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Injuries from Unforeseeable Risks which Advance Medical Knowledge: Restitution-based Justification for Strict Liability*

Abstract: This article examines the case for restitutionary-based strict liability towards patients who were injured from risks that were unforeseeable at the time of treatment: involuntarily, the patient has advanced knowledge that will prevent harm to future patients. This situation is analogous to necessitous interventions so it is fair to compensate the patient for the costs she incurred in providing this benefit. The argument is based on both an emerging consensus by English restitution scholars about the appropriate scope of a common law necessity doctrine and a comparative approach of the civilian concept of *negotiorum gestio* and the hybrid Israeli solution to this issue. The fact that the service was not rendered with the intention to benefit potential alternative victims is not a bar for recovery, since the intervention was both successful, ex post, and cost-justified (and hence reasonable) ex ante. Crucially, an obligation to compensate the claimant conforms to the alternative victim's hypothetical wishes and preserves his autonomy, as it reflects incontrovertible benefit. Since the alternative victim is unidentifiable, and since imposing on him alone the financial burden to compensate the victim for her personal injury might be oppressive, an acceptable solution would be to impose the obligation on the treating physician who can spread this cost – to varying extent depending on how the health care system is funded – amongst potential victims who benefit from the advancement of medical knowledge, which is the necessary by-product of the claimant's injury. This restitutionary rationale bears resemblance to two theories justifying strict liability (while differing from the third, efficiency rationale): fairness and ex-post negligence. The analogy to necessitous interventions provides justification that is both narrower, and more convincing, than the two competing justifications for compensating the victim injured from unforeseeable risks which advance medical knowledge.

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I Introduction

Medical treatments involve risks; sometimes the risks are unforeseeable at the time of treatment.[1] When a patient is injured from the materialisation of unforeseeable risk,

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1 We are concerned here with situations in which the risk's unforeseeability affects the judgement of whether the action taken was negligent. Much more common are situations in which the act or omission are considered as negligent regardless of the materialisation of the specific risk where the question of the foreseeability of the injury is relevant only for purposes of legal causation. See eg *R v Croydon HA* [1998] Lloyd's Rep Med 44; *Loraine v UTHNHSFT* [2008]

traditional tort principles require one of two unhappy results: either the patient who was injured from what is deemed to be, albeit only with hindsight, suboptimal treatment, would not be compensated, or the physician would be found liable, based on an incorrect finding of the risk as foreseeable, with the result that the physician would be unjustly labelled as negligent. This article examines a third possibility which imposes strict liability on the physician under a restitutionary theory: involuntarily, the patient has advanced knowledge which will prevent harm to future patients. Therefore, it is fair[2] to compensate the patient for the costs she incurred by providing this benefit.

Consider the following example. Ravid, a 5 year old girl, is treated by a dentist who uses a non-aspirating syringe (NAS) for a local anaesthetic to her gum. Shortly thereafter neurological symptoms appear and eventually, permanent neurological impairment remains. The use of an aspirating syringe (AS) would have indicated the penetration of the material to the artery, thereby preventing the injection into the bloodstream. At the time of treatment, minor complications were known to have occurred due to the anaesthetic reaching the brain via this route, but not neurological sequelae of such gravity. While the use of AS was recommended at the time of the treatment and considered as superior treatment, it was considered accepted dental practice at the time to use NAS.[3] This scenario is used as an illustrative example throughout this paper.

Three preliminary points are in order. First, the fact that the use of AS was considered as superior colours the dentist's behaviour as potentially negligent. But the argument in this article stands even if there was no known reason to prefer AS over NAS at the time of the treatment. Second, on the facts of the case, it does not seem that relying on product liability was an option as the NAS producer warned against the foreseeable minor side effects (a point relied upon by Justices Or and Tirkel as indicating negligence). Moreover, the main dilemma underlying the analysis in this article remains even if we think of examples in which the unforeseeable risk was merely the result of the procedure, rather than the product used, and in these cases a product liability claim was unavailable. Interestingly, though, one justification for strict liability – ex post negligence – developed in the context of product liability and discussed in Section IV.B below, could justify liability in the case at hand. Ultimately, however, the argument defended in this article provides a justification for strict liability (against either the treating physician or the state) which is both narrower and more compelling. More generally, in practice, the tests for design defect are fault-based so the

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England & Wales High Court (EWHC) 1565 Queen's Bench (QB) (Admin); *Hughes v Lord Advocate* [1963] Appeal Cases (AC) 837.

2 As explained below, the term 'fairness' – following Gregory Keating – is used in a defined and narrow way namely, that those benefitting from a given activity should share its costs. The relationship between the necessity theory defended here and fairness is elaborated in Section IV.A.

3 The example is based on the facts of CFH 7794/98, *Moshe v Clifford* Piskei Din (PD) 57(4) 721 (Supreme Court, Israel, 2003). The trial court found the dentist to be not liable. On appeal, the Supreme Court affirmed by 2-1 majority. The case was reheard by a special panel of the Supreme Court and, by a 5-2 majority, reversed with the result that the dentist was found liable. Issues of standard of care, legal causation and remoteness of damage were discussed. Under English law, unless the practice is deemed illogical under *Bolitho v City and Hackney HA* [1993] 4 Medical Law Reports (Med LR) 381 (which on the facts is unlikely), a finding of no liability is warranted under *Bolam v Friern Hospital Management Committee* [1957] 1 Weekly Law Reports (WLR) 582.

question remains whether there should be strict liability for injuries from unforeseeable risks which advance medical knowledge. If one agrees that the case for this has been made, the producer is merely another potential pocket, alongside the treating physician and the public purse, to compensate the victim. Finally, to the extent that the victim is entitled to receive disability state benefits, a private law remedy is less crucial although, to the extent that what is paid under private law remedy exceeds welfare payments, resolving the private law entitlement claim is still important. Section III.D below return to this issue in the context of briefly examining the approach in countries such as Germany and Israel, in which a rescuer suffering personal injury in the course of rescue is entitled to state benefits in the same way as if she had suffered work injury.

This article begins by exploring the restitutionary theory and examining how, if at all, it could be translated into existing doctrine (Section II). It moves on to examine several challenges against the adoption of the restitutionary theory for recovery (Section III), and discusses to what extent this theory is different from the three other strict liability-based theories of fairness, ex-post negligence and efficiency, and whether the scope of liability is desirable from a policy perspective (Section IV). In the conclusion, the scope of the theory is explored via brief examination of whether it could support liability in cases beyond iatrogenic injuries.

II A restitutionary theory

A Identifying the benefits

The unfortunate patient conferred, albeit involuntarily, a series of benefits on certain third parties through her involvement in the procedure which injured her. These benefits are multifaceted and some could be conceptualised in different ways. If we stick to the example above, our working assumption should be that following the report of the incident in the medical literature, a new consensus emerged according to which the use of NAS became sub-standard and, ultimately, was stopped. Following on from this, Ravid's injury conferred the following categories of benefits:

1. It prevented a similar injury to at least one future unidentified patient.

The question is how to determine the correct way to measure this benefit? One view – which could be termed the conventional causation analysis – would be that, based on notions of causation, the benefit from Ravid's injury is limited only to preventing the injury to 'the alternative victim'. This refers to the first patient who would have been injured from the unforeseeable risk had Ravid not been injured earlier. After the injury to the alternative victim, the practice of using NAS would have ceased. If this is true, Ravid's injury involves only a distributive issue: it did not decrease the overall injury resulting from what is considered (in hindsight) as a sub-standard practice. An injury from such a practice ought to occur only once in order for the practice to stop (or to be considered as negligent) and the

question thus is who is the unfortunate individual who has to suffer the injury: the actual patient or the alternative victim who is unidentifiable?[4]

The contrasting view would be that the correct measure of the benefit conferred by Ravid is the difference between the expected injury from using NAS and the expected injury from using AS (when the latter could be assumed to be zero). In a world in which NAS is used more than one injury would occur over time. The shift to the safer state of affairs, which produced this benefit, is the factual result of the injury to Ravid. The fact that the same progress would have been achieved at a later stage, had the first victim been the alternative victim, does not matter since Ravid is still the factual cause of this benefit. The alternative victim (and the argument could be continued *ad infinitum*) is merely a pre-empted cause of the benefit. Accepting the conventional causation analysis artificially reduces the extent of the benefit by failing to recognise that the benefit is the result of preventing several successive potential injuries, each pre-empted by its predecessor. According to this contrasting view, the conventional causation analysis fails here for similar reasons as it does in *Baker v Willoughby*.[5] If this view is correct, the benefit consists of the prevention of all future injuries which would have occurred over time had the sub-standard practice continued.

Related to this, future patients who are injured due to the continuation of the sub-standard practice subsequent to Ravid's injury will benefit by being able to establish that their injury is the result of the dentist's negligence.[6] Even though compensation for serious personal injury can never leave the claimant indifferent to not being injured as opposed to being injured but compensated, the significance of this benefit cannot be ignored.

2. It prevented the occurrence of minor complications to patients caused by being injected with NAS, such as transient feeling of dizziness.

These minor injuries did not render the use of NAS negligent but post Ravid's injury, when the practice ceased, such minor injuries no longer occur. As an aside, if post injury a NAS is used and it causes merely a minor injury there is doubt whether liability in negligence could be established since, arguably,[7] it falls outside the scope of risk which rendered the use of such syringe a breach of duty.[8] What makes it negligent is the risk of serious permanent injury and not the risk of transient lack of comfort which, prior to Ravid's injury, was

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4 Even if this view (examined in Section III.C) is correct, there is arguably a fairness-based claim to compensate Ravid for her loss, which is discussed later.

5 [1970] AC 467.

6 Cf *A Porat/A Stein's* argument in Tort Liability Under Uncertainty (2001) 162 that the liability of the negligent hunter who did not cause the physical injury in *Summers v Tice* 199 Pacific Reporter, Second Series (P.2d) 1 (California 1948) is based on the evidentiary loss he caused to the claimant by depriving him of the opportunity to establish the liability of the other hunter.

7 Justice Englard in his dissenting view in *Moshe* (fn 3) [15] observed (correctly in my view) that adopting the majority's view – that failing to prevent the transient injuries from the foreseeable risks is negligent – must lead to liability in all cases in which such injuries occur. Indeed, Justice Or, authoring the main opinion for the majority, seems of the view (at [9]) that there should be liability for such injuries as they are sufficiently serious to require their prevention by using AS.

8 *SAAMCO v York Montague* [1996] 3 All England Law Reports (All ER) 365, 371; cf *Restatement (Third) of Torts: Liability for Physical and Emotional Harm* (2010) § 29.

insufficient to classify the practice of using NAS as negligent. One way or another, however, such injuries are less likely to occur given that NAS are no longer likely to be used.

The injury also produced other benefits. Since their existence carries much lower normative significance for supporting the argument defended in this article, they will only be mentioned briefly.

3. The injury has advanced scientific knowledge and has thereby benefited the medical scientific community and, more broadly, society in general.

4. The injury might provide the physician involved in the treatment with the opportunity to publish the details of the incident. This might enhance the physician's scientific career.

5. The injury benefited the physician of the next potential patient, who would have been injured by the use of NAS, by saving the physician from becoming a potential defendant in a medical malpractice claim.[9]

6. By eliminating the practice of using NAS, the injury benefitted the producers of AS.[10]

The following are relevant observations about the nature of the enrichment in these categories. First, in all six categories (including the first, which presents the strongest case for restitution) the benefit is attained from knowledge gathered as a by-product of the victim's injury. Two difficulties (discussed below) are that the information was not owned by the claimant, and is not likely to be owned by anyone, and that neither the production of the information nor its dissemination was the patient's voluntary action, a point reducing, but as will be seen below, not eliminating, the cogency of the claim for restitution which is based on the necessity doctrine.

Second, focusing on categories 1 and 2, there is an issue of remoteness which could be understood as a matter denying the free acceptance of the benefit. It is not that alternative victims have voluntarily used the information but, rather, that their physicians have used the information thereby preventing the likelihood that the alternative victims would be harmed. This problem is less crucial, however, since the benefit to the alternative victim (assuming he can be identified) could be considered as incontrovertible: the saving of necessary expenses.[11] This relates to the distinction (important also to the necessity doctrine discussed below) between preservation of an interest (in categories 1, 2 and possibly 5) and its improvement (categories 3, 4, 6). This distinction serves to protect the defendant's autonomy from being forced to pay for an unsolicited benefit:[12] as long as the intervention is cost-effective, urgently needed and limited only to preserving an existing interest of the defendant,

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9 It could be noted, however, that following Ravid's injury, all physicians continuing to use NAS would be found negligent for the ensuing injuries. This is a kind of indirect loss which could be factually (but of course not normatively) attributed to Ravid.

10 Although this might be, at least in part, a transfer loss – the loss of NAS producers.

11 See eg *Craven-Ellis v Canons* [1936] 2 ALL ER 1066 (CA).

12 *Falcke v Scottish Imperial Insurance Co* (1886) 34 Law Reports, Chancery Division (2nd Series) ChD 234, 248; *Taylor v Laird* (1856) 25 Law Journal Reports, Exchequer New Series (LJ Ex) 329, 332.

imposing an obligation on the claimant to pay the costs of rescue does not undermine, and is in fact likely to increase, the defendant's autonomy by conforming with his hypothetical wishes.[13]

Finally, in classic unjust enrichment situations the defendant's enrichment amounts to value subtracted from the claimant. While at first impression something akin to subtraction occurs in the first category this is not in fact the case. It is not that a quantum of health, which the claimant loses due to the injury, is added to the next potential victim (who, as noted above, is unidentifiable). Rather, either the claimant or the alternative potential victim will suffer the loss (this imaginary quantum of health) and the fact that the claimant suffers the loss saves the alternative victim from this fate. It is for this reason as well that it is difficult to analyse Ravid's case as a normal unjust enrichment claim. As clarified below – mainly in Section III.B and the conclusion – some justified objections to awarding the claimant a right to the gain resulting from her injury are simply irrelevant for the loss-based claim underlying the necessity doctrine.

B The prima facie case for recovery

Can all or some of these benefits be claimed under a restitutionary theory? The main (though imperfect) analogy which presents itself[14] is the common law doctrine of necessity, and its broader civilian counterpart doctrine of *negotiorum gestio* (NG).[15] Examples of necessitous intervention are a stranger saving a quantity of timber floated down the river,[16] or lifting a car to free a trapped person.[17] English law recognises several categories of necessitous interventions, including preservation of property and of credit, care for the sick and burial of the dead. The editors of Goff and Jones support a general doctrine of necessity, the elements of which are: great likelihood of imminent harm, impossibility of communication, the claimant must be the appropriate person to act, the expenses incurred must be reasonable and the claimant must not have acted to further his own interest.[18] When these conditions are met the intervener may recover his reasonable costs. In civilian systems recovery is allowed to those preserving the defendant's property (and, at times, even improving it) regardless of any pre-existing relationship and provided that the claimant intended to conduct the defendant's

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13 Cf *H Dagan*, The Law and Ethics of Restitution (2004) 95–101. See also Sections II.B and III.C.

14 The second analogy is transfer of a benefit by mistake. While a pure analogy is not likely to succeed (mainly since no benefit was subtracted from the claimant and passed on to the defendant), as will be demonstrated below, mistaken, and even entirely passive, interferences preserving the defendant's interests do, and should, allow recovery of the claimant's costs, hence dispensing with one of the strongest challenges to the analogy with the necessity doctrine namely, that the interference was not made with the intention to manage the defendant's affairs.

15 For the claim that English law recognises in all but name a (narrow version of the) doctrine of NG see *D Sheehan*, Negotiorum gestio: A Civilian Concept in the Common Law? (2006) International and Comparative Law Quarterly (ICLQ) 253.

16 *Nicholson v Chapman* (1793) 126 English Reports (ER) 536 in which the claimant was allowed a personal claim for his costs.

17 Cour de Paris, 30 January 1907, Sirey (S) 1908, 2, 44 (France) in which the rescuer recovered for his personal injury. Cf *G Virgo*, The Principles of the Law of Restitution (2nd edn 2006) 295.

18 *C Mitchell/P Mitchell/S Watterson* (eds), Goff & Jones, The Law of Unjust Enrichment (8th edn 2010) 493 f (cited hereinafter: G&J). The authors reject as 'illogical' the further condition appearing in some authority that the intervener intended to charge for his services.

affairs, the claimant was the right person to act, the action was reasonable under the circumstances and the claimant could not have received the defendant's consent prior to taking action.[19] In addition, rescuers, including those who risk themselves in order to save the defendant from physical injury, are awarded indemnity for their own physical injuries.[20]

The necessity doctrine is commonly classified as an instance of unjust enrichment in which necessity serves as an unjust factor negating the claimant's free will to transfer the benefit since he was morally compelled to render help.[21] But it could be useful to note the doctrine's unique features which arguably justify its classification as a separate branch in the law of restitution or as belonging to neither unjust enrichment nor restitution law,[22] namely, that the remedy is not measured by the defendant's actual enrichment but rather by the expense incurred by the claimant. One aspect of this is that (with the exception of maritime salvage) the success of the intervention is not a precondition for claiming restitution as long as the intervention was reasonable at the time it took place, where 'reasonableness' is based on a comparison between the costs of intervention and the likelihood of its success.[23] Another aspect of the exceptional nature of the remedy is discernible in the civilian tradition of NG in which the remedy also includes indemnity for property loss and even for personal injury to the intervener.[24] While English case law does not reflect this tradition, the new editors of Goff and Jones support a remedy 'aiming to neutralise the whole cost of the intervention by awarding compensation for the full loss'.[25] The nature of the remedy in NG cases led Stoljar to conclude that the underlying rationale of the doctrine is the prevention of the claimant's unjust sacrifice rather than the defendant's unjust enrichment.[26] The following analysis is based on this important distinction.

Moreover, at common law, cases of necessity as incomplete privilege in torts, such as *Vincent v Lake Erie*,[27] render the interference with the claimant's property permissible[28] but require

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19 *S Stoljar*, Negotiorum Gestio (ch 17), in: E von Caemmerer/P Schlechtriem, International Encyclopedia of Comparative Law, vol X, 40 ('absence', 'intention to manage another's affairs' and 'utility' as the three operative conditions for recovery), 104 ('urgent preservation of property').

20 Ibid, 144–147 and Section III.D below.

21 *P Birks*, An Introduction to the Law of Restitution (rev edn 1989) 193–202; cf *Virgo* (fn 17) 286 f. This taxonomy has been followed in *T Keren-Paz*, Sex Trafficking: A Private Law Response (2013) 95–102. But if necessitous interventions ought to be analysed as a matter of unjust enrichment, there is much to be said for the fact that the intention to transfer the benefit is not vitiated but rather qualified – the claimant expects to be remunerated for his services in situations in which taking action corresponds with the defendant's hypothetical consent and communication is impossible.

22 *Stoljar* (fn 19) 8–12; *P Birks*, Unjust Enrichment (2nd edn 2005) 23 f who qualifies that certain cases could form a narrow category of necessitous interventions within the law of unjust enrichment.

23 *Stoljar* (fn 19) 52; *Birks* (fn 22) 495; *Matheson v Smiley* [1932] 2 Dominion Law Reports (DLR) 787. But see *Sheehan* (2006) ICLQ 265. See also fn 46 below. One should also distinguish between the questions of whether the intervention was reasonable, despite the fact that it ultimately failed, and whether a subsequent event eliminating the benefit conferred by the claimant precludes liability. In civilian systems it does not preclude liability but a different result was achieved in *Chellew v Royal Commission on the Sugar Supply* [1921] 2 King's Bench (KB) 627 (a general average case), which G&J (fn 18) 482 f explain as based on a change of position defence.

24 See Section III.D.

25 G&J (fn 18) 495 adopting *J Kortmann*'s view in *idem*, Altruism in Private Law: Liability for Nonfeasance and Negotiorum Gestio (2004) 179–183. Stoljar's view is different and is discussed further in Section III.D.

26 *Stoljar* (fn 19) 11.

27 124 North Western Reporter (NW) 221 (Minnesota 1910). While there is no consensus on this issue, some analyse *Vincent* as belonging to the law of restitution. See eg *R Keeton*, Conditional Fault in the Law of Torts (1959) 72 Harvard Law Review (Harv L Rev) 401, 401–412. Cf *G Keating*, Property Right and Tortious Wrong in Vincent v Lake Erie (2005) Issues in Legal Scholarship, art 6.

compensation for the claimant's loss.[29] These cases balance the interests of rescuers and beneficiaries by awarding the involuntary rescuer the costs of the loss to his property which were incurred in order to save the defendant's property and life.

The prima facie case for recovery in cases of injury from unforeseeable risk is that the injury to the patient (which is the relevant cost of the 'intervention' manifested in producing the relevant knowledge) prevented a great likelihood of harm,[30] at least to the alternative victim; the communication between the actual and alternative victims was impossible, given the nature of injuries from unforeseeable risk; the claimant was the appropriate person to act, since her injury is a necessary condition for producing the knowledge that prevented future injuries, and the expense (the claimant's injury) was reasonable ex ante in that the benefit could not have been achieved in a less costly way. In our example, the 'intervention' prevented at least the injury to the alternative victim (and in fact also other future injuries to further potential victims) and, in this sense, was successful.[31] While the dental treatment was carried out in order to advance the claimant's interest, the injury incurred was obviously not.[32] Therefore, the requirement that the action (in this case involuntarily providing the relevant information needed to prevent the injury to the alternative patient) should not have been carried out to further the claimant's own interest is also met.

At the outset, it ought to be observed that liability in cases discussed in this article goes beyond any existing recognised categories of necessitous intervention in English law. The closest analogy is cases of agency of necessity involving an intervention preserving the defendant's property but, in these cases, there was usually a pre-existing relationship between the parties, a fact that renders the claimant to be the appropriate person to act, such as shipmasters and bailees.[33] In contrast, in other categories, such as providing necessaries to the defendant's dependants in his absence, or caring for the sick, claimants recovered without

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[28] Some (like Jules Coleman) dispute the characterisation of liability in *Vincent* as reflecting permissible behaviour. This author believes that this view is mistaken but nothing in the argument made in this article hangs on resolving this dispute. See *T Keren-Paz, 'Risks and Wrongs'* Account of Corrective Justice in Tort Law: Too much or Too Little? (2012) 12 Diritto & questioni pubbliche 75, 98.

[29] It is not entirely clear that in English law private necessity works as incomplete (as opposed to complete) privilege. The English position seems to absolve the defendant from the duty to compensate, although the interpretation of the cases is disputed. See *Romney Marsh v Trinity House Corp* (1870) Law Reports (LR) 5 Exchequer Cases (Ex) 204; *Cope v Sharpe* [1912] 1 KB 496; *Southport Corp v Esso Petroleum Ltd* [1965] AC 218, 227 (per Devlin J); *M Jones/AM Dugdale,* Clerk and Lindsell on Torts (19th edn 2006) 1140 no 91 ('…necessity is not favoured by the courts, especially where the defendant acted to protect private…interest'). The current edition (20th, 2010) 258–63 does not include this observation; *WVH Rogers*, Winfield and Jolowicz on Tort (18th edn 2010) 1172 f. To the extent that private necessity works as complete privilege in English law, this should be criticised for reasons similar to those offered in this article in regards to injuries from unforeseeable risks.

[30] Granted, the harm to the alternative victim is not imminent. But imminence is merely a proxy for the inability to communicate (and hence for the reasonableness of taking action) and has no normative power of its own. In our context, in which inability to communicate and reasonableness are met, lack of imminent harm should not fail the claim.

[31] While success is not generally a condition for a claim, as will be explained below, in our context it substitutes the intention to manage the affairs of the defendant as a condition for liability.

[32] A similar distinction is captured by Oren Bar-Gill and Ariel Porat in their economic analysis of situations in which the claimant's injury itself, rather than the defendant's activity, benefits the latter. *O Bar-Gill/A Porat*, Harm-Benefit Interactions (2014) American Law & Economics Review 86.

[33] *Sheehan* (2006) ICLQ 269.

having such pre-existing relationship.[34] While a claim by a stranger is not an insurmountable obstacle, the claims of patients injured from unforeseeable risks against the treating physician face serious challenges which are addressed below.

III Challenges

There are several possible objections to awarding the claimant who is injured from unforeseeable risks damages from the treating physician. First, both necessity and NG are seemingly based on a conscious decision by the claimant to take care of the defendant's interests. In the absence of such a conscious decision is restitution justified? Second, in contrast to the typical intervention scenario, there is a need to inquire whether the benefit received by potential defendants is at the expense of the claimant in any meaningful sense. Third, the doctrine is based on useful interventions which could be justified on utilitarian grounds. Given the nature of the benefit as arguably nothing more than a transferred loss from the alternative victim to the claimant, could the 'intervention' be considered as useful? Fourth, given the enormity of personal injury damages it is not clearly just to impose those on the beneficiary? Finally, there is an issue of privity. Of the six categories of benefits listed above, only the fourth is borne by the physician. Why then should he be liable to the claimant? Analytically, the first three challenges, and possibly the fifth suggest that the analogy to the necessity doctrine is defective, since relevant differences exist between previous recognised cases and the case at hand. The fourth challenge suggests that to the extent that the necessity doctrine indeed compensates rescuers for their personal injury during rescue, this is unjust, and should therefore not be extended to victims of unforeseeable risks. The last challenge is that even if the victim deserves compensation, it is not the treating physician who should be liable. These issues will be discussed in turn.

A Absence of intention to act for the defendant's interest

At the heart of the doctrines of necessity and NG lies the claimant's agency manifested by a decision to act for the defendant's interest.[35] The doctrine could be understood as

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[34] See eg *Matheson* [1932] DLR 787. Previous editions of G&J (fn 18) (eg 4th edn 1993, ch 15) used a taxonomy separating cases of agency of necessity and intervention by a stranger.

[35] *Stoljar* (fn 19) 45–49. Two observations are apposite: first, French courts sometimes grant a remedy in NG claims under circumstances where there was no intention to manage the defendant's affairs: *Stoljar* (ibid, 49). See also *J Bell/S Boyron/S Whittaker*, Principles of French Law (1998) 406 ('in some cases, a finding of gestion d'affaires by a court seems to be aimed solely at procuring a legal basis for a claim of damages for personal injuries'); *Sheehan* (2006) ICLQ 257; *Falcke* ((1886) 34 ChD 234, 251. Second, when a NG claim fails, due to the fact that the claimant did not intend to manage the defendant's affairs, liability may be established based on alternative grounds such as *de in rem verso* see Donizzetti Cass Civ 6 Jukt 1927, S 1928 I 18, and in rescue cases liability is at times based on a contractual model under which the rescuee's consent to the offer of assistance and reimbursing the rescuer for his losses is presumed: Cass 1 December 1969, Juris Classeur Périodique (JCP) 1970 II 16445 note by *JL Aubert*.
The contractual model for the rescuee's liability towards the rescuer, however, does not undermine the thesis in this article for two reasons. First, presumed consent largely collapses into hypothetical consent and, as such, the substantive ground for recovery is still NG. Second, the argument in this article is based on the analogy between the patient and the (involuntary) rescuer. As long as it is accepted that the rescuer ought to be compensated by the rescuee (as is clearly the case in French law), it matters little whether this is grounded in NG or in another doctrine.

encouraging, or rewarding, calculated kindness[36] and as a form of institutionalised limited altruism.[37] But these underlying rationales do not seem to support liability where the claimant transferred the benefit involuntarily. And yet, both doctrinal examination and normative analysis suggest that compensation is not and should not be limited to altruistic interventions.

The clearest doctrinal example is *Vincent* in which the beneficiary used the involuntary rescuer's property (the dock) foreseeing that it might be damaged from the use to preserve 'its own more valuable property' (the ship). The court emphasised the deliberate action by the defendant as justifying liability but what is crucial for current purposes is that although the rescuer claimant was entirely passive he was nevertheless entitled to be compensated for his loss in circumstances in which he involuntarily conferred a benefit, in preventing a more severe injury to the defendant's property, and, in order for this benefit to be conferred, had to suffer a loss to his own property. The similarity to our example is striking: in order to prevent an injury to future patients, Ravid had to be injured and this benefit conferred was *not* produced by Ravid's agency.

A similar approach is reflected in sec 5 of Israel's Unjust Enrichment Law 1979 which governs, as its title suggests, the right for restitution of a 'person who acts to protect another person's interest'. This section, which is influenced by both common and civil law and the provisions of which are somewhat unique, provides in subsection (b) that 'For purposes of the requirement for compensation under subsection (a), a person whose property is used for the protection of any of the aforesaid values shall be treated as a person who does something for its protection'. Under subsection (a), and in contrast to the civilian tradition, compensation for damage caused to the benefactor in consequence of the intervention is limited to property loss and is discretionary. Extending the right for compensation to passive owners of property, whose property was used without their consent to protect the defendant's interest, undermines the common understanding that the conscious attempt to act for the defendant is what justifies compensation. True, the property should be used by the benefactor with the intention to protect the defendant's interest. But the fact remains that a right for compensation from the beneficiary is afforded to an involuntary benefactor whose loss was crucial for protecting the defendant's interest.

Further support for the conclusion that an involuntary benefactor might be owed compensation comes from a line of cases in which the benefit was transferred by mistake. When the service saves the claimant necessary expenses – the equivalence of preserving the claimant's property – as in *Craven-Ellis v Canons*,[38] or ends up with realised or easily realisable benefit, as in *Greenwood v Bennett*,[39] the involuntary intervener receives the lower of the market value of the services or the resulting improvement. There is comparative support for such an outcome. Daniel Friedmann in his authoritative *The Law of Unjust*

For a further alternative theoretical justification for liability to those discussed in this article see *K Genius*, Risikohaftung des Geschäftsherrn (1973) 173 Archiv für die civilistische Praxis 481, 513 ff.

36 *Stoljar* (fn 19) 47.

37 *Dagan* (fn 13) 101–108, who explains in this chapter the doctrine as also based on respecting the defendant's autonomy.

38 See fn 11. See also *Rover International v Canon Films Sales* [1989] 1 WLR 912 (CA).

39 [1972] 3 All ER 586 (CA). See also Torts (Interference with Goods) Act 1977, sec 6.

Enrichment – the approximate Israeli equivalent of *Goff and Jones* – is of the view that mistaken acts preserving the defendant's interests should lead to reimbursement (the lower of either the benefit it brought or the cost of its provision) provided that the intervention was successful.[40] According to this view, then, the success of the intervention substitutes voluntariness as a condition for recovery.

From a policy perspective, to English lawyers at least, it might be easier to support liability in a case of mistake as there is no fear of incentivising or rewarding officious interventions.[41] While the claimant in our example showed a lesser degree of agency than those acting under a mistaken belief that the property they improve belongs to them, this is not a reason to deny them a remedy. As we have seen, even passive owners of property used to save the claimant's interest can recover. Moreover, those who act to further their own interest could arguably (but unconvincingly) be said to take the risk of erroneously acting on another's property and losing their contribution; this cannot be said for those more passive claimants who do not take any conscious action to preserve (or improve) their interest.

It could be argued that the correct classification of Ravid is that of someone acting to protect her own interest (receiving dental treatment) who incidentally conferred a benefit on the alternative victim and, as such, should be denied recovery. But this suggested classification is unconvincing. In self-interested conferral of benefits (such as the saving of the owner's cost of docking a ship for survey purposes where the ship needed to be docked for repair covered by the insurer[42]) the benefit (in that case, docking the ship) is intended, but the act is carried out in order to further the claimant's interest, not that of the defendant. In Ravid's case, it is not the treatment received *per se* which benefited the alternative victim. Rather, it is the knowledge produced from the occurrence of the unexpected injury due to the materialisation of unforeseeable risk. Under these circumstances, the claimant should more correctly be classified as someone who conferred a benefit involuntarily and, indeed, without agency rather than as someone who conferred an incidental benefit on the defendant while pursuing her own interests.

The policy of protecting the *defendant*'s autonomy in cases of mistaken conferral of benefits is satisfied by limiting the remedy to the defendant's actual benefit (which is equivalent to applying the defence of change of position) and by insisting that the intervention was useful. Applied to the context of injuries from unforeseeable risks, the involuntary involvement in the production of knowledge that NAS should not be used saved the alternative victim from being injured and the intervention was therefore successful.

B Identifying the contribution

In the examples discussed above – *Vincent*, and the comparative equivalents – the claimant's property was *directly* used to preserve the defendant's interest. In the case of Ravid, it was the knowledge revealed as a by-product of her injury that protected the beneficiaries. Ravid

[40] *D Friedmann*, Diney asiyat osher velo Bamishpat [The law of unjust enrichment] vol 2 (2nd edn 1998) 890 f (Hebrew).
[41] See *Falcke* (1886) 34 ChD 234, and *Sheehan* (2006) ICLQ 262.
[42] *Ruabon Steamship Co Ltd v London Assurance Co Ltd* [1900] AC 6.

did not own this information and therefore, arguably, should not be compensated for the injury that produced the benefit. This is a powerful observation but it has its limitation. In novel disputes, the question that courts face is exactly that of whether the claimant has entitlement over the litigated resource, and if so, what the scope of that protection is. In *International News Service v Associated Press*[43] the finding that the claimant had a quasi property right in the news was the result of the litigation; the existence of the right did not predate the litigation. The same is true of the frozen sperm litigated in *Yearworth v North Bristol NHS Trust.*[44] Similarly, had the Californian Supreme Court in *Moore v Regents of the University of California*[45] adopted the dissenters' view, a property right in a body cell would have been created as a result of the litigation.

Moreover, Ravid is not asking to exclude others from the use of the useful information or (amounting to the same) to reap the full economic benefit of the unauthorised use of the information, so in this sense, the fact she does not own the information (nor should she) does not matter. The question is normative: whether the fact that the useful information preventing injuries to others is a *necessary* by-product of Ravid's injury is a good enough reason to place a duty on the beneficiaries to compensate her. I believe that the answer is 'yes' based on the notion of unjust sacrifice underlying the necessity doctrine and, for that matter, the absence of a pre-existing property right is not dispositive. What does matter is the necessary correlation between the setback to the claimant's interests and the benefit derived by the defendant: it would be impossible to prevent the injury to the defendant without the injury having been incurred by the claimant. The fact that the benefit was produced directly by the knowledge and only indirectly by the injury itself is an unconvincing ground to distinguish this case from the cases discussed above in which involuntary contribution is deemed as sufficient to award the claimant compensation for her loss.

The link between the benefit and the sacrifice – or loss – also serves the crucial screening role of preventing excessive liability. New knowledge can benefit many, and it is neither conceivable nor desirable that those involved in the production of this knowledge, let alone involuntarily, will be able to sue those benefitting from this knowledge. In our example, the physician who treated Ravid has also conferred (unwittingly) on future patients the benefit of preventing injuries from the use of NAS. But, unlike Ravid, he did not suffer an inevitable loss in producing this beneficial knowledge. Therefore, unlike Ravid, he should not be compensated or otherwise remunerated. It is true that his need to defend himself from the charge of negligence is some type of cost but at least as long as his liability to the patient (if indeed it is established) is *not* based on negligence, his loss is not significant enough to merit compensation.

C Reasonableness and usefulness

[43] 248 United States Supreme Court Reports (US) 215 (1918).
[44] (2009) England & Wales Court of Appeal (Civil Division) (EWCA Civ) 37.
[45] 793 P.2d 479 (1990).

The necessity and NG doctrines require that the intervention be reasonable under the circumstances, one element of which is that it would be cost-justified with respect to the expected benefit.[46] The difficulty is that, according to the narrow quantification of the benefit according to the conventional causation analysis, the victim's injury merely transferred the loss from the alternative victim to the claimant and, as such, is not cost-justified. An intervention is cost-justified if it is likely (ex-ante) to prevent a greater loss than its cost. If a serious injury is doomed to befall once, either on the victim or on the alternative victim, the 'intervention' seemingly only transfers the loss from the alternative victim to the victim, rather than preventing, or reducing it, and as such is not cost-effective.

There are several responses to this challenge. First, arguably, as explained above, the expected benefit in terms of preventing serious injuries extends to the overall difference between the expected harm under a practice using NAS and that under a practice using only AS. After all, this is exactly what makes the use of NAS negligent from the moment the risk has materialised, namely, that using NAS will cause more overall injuries than the alternative practice. Second, there is much to be said for the observation that the overall benefit from the shift to AS goes beyond the benefit to those spared from the risk of suffering a serious injury. This could be illustrated by reference to the other categories of benefits presented above. In particular, the second category undeniably includes benefits to several potential victims; this alone renders the 'intervention' cost-justified.[47]

It might be objected that benefits to third parties should not be taken into account, since, in order to preserve the defendant's autonomy, the intervention should be reasonable from his perspective. It is accepted here that the intervention should be ex-ante beneficial from the defendant's perspective yet it is argued that the intervention in our example meets this requirement. From the perspective of the alternative victim, the intervention is still reasonable and conforms to his hypothetical wishes since it is better not to be injured (the result after the intervention) than to be injured and receive compensation. Moreover, unless the theory defended here is accepted, in the absence of the intervention (knowledge produced by the claimant's injury) the alternative victim, being the first to be injured, would not have received compensation since the risk was unforeseeable at the time of his injury. It follows, then, that even when we ignore the benefits to third parties, the alternative victim would prefer to be liable for the claimant's injury rather than being injured and left uncompensated (and, arguably, rather than being injured and receiving compensation for the injury) if this was the only alternative. As the discussion below demonstrates, however, it is not.

As an aside, it might be that for the beneficiary to be liable to the benefactor it should be sufficient that the intervention conforms to the beneficiary's hypothetical wishes (as it does,

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[46] *Re F (Mental Patient: Sterilisation)* [1990] 2 AC 1, 75 f; *Virgo* (fn 17) 287–290. *Stoljar* (fn 19) 52, 145 f.

[47] An interesting question is whether the approach viewing the prevention of injuries outside the scope of duty as a benefit is analogous to imposing liability in negligence for such injuries. For a critique of the 'harm within risk' rule as manifesting misalignment see *A Porat*, Misalignments in Tort Law (2011) 121 Yale Law Journal 82,123. For a response see *I Gilead/M Green*, Maligned Misalignments (27 February 2012). Wake Forest University Legal Studies Paper No 2014874. Available at SSRN: <http://ssrn.com/abstract=2014874> or <http://dx.doi.org/10.2139/ssrn.2014874> 17.

in our example, for the reasons mentioned above) even though the intervention is not cost-justified when measured from the beneficiary's perspective only but, overall, is cost-justified. If the claimant jumps into a fire to save several people, while taking a big risk upon himself in so doing, it would make sense that the cost-justified test would take into account the aggregate benefits to all potential beneficiaries, even though the intervention might not have been considered as cost-justified had only one person been trapped in the fire.

Indeed, mere diversion of risk from the defendant to the claimant has been considered by the Privy Council as reasonable and as giving rise to the defence of necessity where the defendants turned away locusts heading to their land thereby directing them back to the claimant's land.[48] Similarly, a comparative look into the operation of NG in rescue situations[49] reveals that compensation has been awarded where, similar to our context, the rescuer suffered an injury while attempting to prevent a similar injury from occurring to the defendant. Examples from French law include descending down a deep well to help a man trapped below, lifting a car to free a trapped person, pulling a passenger out of a flaming car,[50] and even saving cattle from a fire.[51] In Germany examples include rushing to the aid of a man who had fallen into a deep poisoned shaft and attempting to aid a woman attacked by a lunatic.[52] 'German law has even given a right to "outlays" to someone suffering a serious injury as a result of taking evasive action to avoid an accident caused by the defendant's actions.'[53] One could have argued that in these cases the intervention was not strictly cost-justified since it was likely, at best, to shift the injury from the defendant to the claimant and yet liability was established. The relevance of the fact that compensation is sought for the claimant's *personal injury* is discussed in the next section.

D Spreading the costs of personal injuries

Stoljar expresses unease with the civilian solution of compensating the rescuer for his personal injury for two reasons which could be termed formalist and substantive. The formalist, and unconvincing, reason is that the 'new extensions of NG in this way circumvent established principles of the law of tort; they establish, in fact, a new liability without fault.'[54] But even if tort liability is, and ought to be, in general fault-based, this tells us nothing about the normative justifiability of strict liability towards a rescuer. It is one thing to believe that a defendant should not compensate a claimant he harmed without fault. It is quite another to

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48 *Greyvensteyn v Hattingh* [1911] AC 355 (an appeal from South Africa).

49 As reported by *Stoljar* (fn 19) 144 (German cases), 145 (French cases).

50 Cass Civ 16 November 1955, JCP 1956 II 9087 note *P Esmein*; Cour de Paris, 30 January 1907, S 1908 2 44, Recueil périodique et critique Dalloz (DP) 1908 2 345.

51 Cour Chambéry 12 July 1943, Recueil analytique Dalloz (DA) 1943 J 83; Cour Lyon 17 June 1946, D 1947 Som 29.

52 Oberlandesgericht (OLG) Tübingen 12 October 1949, Monatsschrift für Deutsches Recht (MDR) 1950, 160; Bundesgerichtshof (BGH) 7 November 1960, BGHZ (Decisions of the BGH in civil matters) 3, 251, LM § 683 BGB no 8 German Civil Code (BGB).

53 BGH 27 November 1962, BGHZ 38, 270; *Stoljar* (fn 19) 144 ('The defendant, an infant, was not held to be negligent' and the rescuer received 'only half the damages for his bodily integrity').

54 Ibid, at 150.

believe that the claimant should not be compensated by the defendant if the claimant was injured while trying to rescue the defendant from a non-negligent risk created by the defendant (or a third party). The justification of such a result should be decided on the merits rather than on misconceived coherence arguments.

Stoljar's substantive reason is more convincing, however. It has to do with a preference for a socialisation of the risk of personal injury, at least in circumstances when fault is absent, rather than imposing it on either the rescuer or the beneficiary.[55] When a non-professional undertakes a rescue intervention both parties might not be insured. Under such circumstances, imposing on the rescued person the burden to compensate the rescuer for the latter's losses might seem harsh (although, in the absence of an alternative source of compensation to the rescuer, the alternative is not necessarily less harsh, or fairer). Stoljar therefore supports a solution giving courts discretion as to awarding indemnity and a special reward by the state, which could be in the form of social or accident insurance. Indeed, social insurance awards for rescuers exist in Germany and Israel,[56] and sec 5 of the Israeli Unjust Enrichment Law limits the (discretionary) compensation for losses only to the rescuer's property rather than to personal injury.

Liability of the physician for injuries from unforeseeable risks could be supported as an acceptable, perhaps even ideal, solution in terms of the socialisation of the risk. Even when medical care is privatised, liability would be spread amongst all patients of physicians who carry liability insurance in that insurance pool (under the assumption that increased costs of insurance are ultimately passed on to patients). Since many of these patients are likely to benefit from the reduction of the risk due to the change of practice, and are unidentifiable, the solution can be supported not only by considerations of loss-spreading (which are currently of concern) but also fairness – that those benefiting from the activity (the patient's injury which revealed useful knowledge) would share its costs. The physician is not found liable *merely* because he is insured but, rather, since he is able to spread the cost – and in this sense is a good proxy – amongst a significant number of unidentifiable alternative victims (and potential alternative victims) who should ideally reimburse the claimant for the cost involved in conferring the benefit from which they all gain. Seemingly, in public health systems the socialisation of the risk is even more extensive since the cost of compensating the claimant is ultimately borne by the public purse (in England, injuries occurring as part of secondary care are paid by the National Health Care Legal Authority (NHSLA) which, ultimately, is funded by the public).[57]

Where the health care system is publicly funded all potential patients who benefit from the new knowledge, including the alternative victim (and many others who do not), bear the costs of compensating the claimant. Where health care is privatised, only patients treated by

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55 Ibid, at 151.

56 For Germany see ibid ('In GERMANY, social insurance now provides compensation for those injured during rescues in which they participate...as if the rescuer had been injured in an accident at work.'). For the similar Israeli solution see *Dagan* (fn 13) 119.

57 *T Keren-Paz*, Liability Regimes, Reputation Loss, and Defensive Medicine (2010) 18 Med LR 363, 366 no 8.

defendants insured in the same liability insurance pool bear the costs of liability whereas other patients (including possibly the unidentifiable alternative victim) who benefit from the new knowledge do not bear the cost. But while this under-inclusiveness is less desirable from a fairness perspective than imposing liability within a public-funded health care system, in both cases liability of the treating physician towards the patient serves as an insurance mechanism under which potential beneficiaries pay for the benefit they receive while no one individual has to bear the costs of the injury producing this beneficial information. This result is achieved without burdening the treating physician with the reputational costs of being found negligent.[58] Moreover, while private insurance is under-inclusive in failing to impose the costs of liability on some potential beneficiaries, a publicly funded health system might be over-inclusive, since part of those bearing the costs of the injury are not likely to benefit from the knowledge produced by the injury. The point is that both systems are better than a system that leaves the losses to fall on one individual.

One might oppose the justification of strict liability based on socialisation of the costs of injury during rescue by correctly observing that what is typically paid into social insurance schemes is lower than what could be awarded in tort claims. But, if we are forced into either/or solutions, and accept that in this scenario, full compensation goes too far,[59] the 'windfall' of receiving more than what would have been received by social insurance is still preferable to a solution that leaves the victim with nothing. Finally, possibly, although this is contested, the injured patient's case for compensation is even stronger than that of the injured rescuer, so a higher award is unproblematic. First, the patient's contribution is involuntary, so she did not take on the risk of injury and, second, the benefits she conferred overall might be more significant, given their open-ended nature, than the benefit typically conferred in 'traditional' rescue cases which usually affects only one or a small number of beneficiaries.

E Privity

The discussion in the previous section responds to possibly the biggest challenge to the restitutionary theory, namely, that of the identity of the beneficiary. From the six categories of benefits mentioned above, the most significant ones are the first two, since they deal with the protection of bodily integrity. Both the fact that the interest protected is of bodily integrity and the fact that it is a preservation of an interest rather than its improvement makes the case for an obligation to compensate the benefactor a strong one. Individuals are likely to be risk-averse about their health and preservation of an interest (including the saving of necessary expenses) does not raise the concern of forcing a bargain onto an uninterested beneficiary,

[58] Physicians are usually not likely to be negatively affected by the obligation to pay damages since, even when they carry liability insurance (rather than the payment being made by their employer), premiums are not experience based. See ibid.

[59] Both assumptions could be questioned. It might be that the amount of damages to rescuers for their physical injury should be discretionary. Moreover, it does not follow from the fact that social security benefits for personal injury are usually lower than tort awards, that this should be the case with rescuers. At least a voluntary rescuer seems to merit more compensation than someone injured without acting altruistically. Finally, it is not clear that under the necessity or NG doctrines that which is paid for personal injury equals that which is paid as damages under tort law.

thus undermining his autonomy. Recall that the measure of recovery in necessity cases is cost-based – basically neutralising the costs of intervention. Therefore, the fact that the intervention produced additional benefits, as described in categories 3–6, which should not by themselves trigger liability under the necessity doctrine, ought not to disqualify the claimant's case for a remedy as long as she can identify an intervention meeting the conditions for recovery under that doctrine *and* the correct beneficiary as the defendant.

One thus needs to explain why it is the treating physician, rather than the alternative victim or other potential victims, who is burdened with the obligation to compensate the claimant for her loss. The physician's strict liability could be best understood, and justified, as an imperfect passing-on mechanism of the cost of rescue onto those potentially benefiting from the new knowledge. Granted, the mechanism is imperfect but, on a closer look, each of the privity-based challenges is unconvincing as a reason to oppose the physician's liability. The physician is thus liable neither in order to account for his own benefit (the fourth category) nor as a proxy for the benefits to the medical community, fellow physicians and the producers of AS at large; rather, he is liable as an imperfect proxy for benefits that other potential victims receive from the new knowledge produced through the patient's injury which prevents them from being injured themselves.

The major challenge is that imposing liability on the physician creates a de facto obligation on potential victims to make restitution of the benefit manifested in the reduction of the statistical risk of being injured rather than an obligation on the alternative victim, or alternative victims from categories 1 and 2, to make restitution of the benefit of not being injured by the use of NAS. Although a similar argument has been presented by Ariel Porat[60] – that unsolicited benefits in the form of the reduction of risk of injury to the patient, and possibly to third parties and society at large, produced by the physician's course of action should reduce his liability to the injured patient – this thesis is controversial especially given that it conflates materialised injuries and benefits with risks and expected benefits.[61] According to this challenge, it is only the (unidentifiable) alternative victim who should be under the obligation to compensate the claimant.

There are several responses to this challenge. First, accepting the second type of benefit as one yielding an obligation to compensate increases the number of defendants who actually receive a benefit (although these are still unidentifiable) and indirectly discharge this obligation through the passing on of the costs by the treating physician to his patients. Secondly, a similar expansion of the number of beneficiaries who actually benefitted occurs if one accepts that all patients who would have been injured over time under the old practice received the benefit in the first category (rather than merely the first alternative victim). Finally, even if only one alternative victim owes the obligation, imposing the obligation on

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60 *A Porat*, Offsetting Risks (2007) 106 Michigan Law Review (Mich L Rev) 243.

61 Critics include *J Coleman*, Mistakes, Misunderstandings, and Misalignments (2012) 121 Yale Law Journal Online 541; *B Shmueli*, Offsetting Risks in Tort Law: Theoretical and Practical Difficulties (2009) 37 Florida State University Law Review (Fla St U L Rev) 137. However, Porat's thesis raises several objections which are irrelevant in our context, such as offsetting benefits to third parties from the defendant's obligation to compensate the claimant.

the treating physician is an acceptable second best solution given the inability to identify the true defendant and the fact that imposing liability on the treating physician serves as an imperfect loss-spreading mechanism under which the unidentifiable beneficiary is forced to discharge his obligation, by having the costs of liability passed on to him (and to other potential beneficiaries) by the treating physician. The suggested solution could therefore be defended as an obligation to make restitution by the unidentifiable alternative victim coupled with a compulsory liability insurance scheme of potential alternative victims.

Some might nevertheless still oppose that the very fact that so many individuals benefit from the knowledge produced by the claimant's injury, that these individuals are unidentifiable, and that some benefits are collective in nature (such as the advancement of scientific knowledge) and go beyond the sum of prevented injuries to unidentifiable victims, all which lead to the conclusion that the correct analogy is with public, rather than private, necessity. While this might be true, it merely goes to strengthen the fairness (and loss-spreading) case for imposing liability on the state rather than the treating physician. Comparatively speaking, the prospect of shoehorning Ravid's case within the doctrine of public necessity changes from one jurisdiction to the next. In England, the *Saltpetre Case*[62] and *Burmah Oil Co (Burmah Trading) Ltd v Lord Advocate*[63] may support such an approach but several problems are identifiable. First, the cases established liability to compensate for property destroyed or reduced in value for purposes of the defence of the realm. It is open for debate whether they reflect the broader rationale of compensation for unjust sacrifice when the private loss is inseparably linked with the public benefit. Strictly speaking, the improvement of public health is not the defence of the realm. Secondly, the result in *Burmah* was altered by the introduction of the War Damage Act 1965 giving rise to the question of whether the broader principle, if established by these cases, survived the Act the scope of which is limited to destruction of property by lawful acts by the Sovereign during (or in anticipation of) war. Lastly, unlike private necessity, all public necessity cases – including the constitutional protection of taking property for public purposes[64] – are based on the classic tort paradigm of the defendant causing harm to the claimant's property for the defendant's purpose. There is the question of whether the principle could extend to the restitution paradigm, of which Ravid's case is an example, in which the defendant is passive and received a benefit by the claimant who had acted inadvertently. Thus, while this author has no objection to finding the state liable based on an expanded public necessity doctrine, it is not clear that authority supports such a result.

By comparison, in France, prior to the 2002 *loi Kouchner* reform, unplanned harm from a new medical technique was compensable without fault as part of the category of equality

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62 (1606) 12 Coke's King's Bench Reports (Rep) 12, 13.

63 [1965] AC 75. For discussion of public necessity in US jurisdictions see *D Dobbs*, The Law of Torts (2000) 252–256.

64 In the Council of Europe provided by The First Protocol to the European Convention on Human Rights (ECHR) and in the United States by the Fifth Amendment.

before public burdens as a form of quasi appropriation in which one person suffers for the benefit of the community.[65]

In Germany, the doctrine of *Aufopferung* (sacrifice) – the rough equivalent of public necessity – renders compensation conditional on the victim bearing a *special* sacrifice (that is, beyond that suffered by other persons) resulting from a compulsory state measure and serving the interests of society. Accordingly, a syphilis patient who became paraplegic as a side effect of a treatment she was under an obligation to undergo received compensation,[66] and the doctrine was applied to cases of injuries from vaccination, injury from fellow prisoners or mentally ill inmates and injury to a bystander from police operations.[67]

The German case presents interesting similarities, but also important differences from, Ravid's case. Both cases involved an injury from treatment (although the injury in the syphilis case, while rare, was foreseeable) and in both cases the treatment or its result were beneficial to the public at large. But the differences should not be overlooked. First, the German case involved a compulsory treatment, and in this sense, as explained above in discussing the English authorities, better fits the quasi-expropriation paradigm than Ravid's case in which Ravid voluntarily sought treatment. Secondly, the purpose of the compulsory treatment in the German case was to advance public health whereas no such motive existed in the treatment of Ravid. This too suggests that the public necessity paradigm is less fitting to Ravid's case. On the other hand, and this is a third difference, the obligation to undergo treatment in the German case responds to the risk posed by carriers of contagious diseases on others; the treatment could arguably be perceived as a justified reasonable 'self-defence' measure, and accordingly, no compensation should follow to the injured patient. No such risk was posed by Ravid who should therefore be compensated according to the ethics of unjust sacrifice and fairness. In this sense, Ravid's case presents a stronger case for compensation (as an instance of either private or public necessity) than the German case.

More generally, analytically, private necessity (including *negotiorum gestio*), rather than public necessity, seems the more fitting analogy to Ravid's case. Private necessity paradigmatically includes an intention to manage the affairs of others, which is absent in Ravid's case.[68] Public necessity paradigmatically also includes, in addition to an intention to further the interests of the public, active conduct by the state which expropriates the claimant's interest for the public interest. In this sense, public necessity fits a strict liability tort paradigm (defendant harms claimant) while private necessity, a restitution-based strict

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[65] See, prior to the 2002 reform, Cour administrative d'appel (CAA) Lyon, 21 December 1990, *Gomez* Actualité Juridique: Droit Administratif (AJDA) 1991, 167, extended in Conseil d'État, Section du contentieux (CE Sect) 3 November 1997, *Hopital Joseph-Imbert d'Arles*, AJDA 1997, 1016; *Bell/Boyron/Whittaker* (fn 35) 195. See also Conseil d'État, Assemblée plénière (CE Ass) 9 April 1993, *Bianchi*, AJDA 1993, 344. For evaluation of the reform, which conditions liability on fault and which 'made a move away from strict liability principles…developed by the French…courts…from the 1990s onwards' see *S Taylor*, Providing Redress for Medical Accidents in France: Conflicting Aims, Effective Solutions? (2011) 2 Journal of European Tort Law (JETL) 57.

[66] BGH, 26 September 1957, BGHZ 25, 238.

[67] *W van Gerven/J Lever/P Larouche*, Cases, Materials and Text on National, Supranational and International Tort Law, Ius Commune Casebooks for the Common Law of Europe (2000) 377/10.

[68] However, as explained above, the success of the intervention substitutes this intention.

liability paradigm (claimant-did-something-beneficial-to-defendant-so-should-be-reimbursed).

The question, however, is not primarily conceptual but, rather, policy- (or justice-) driven: who should compensate the patient – the treating physician or the public? The choice between public or private necessity has to be made based on the answer to the following two questions. The first question is how diffused the benefits from the new knowledge are. For those, like this author, who are of the view that the main benefit is private – in that several future victims are spared the injury (and several others are spared of injury without compensation) – private necessity is the better analogy.[69] The second question, then, is who the better proxy is for the obligation on the part of any of the alternative victims to compensate Ravid for her loss – the physician or the state? The answer might depend on the relevant priority one gives to loss spreading and fairness as criteria for distribution. Loss spreading seems to favour the state but, given the above-mentioned feature of medical liability insurance in private health care systems (absence of history-based premiums) and the existence of public health care systems, the difference is not so marked. Fairness – demanding that those who benefit from an activity would bear its costs – might arguably dictate imposing a duty on the physician for the reason that the benefit from the new knowledge is primarily shared by those undergoing the same procedure from which the claimant was injured. Imposing liability on the treating physician is a good proxy for people receiving similar treatment – the group of beneficiaries comprises all patients of all physicians who are pooled in the same liability insurance (or, in public funded health systems, all patients covered by the relevant scheme).[70] As explained above, state liability would impose the burden on all tax payers, some of whom might not be potential beneficiaries of the relevant treatment. So the choice between liability on the part of the physician or the state should depend on whether the under-inclusiveness of the former is less or more extensive than the over-inclusiveness of the latter.

The article makes two claims. First, that there is a restitutionary non-fault and fairness-based claim to compensate patients injured from unforeseeable risks that advanced medical knowledge. The second claim is that the appropriate analogy is that of private necessity and, accordingly, that the treating physician rather than the state should compensate the victim. The more crucial point, in this author's opinion, is the first, for as long as the patient is compensated, no injustice is done if the state (based on public necessity), rather than the treating physician (based on private necessity), compensates her.[71]

IV Comparison to other strict liability theories and policy analysis

[69] Those who emphasise the more abstract benefit of advancing knowledge might classify the situation as one of public necessity. In this author's view, the distinction between public and private interests (which is crucial in the context of constitutional and human rights law) is contested since many public interests are in fact primarily an aggregation of individual interests. This said some public interests (eg prohibition of spying) are more genuinely public so it is harder to reduce them to the aggregation of private interests.

[70] For the five NHSLA schemes, three of which clinical, see <http://www.nhsla.com/Claims/Pages/Handling.aspx>.

[71] See also fn 35 above.

A Fairness

The discussion above suggests that the application of a necessity theory to the context of injuries from unforeseeable risks might be best understood as a manifestation of a fairness theory, a theory that is mainly explored in the work of Gregory Keating.[72] The idea of fairness is that all those benefitting from a given activity should bear its costs. According to such an understanding all potential patients who were likely to be treated with NAS benefit from the new knowledge which shifts practice away from the use of NAS. While all potential patients share the benefit, the cost of producing this beneficial knowledge is borne by the first patient alone. Given that the costs could be shared it is unfair to concentrate them on the unlucky few who happen to suffer unavoidable harms inflicted by treatments that turn out to be flawed and which benefit patients and the medical community.[73] The unfairness could be alleviated by holding the treating physician liable and passing this cost on to the potential beneficiaries.

The advantage of framing the issue as one of fairness, rather than of reimbursement of the costs of rescue, is that the fairness framework wholly embraces as uncontroversial the idea that risks and expected benefits should be pooled together rather than focusing on the actual costs and benefits as the necessity doctrine does.[74] The collective dimension of our problem – that the benefits accrue to plural (if unidentified) members of the public at large – is what makes the situation ripe for enterprise liability: the benefits accrue to the other participants in the enterprise and it is only fair that those other participants take the bitter with the sweet and bear the cost of repairing the harm that is the price of their benefit. Moreover, the risk here is a characteristic risk of the enterprise of medicine. Some patients will be harmed in ways that could not have been avoided. Thus the risks involved are 'unforeseeable' at the act level (no individual doctor can foresee the harm that he or she inflicts in these cases) but not at the institution or enterprise level – it is a well-known feature of the enterprise that there will be such harms. These harms are a regular part of the system, incorporated into its learning mechanisms. Because the risk is an enterprise risk, moreover, it is a strong candidate for enterprise responsibility.[75]

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[72] Eg *G Keating*, Distributive and Corrective Justice in the Tort Law of Accidents (2000) 74 Southern California Law Review (S Cal L Rev) 193; and *idem*, The Idea of Fairness in the Law of Enterprise Liability (1997) 95 Mich L Rev 1266. For the connection between necessity in torts and fairness see *Keating* (2005) Issues in Legal Scholarship art 6.

[73] The retrospective aspect of unfairness with respect to the distribution of the loss is important. Prospectively, the injured patient is unlucky but is not treated unfairly since the distribution of the risk is random and since, ex ante, the treatment is beneficial. It is the refusal to distribute the costs of the injury to those who benefit from it, under circumstances in which such distribution is possible, which is unfair.

[74] This statement needs clarification. With the exception of maritime salvage, the intervention does not need to be successful. But, in necessitous intervention cases, the defendant is exposed to *concrete* and imminent risk that would injure his body or damage his property. This is different from the benefit involved in reducing a *statistical* risk of being injured. The latter benefit is the one triggering the fairness framework.

[75] In the context of a globalised scientific community, the knowledge from Ravid's injury will prevent injuries in other jurisdictions. In an ideal world it might be fairer to spread the costs of the injury amongst the health care enterprise globally. But, given the fact that this is impossible the least that can be done is to spread these costs amongst the national enterprise.

On one understanding, the restitutionary explanation collapses into a fairness theory. If this is the case, the significance of the analysis suggested in this article is that it enables courts to ground the desired solution, which is based on notions of fairness, in an extended doctrine of necessity or an analogy thereto. Given the inability of personal injury judge-made law to establish strict liability in appropriate cases, the route for recovery constructed here is hopefully significant. At a more theoretical level, the interchangeable nature of the necessity doctrine with its restitutionary[76] and fairness rationale is instructive. For one thing, it might suggest that we need to explore and theorise further the relationship between actual and expected losses and benefits as ground for creating obligations. It might suggest, for example, that innovative arguments such as Porat's, which are seemingly unconvincing, may be worthy of further reflection.[77] We might also need to explore further the relationship between losses and benefits (whether actual or expected) as a ground for liability in either torts or restitution and further rework the dividing line and overlap between these two branches of the law of obligations.

On another understanding, endorsed here, the restitutionary theory cannot be collapsed to a fairness rationale and provides a stronger justification for a remedy. Think of the justification for strict liability in situations involving foreseeable risks. Suppose that a certain medicine, which reduces the risk of suffering a cardiac arrest by half, has a side effect of causing a stroke in 1 in a million patients. Speaking figuratively, the injury to the one patient who suffers the stroke is necessary in order to produce the benefit of reducing the risk of cardiac arrest to all patients; and indeed, a fairness theory seems to support awarding compensation to the unlucky patient stricken with the stroke. But it is easy to see the difference between this scenario and Ravid's example. In the medicine example, the same benefit of reducing the risk of cardiac arrest would have been produced even if the claimant had not suffered the stroke. By contrast, the only way for the group of potential patients to reduce the risk of being injured from the use of NAS is to have Ravid injured. Ravid is the involuntary Guinea pig, or scape goat – choose your preferred metaphor – needed in order to generate this benefit for all members of the group. One way to look at it would be to say that the injury to Ravid is necessary in a way that the injury to the patient stricken with a stroke is not. Another way would be to note that all patients taking the medicine are aware of the risk of injury in a way that Ravid is not. While this awareness does not eliminate the justificatory power of a fairness-based rationale for compensation, the lack of reciprocity in terms of awareness of the risk seems to strengthen Ravid's case for recovery. Lastly, the injury to Ravid does advance the state of the art and this creates some reward-based justification which is absent in the medicine example.

One might wonder whether it is accurate to assume that Ravid's injury is necessary to bring about the shared benefit since it might have been possible to discover the risks by other means (eg animal experiments or more cautious experiments with humans). There are two

[76] Or non-tort based (although not restitutionary either) rationale, according to *Birks* (fn 22).

[77] That said, this author does not commit himself to agreeing with *Porat*'s argument (2007) 106 Mich L Rev 243, which still seems to be problematic. However, this requires further analysis.

responses to this objection. First, questioning whether the injury is necessary in order to improve the state of medical art in fact undermines the assumption that the risk is unforeseeable; and it is injuries from unforeseeable risks which present the hardest case to justify liability towards the patient based on the argument that, in such cases, the loss should be left where it fell. Had the injury been capable of being prevented by alternative measures, the risk would have probably been foreseeable and the failure to prevent the injury would most likely have been negligent (on the part of either the NAS producer or the dentist) so Ravid would be compensated. The idea behind unjust sacrifice, or more broadly, fairness, justifies compensation in the harder case of truly unforseeable risks in which the injury to the patient is necessary to bring about the benefit to (potential) alternative victims.

But it seems (and this is the second response) that based on notions of causation, the case for sharing the costs of producing the useful information does not require that the claimant's injury would be the only (or even the cheapest) way to produce that information. Even if it is true that the valuable information could have been produced by other means, it was not. The one who produced the valuable information is the claimant, and the notion of unjust sacrifice demands that she be compensated. This is undoubtedly true, if the cost of compensating the claimant is the cheapest way to achieve this information – and this is likely to be the case given the nature of the risk as unforeseeable. Moreover, it seems to be true, at least as a prescription, even if the alternative mechanism of finding the useful information is cheaper. In that case, alternative victims, *alongside the claimant*, might have a ground to complain that the injury was not prevented more cheaply, but fairness still demands that all potential victims would share the costs actually incurred by the claimant to reduce the collective risk, since the injury benefited all but its costs were borne only by the claimant.

B Ex post negligence

The last point takes us nicely to a third theory of strict liability, that of ex-post negligence. According to such an approach, elucidated by Guido Calabresi and Alvin Klevorick and having had some support in several US product liability jurisdictions, strict liability could be imposed for behaviour which, due to knowledge existing at the time of litigation, would have been deemed as negligent had the relevant information been available to the defendant at the time he acted.[78] Liability is strict since the unforeseeability of the injury at the time the defendant acted renders the behaviour to be non-negligent. By imposing liability, however, for what is deemed undesirable at the time of evaluation based on future knowledge, the test both limits liability more than other strict liability rules and conducts a risk-utility analysis similar to the one conducted in negligence cases.[79]

The rule defended in this article is clearly either a manifestation, or a sub-set, of an ex-post negligence rule since the only reason the use of NAS at the relevant time was not negligent is

[78] *G Calabresi/AK Klevorick*, Four Tests for Liability in Torts (1985) 14 Journal of Legal Studies (JLS) 585; *Beshada v Johns-Manville Prods Corp*, 447 Atlantic Reporter, Second Series (A.2d) 539 (New Jersey, 1982).

[79] The author side-steps here the discussion of the extent to which post-Bolitho determinations of medical negligence in England are indeed based on risk utility calculus. See *R Mulheron*, Trumping Bolam: A Critical Legal Analysis of Bolitho's 'Gloss' (2010) 69 Cambridge Law Journal (Camb LJ) 609.

that Ravid's injury was unforeseeable. Had this risk been foreseeable at the time of treatment, the practice would have been classified as negligent without hesitation. On one account, there is a complete overlap between the restitutionary theory defended here and an ex post rule; accordingly, the analogy to necessitous interventions offered in this article provides both a doctrinal anchor to impose strict liability and a normative justification for doing so. In the absence of fault, and given that strict liability is generally unfavourable in both case law and tort law literature as the general regime for personal injury, it is unclear why an ex-post negligence test is normatively attractive.[80] This article provides such justification in the notion of unfair sacrifice and the conferral of benefits in a rescuing scenario.

On another account, an ex-post negligence rule could lead to extensive liability which is not necessarily desirable as a matter of policy. The fear is paramount mainly in the context of design defect in product liability where a long latency period before the injury manifests itself might expose producers and their insurers to crushing liability. This led to the general rejection of the ex post negligence rule by recognising a state of the art defence to product liability claims, at times legislated.[81] But even if convincing in the context of products liability – a point on which the author is agnostic – the typical claim in the medical context, as our case study reveals, is quite different: It involves only one patient and one injury after which the practice is changed and thus crushing liability is unlikely.[82]

Theoretically, this difference might be reflected in a more limited justificatory power of a restitutionary theory compared to an ex post negligence rule. In cases of long latency periods with many potential victims it might take only one confirmed case, in which the unforeseeable risk has materialised, to redirect the state of the art forward. This suggests that only the victim whose injury led to the change of practice can claim compensation for her injury. Note that it might be that the injury of several victims (and not only one) brought about this change and, in this case, all these victims seem to have a valid claim for compensation of their injuries. Entitlement for compensation under the theory defended here should be determined by causal link between the injury and the advancement of the state of the art. If the realisation that the practice should be changed was also based on injuries sustained by past patients they should be compensated since their injury is part of the necessary costs to bring about the shared benefit. Note, also, that the victim or victims who contributed to advancing the state of the art are not necessarily those who were treated or injured first but, rather, those whose injuries led to a conclusion (possibly through litigation)

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[80] Traditionally, the answer has to do with giving producers a better incentive to continue investing in research and development even after the product has entered the market but, it is disputed whether overall such a rule is efficient. See *Calabresi/Klevorick* (1985) 14 JLS 585.

[81] See eg Indiana Code § 33-1-1.5-4(b)(4) (1988); Restatement (Third) of Torts: Products Liability § 2 cmt d (1998).

[82] An element of the suggested cause of action is the success of the 'intervention' and, thus, the claimant would need to show that the injury led to a change of practice. As Ravid's case demonstrates the change of practice would usually occur quite soon after the injury. But, even if this were not the case, no special and unique policy concerns arise as the result of the passage of time between the injury and the change of practice upon which the claim matures. After all, under the tort of negligence the claim matures upon injury which, in rare cases, might occur many years after the breach of duty. Nor does this cause of action create a disincentive to change the practice: following the injury there is a general change of practice and thus the treating physician is likely to expose himself to negligence-based liability were he not to change *his* practice.

that the practice should be changed. Whether the distinction between victims whose injuries are causative to the change of practice and therefore receive compensation and those who do not is desirable or just is another question. The relevant point is that if policy makers are fearful of too broad a liability under an ex post negligence rule, a restitutionary theory could be delineated in a narrow way limiting liability only to the patient whose injury changed the state of the art.

More broadly, a general shift to strict liability in the medical context is often resisted by reference to the costs of such a shift.[83] But one can oppose a general or broad no-fault scheme and still support strict liability with regards to patients injured from unforeseeable risks. The scope of such liability is limited, so the fairness and loss-spreading rationales supporting compensation are not offset by cost-management concerns.

C Efficiency

Three comments about the relationship between the argument made in this article and an efficiency analysis are in order. First, Bar-Gill and Porat seem to offer general efficiency-based support for strict liability when the benefit to the injurer in a harm-benefit interaction – interaction that produces harm to the victim and benefits to the injurer – exceeds the loss to the victim.[84] While it is less clear that strict liability is desirable when the benefit is borne by third parties, arguably, when the defendant can pass on the costs of liability to potential beneficiaries, the efficiency-based justification for strict liability holds. However, the efficiency case for strict liability in the case of patients seems weak since patients are unlikely to avoid seeking treatment even if strict liability for unforeseeable risks is denied. When the overall benefits from the interaction exceed its overall costs, such avoidance is socially undesirable. So, while the overall benefits from the knowledge produced from Ravid's injury are likely to exceed the injury to Ravid, denying Ravid compensation is not likely to cause patients to avoid seeking treatment and thus there is no efficiency justification for imposing strict liability in such a case. More broadly, all the benefits following the injury result from the production of knowledge as a by-product of the accident. Information is a public good and it has been suggested that the producers of public goods might, under certain conditions, have an efficiency-based claim for restitution of unsolicited benefits which would otherwise not have been produced.[85]

Second, from an efficiency perspective, adequate incentives should also be given to the physician, not only the patient. Given the fact that the physician also (inadvertently) produced positive externalities, efficiency considerations, which are defendant-focused, suggest that his liability should be reduced to set-off these benefits. Therefore, from an efficiency perspective (which is nevertheless problematic as it ignores corrective justice), the question should be: to whom it is more important to provide the right incentives – the physician or the patient? To

[83] Eg *Department of Health*, Making Amends (2003) 112 ('a comprehensive no-fault scheme was unaffordable for the NHS' according to the Chief Medical Officer).

[84] See fn 32.

[85] *A Porat*, Private Production of Public Goods: Liability for Unrequested Benefits (2009) 108 Mich L Rev 189.

avoid confusion, the justification endorsed in this article in relation to the strict liability rule has to do with fairness (broadly defined) and the notion of unjust sacrifice in the production of a benefit, not efficiency.

Third, when the risk to the patient is foreseeable but treatment, with the accompanying risk of injury, might advance knowledge and prevent injury to future patients, a possible defensible solution would be that the benefit to third parties should be taken into account for purposes of determining negligence so that the physician should not be found negligent. The physician should, however, be strictly liable to the patient based on the unjust sacrifice rationale, fairness and, in certain cases, incentivising (or rewarding) patients' participation in the production of public goods. Courts and self-regulators' rhetoric is inconsistent with such an approach in insisting that clinical decisions should be made based only on the patient's best interests.[86] However, a strict liability rule might be a desirable solution to the need to balance adequate protection to patients with adequate incentive to develop innovative treatments. A fuller analysis of this issue will have to await another day.

V Conclusion

The first patient injured from an unforeseeable risk which could easily have been avoided (had the risk been known) provides, albeit involuntary, a useful service to society by improving scientific knowledge and future care; part of this service is manifested in preventing injuries to other future and unidentifiable patients. This article argues that this situation is analogous to necessitous interventions and, thus, it is justified to compensate the unlucky patient. The fact that the service was not rendered with the intention of benefiting potential alternative victims is not a bar for recovery since the intervention was both successful, ex post, and cost-justified (and hence reasonable), ex ante. Crucially, an obligation to compensate the claimant conforms to the alternative victim's hypothetical wishes and preserves his autonomy, as it reflects incontrovertible benefit.

Since the alternative victim is unidentifiable, and since imposing on him alone the financial burden to compensate the victim for her personal injury might be oppressive, an acceptable (perhaps even ideal) solution would be to impose the obligation on the treating physician who can spread this cost – to varying extent depending on with the way in which the health system is funded – amongst potential victims who benefit from the advancement of medical knowledge, which is the necessary by-product of the claimant's injury. Alternatively, for those perceiving the benefit provided as mainly 'public' in nature, the desirable result could be achieved by finding the state liable based on public necessity.

This restitutionary rationale bears resemblance to two theories justifying strict liability (while being different from the third, efficiency rationale): fairness and ex-post negligence. At minimum, the analysis offered in this article enables one to ground strict liability, which is

[86] See eg *Walker-Smith v GMC* [2012] EWHC 503 (Admin); Medical Innovation Bill (2012) sec 2(5)(b).

justified by either of these rationales, in a doctrine leading to such a result. On closer analysis, however, the analogy to necessitous interventions provides justification which is both narrower and more convincing than the two competing justifications for compensating a victim injured from unforeseeable risks which advance medical knowledge. This suggests that from a policy perspective, and in a cost-conscious environment, a strict liability rule towards victims who, through their injury, involuntarily contributed to the development of safer practices is both defensible and affordable.

The argument made in this article might have broader implications. It might be that outside the medical context victims who are injured from unforeseeable risks with the result that scientific knowledge is advanced and future injuries are reduced are entitled to compensation from the non-negligent injurer or from the public purse. Whether relevant differences exist, including the possible need to give victims appropriate incentives (a point which is largely irrelevant in the medical context), would have to be examined on a case-by-case basis. While a detailed examination should be left to future inquiry, consider the applicability of the theory to the following three examples:

Treatment for a congenital handicap: The claimant is born with a severe handicap, unknown so far. The treatment of this illness fails but subsequent advances in scientific knowledge have the result that the treatment in future cases is successful. This example falls squarely within the theory advocated in this article: the benefit of successful treatment of future patients is the result of the knowledge gained from the failure to successfully treat the claimant and should thus be shared by the group of beneficiaries – all future children born with such a condition – and could be socialised by imposing liability on the treating physician.

The mountain road accident: Driving on a mountain road the claimant is severely hurt by a falling rock. Arising from this accident there is a realisation that the mountain is crumbling – an otherwise unforeseeable occurrence; accordingly, the authorities close the road. Does the claimant have a claim against all those who would have used the road in future who have now been saved from potential future harm because of the claimant's accident? Here the question is whether it is correct to assume that, over time, more than one injury would have occurred had the road not been closed. Unlike Ravid's example, we might doubt whether the closing of the road can be regarded as a lasting change of practice which advances the state of the art and, over time, reduces the number of casualties arising from the crumbling of the mountain. If, however, the conclusion is that the claimant's accident prevented future injuries due, for example, to subsequent improvements in road safety, the implementation of anti-crumbling measures or increasing the distance of the road from the mountain – this example is similarly indistinguishable from that of Ravid's. The claimant should be compensated and the costs could be socialised by imposing liability on the public body responsible for

maintaining the road's safety, road users, through liability on the residual insurers' pool,[87] or the state.

Unpatentable idea: The claimant, due to her extensive and costly research, develops an idea which is helpful to thousands of people. Can the claimant claim for compensation of her expenses (although her idea is not patentable)? The answer is 'no', in order not to undermine the specific patents (and, more broadly, the intellectual property) regime which is designed to maintain balance between the competing interests of protecting a robust public domain and rewarding (or incentivising) innovation. If the current protection granted inventors by patent law is inadequate (in fact, the opposite might be true), this should be rectified by increasing the scope of protection afforded by its rules. This example is different from Ravid's case given that the research activity involves risks and benefits which are *voluntarily* taken on by the claimant and because the claimant pursues research *for her own benefit*. As seen above, in Ravid's case, the injury itself, rather than the activity (receiving treatment), benefitted the third parties.[88] In the current example, the activity itself (conducting research) incidentally benefits others but the potential benefits from the activity to the claimant herself justify a denial of an obligation on the beneficiaries to reimburse the claimant for her costs. Finally, the interest in avoiding losses ought to be, and does,[89] afforded more weight than the interest in retaining a gain. Ravid's interest in being compensated for her injury is stronger than the researcher's interest in being reimbursed her costs, which are less likely to be perceived as a loss, and in any event, are not personal injury loss.

[87] Such liability is mandated by art 10 of the Directive 2009/103/EC of the European Parliament and of the Council of 16 September 2009 relating to insurance against civil liability in respect of the use of motor vehicles, and the enforcement of the obligation to insure against such liability, Official Journal (OJ) L 263, 7.10.2009, 11–31 (codified version).

[88] See fn 32, 42 and accompanying text.

[89] See *D Kahneman/A Tversky*, Prospect Theory*:* An Analysis of Decision under Risk (1979) 47 Econometrica 263.