region; the legal responsibility of the testing agencies, however, rests on their faulty testing of the relevant aquifers.

4.2 Cholera

In January, 2010, a massive earthquake struck Haiti, killing thousands, leaving hundreds of thousands homeless, and destroying a large portion of the limited infrastructure of the country. Sometime after 10 October and before 20 October 2010, cholera claimed its first victim in Haiti.[63] Within a year, roughly 4000 people had died. As of 5 May 2013, there had been approximately 650,000 cases of cholera and over 8,000 deaths.[64] The epidemic has contaminated the largest river in Haiti, the valley of which is the primary location of agricultural production.

Cholera arrived in Haiti with the deployment of a contingent of Nepalese soldiers at the Mirebalais camp of the MINUSTAH. These soldiers arrived in Haiti between 8 and 24 October

appears to have financed tube wells for irrigation purposes.

[63] Reports often describe the victim as the first in 100 years, but it is not clear that there was in fact a prior cholera victim in Haiti. Indigenous strains of cholera in Haiti are not pathogenic and records do not include reports of prior epidemics that might have been cholera.

[64] See the report of the Ministry of Health and Population of Haiti, Rapports journaliers du MSPP sur l'évolution du choléra en Haiti, Rapport du 05 mai 2013 at www.mspp.gouv.ht/site/index.php?option=com_content&view=article&id=120&Itemid=1. There is some question about the reliability of the official statistics. From the reported figures, the death rate is slightly above 1.2 per cent down from a rate of 1.7 per cent early in the epidemic. See A. Cravioto, C.F. Lanata, D.S. Lantagne and G. Balakrish, 'Final Report of the Independent Panel of Experts on the Cholera Outbreak in Haiti (UN Independent Panel)', Institute for Justice & Democracy in Haiti, at www.ijdh.org/2011/05/topics/health/final-report-of-the-independent-panel-of-experts-on-the-cholera-outbreak-in-haiti-u-n-independent-panel/ (Final Report). According to the expert panel, a 'well-managed' cholera outbreak should have a mortality rate of under 1 per cent, Final Report, at 8.

2010. Each soldier had had a medical exam prior to deployment to Haiti, but only those with relevant symptoms would have been tested for cholera even though cholera is endemic to south Asia and many infected people are asymptomatic. In addition, after their medical examinations and prior to deployment, the Nepalese contingent was given ten days leave.[65]

The Mirebalais camp had inadequate sanitary facilities. It had black water containers but the water was not purified on site; it was collected by a Haitian contractor. There is evidence both that the base was discharging fecal matter directly into the Artibonite watershed[66] and that the Haitian contractor was disposing of the black water improperly in open pits near the base and the river.[67] The epidemiological evidence and evidence at the site thus strongly suggest the newly deployed Nepalese MINUSTAH contingent as the source of the epidemic. Microbiological analysis confirms this as the strain of cholera in Haiti derives from the distinctive strain present in south Asia.[68]

There are thus a multitude of actors causally responsible for the release of a deadly infectious agent into the population: first, the Nepalese military deployed troops after an inadequate medical screening that failed to detect or use prophylactic measures to prevent cholera in the deployed troops; second, MINUSTAH that had inadequate facilities for treatment of biological waste at its Mirebalais camp, had inadequate standards for waste treatment and inadequate monitoring of its bases and contractors; third, the Haitian Ministry of Health that had no early warning procedures for cholera in place as well as other Haitian governmental bureaus that had failed to provide a more secure and sanitary system of provision of potable water; fourth, the private Haitian contractor who disposed of the waste illegally; and fifth, the UN itself either vicariously or more directly in its failure to provide adequate guidelines for waste removal.

We have an indivisible, irreparable injury or set of injuries that were jointly caused by multiple agents. How should legal and financial liability be allocated?[69] We have identified two issues: the

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[65] Ibid., Final Report, at 8, 12-13; J.M. Katz, *The Big Truck That Went By: How the World Came to Save Haiti and Left Behind a Disaster*, 4th ed. (New York: Palgrave Macmillan, 2013), at 232.
[66] See a video from the news agency Al Jazeera 'UN investigates cholera spread in Haiti', 27 October 2010, at www.youtube.com/watch?v=gk-2HyQHUZ0.
[67] See Final Report, n. 64, at 21-22; and Katz, *The Big Truck That Went By*, n. 65, at 228-231.
[68] Final Report, n. 64, at 28.
[69] The following paragraphs are purely normative as the United Nations has denied responsibility for the cholera epidemic, invoking its sovereign immunity. See the press release, 'Haiti cholera victims' compensation claims "not receivable" under immunities and privileges convention, United Nations tells their representatives', 21 February

amount of financial responsibility and how it should be distributed. Establishing the amount is beyond the scope of this Chapter. I note, however, that limiting financial responsibility to the funds necessary to remove the hazard of cholera is inadequate in deterrence terms as it does not reflect the full social costs created by the actions of the responsible parties.[70] A territory free of the cholera pathogen is of significant value to a country with inadequate health and sanitation facilities, and a government unable to provide them.

In principle, Nepal, the UN, the Haitian government, and the private contractor should bear financial responsibility. Three of these entities, however, are virtually judgment proof as they have few if any funds available to satisfy a judgment.[71] Under a regime of joint and several liability the UN would thus be financially responsible for the full amount

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2013, SG/SM/14828 at www.un.org/News/Press/docs/2013/sgsm14828.doc.htm. It is not clear on what grounds the UN rejected the claim. Perhaps they relied on the conclusion of the Final Report of the Panel of Independent Experts on the Cholera Outbreak in Haiti which concluded 'The introduction of this cholera strain as a result of environmental contamination with feces could not have been the source of such an outbreak without simultaneous water and sanitation and health care system deficiencies. These deficiencies, coupled with conducive environmental and epidemiological conditions, allowed the spread of the *Vibrio cholerae* organism in the environment, from which a large number of people became infected. *The Independent Panel concludes that the Haiti cholera outbreak was caused by the confluence of circumstances as described above, and was not the fault of, or deliberate action of, a group or individual*.' Final Report, n. 64, at 29 (emphasis in original). The panel consisted of experts on epidemiology, microbiology, and infectious diseases competent to reach conclusions about causal responsibility. It indeed concluded that the Nepalese troops introduced cholera into Haiti. Its conclusion concerning legal and financial responsibility, however, is unwarranted. The quoted paragraph virtually blames the victim. MINUSTAH, as most UN peacekeeping forces, arrived in Haiti precisely because the state was unable to provide basic security services . It could not have come as a surprise that the water, sanitation, and health care systems of Haiti were deficient; according to UN data, 'Haiti', UN data, http://data.un.org/CountryProfile.aspx?crName=Haiti, gross national income per capita (in 2010) in Haiti is USD 609.0 (The CIA world factbook estimates purchasing power parity per capita income in Haiti in 2012 as USD 1300 making it the 20th poorest country in the world, see https://www.cia.gov/library/publications/the-world-factbook/geos/ha.html). According to the Haitian Ministry of Health, it has annual per capita health care expenditures of USD 27. 'Haiti at a glance', at www.haitihealthministries.org/haiti/. These facts would give reason for the UN to take extra care, given its knowledge of the fragility of the infrastructure, rather than rely on it as a form of 'contributory negligence' of the state (though obviously not of the individual cholera victims).

[70] One might argue that it is not possible to restore the pathogenic environment in Haiti to its pre-cholera state in September 2010.

[71] Nepal had gross national per capita income of USD 549.0 in 2010. UN data, 'Nepal', see http://data.un.org/CountryProfile.aspx?crname=Nepal, less than that of Haiti though the CIA estimates 2010 purchasing power parity per capita income in 2012 as identical to that of Haiti at USD 1300. Both these governments thus have limited resources available to compensate victims without significant reductions in essential services to other, needy citizens. The two governments are thus functionally judgment proof. The private contractor is,

5. Concluding remarks

The rules governing legal and financial responsibility for wrongs promote two distinct and sometimes conflicting goals: the provision of appropriate *ex ante* incentives on agents to take appropriate care and the compensation of victims. To resolve this conflict, liability regimes must often allocate causal, financial, and legal responsibility for the harm caused differently. We see this separation most starkly, perhaps, in regimes of vicarious liability that assign legal and financial responsibility to an employer that is not causally responsible for the harm. The separation, however, recurs in negligence regimes.

This conflict between the two goals arises whenever the actions of multiple agents causally contribute to the harm. The conflict is exacerbated, however, when the actions cause irreparable harm because, in this case, full compensation is not possible. Society thus has additional reason to promote the prevention of the risk. The inability to compensate for irreparable harms thus shifts attention from the compensatory structure of a legal regime to its incentive structure. The importance of the incentive structure increases as the severity and extent of the irreparable harm increases.

International organisations undertake many activities that impose risks of irreparable harm to the lives and health of large, vulnerable populations. We thus have strong reason to subject these organisations to liability regimes that provide incentives for these organisations to act responsibly and carefully. When multiple agents causally contribute to these harms, a regime of joint and several liability may be appropriate. Regimes of joint and several liability, however, are complex and the optimal structure of such regimes may vary with the underlying causal structure which generates those harms. In domestic law, for instance, joint and several liability functions differently in the context of antitrust law than in the context of the regulation of hazardous waste. The development of regimes of joint and several liability in international contexts should thus attend to the varying structures of harm and harm prevention to which the regimes are applied.

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presumably a small operator with little capital beyond the trucks used to transport waste. These assets are likely to be far below its share of financial responsibility.