AGGREGATION AND RISK

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This is a very long paper. Sorry! If you understandably need to save time, you can skip sections 4 and 5.

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I. Introduction

Deontological ethical theory and unqualified absolutism were once near synonyms. Few deontologists today are so hard-line. But many still believe that some trade-offs that would yield unambiguously better outcomes are nonetheless wrong; sometimes we ought not promote the good. Here is one plausible scenario: we must choose either to avert a minor, temporary headache for each member of a multitude, or to save one person’s life. No matter how numerous the multitude, we ought always to save the one. Call this case *Life for Headaches*.

'Moderate absolutism' accords with common sense for decision-making with perfect

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1 I presented versions of this paper at the Hebrew University of Jerusalem, Universitat Pompeu-Fabra in Barcelona, the University of Stockholm, the ANU and the University of Melbourne. My thanks to the organisers of those events, and the attendees, for inviting me, and for their many helpful comments. Particular thanks for commenting on written drafts to: Mark Budolfson, Dale Dorsey, Tom Dougherty, Alan Hájek, John Halstead, Toby Handfield, Aaron James, Robyn Kath, Chad Lee-Stronach, Kirsten Mann, Jeremy Strasser, Brian Talbot, John Thrasher, Alex Voorhoeve, and Andrew Williams.

2 N.b. I finished working on this paper just before Joe Horton’s excellent paper on the topic came out in P&PA, which was also just before the birth of my second child. As a result, I haven’t yet had a chance to take his work into account.


4 A theory is absolutist if it says that there are some considerations that cannot be outweighed by any amount of good. Moderate absolutism says that there is a consideration C and a good G such that no amount of G can outweigh any amount of C. This relation is sometimes called lexical priority, and sometimes strong superiority. Thanks to Al Hájek for help here.
But in the real world, our information is never perfect. We must therefore extend moderate absolutism to decision-making under doubt. And here things get tricky. Probabilities are the great leveller. The force of our reasons, when acting under risk or uncertainty, must be discounted by their probability of being actual. It would be absurd to treat a very low probability that an innocent person will die if I φ as no less forceful a reason than if their death were certain.

How, then, should we proceed if we can save either one person from a 0.5 probability of death or a multitude from a certain headache? What if the probability of death is only 0.01? At some point we clearly must avert the headaches. But if we think that, then are we really absolutists anymore?

This paper explores principles that can preserve common sense in Life for Headaches, while addressing risky cases in an intuitively attractive way. It shows that deontologists attracted to moderate absolutism can extend their views to decision-making under risk in one of three promising ways. It is part of a broader project to show how deontologists can develop a compelling account of decision-making with imperfect information. In a slogan, it is a crucial step in developing a deontological decision theory.

Here is what I will do. First, I will introduce a moderate absolutist principle, which does not take risk into account. This provides a working model, which I can then extend to

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6 In this essay, I discuss only decision-making under risk, when probabilities are defined, rather than under uncertainty, when they are not.

decision-making under risk. I try to remain as ecumenical as I can. I favour 'anti-aggregationism', and present a principle based on work by Alex Voorhoeve.\(^8\) I call my principle 'Maximise Satisfaction of Claims', (MSC).

Next: I extract some Desiderata that any successful risky extension of MSC must meet. Here I draw on the work of many critics of anti-aggregationism, who have argued that it cannot adequately accommodate risk. I set a high bar.\(^9\)

The rest of the paper offers five different extensions of MSC. First, I ask whether we can represent its objective verdicts with a value function, which we then input in to orthodox decision theory. I then think through four ways to build risk directly into the principle: \textit{ex ante} MSC, \textit{ex post} MSC, Hybrid MSC I, and Hybrid MSC II.\(^{10}\) The last three are genuine contenders, though I favour Hybrid MSC II.

Unfortunately, while I hope my principles are elegant, they are not simple. And yet if the moral content is complex, then the moral theory should be complex also. And this is a complex topic: anti-aggregationism is tricky enough without thinking about risk; adding in probabilities makes things harder still.


\(^9\) For example Reibetanz, 'Contractualism'; Ashford, 'Demandingness'; Fried, 'Can Contractualism'; Norcross, 'Comparing Harms'; Dougherty, 'Aggregation'.

Nonetheless, my principles are complex enough that they clearly cannot provide people with a *decision procedure* for dealing with realistic cases. They offer, instead, a criterion of *subjective permissibility*. But why should we need one of these? Couldn't we make do with a criterion of *objective* permissibility on the one hand, and practical decision procedures on the other?

The question is fair. Discussions of decision-making under risk are often motivated by assertions that moral theory should be action-guiding. But that is not my motivation. Developing a deontological decision theory can help us in three other ways.

First (most boldly), we make judgements about right and wrong action in light of risk that are irreducible to judgements about objective permissibility. A moral theory without a criterion of subjective permissibility is incomplete.

Second, we want procedures that enable us to choose the right action in risky choices. But for decision-making under risk and uncertainty, this cannot mean 'objectively right'. When we're acting with imperfect information, whether we consistently act objectively permissibly is ultimately a matter of luck. The right action to choose under risk just is the one picked out by a criterion of subjective permissibility. Without such a criterion, we can neither calibrate our decision procedures, nor successfully choose between them.

Third, deontological decision theory can generate profound insights into the nature of right and wrong, including into our objective moral theories. The fact that I offer five different principles in this paper, each of which agrees with MSC for decision-making under certainty, suggests that thinking about risky cases allows us to delve deeper into the structure of moral reasons. Risky cases give us an extra lever in the pursuit of reflective equilibrium. They are, as Jeffrey put it, the anvil on which we hammer out our values.\footnote{Thanks to John Broome for this quotation.}
2. Why Not Aggregate?

Some argue that, in *Life for Headaches*, it is better to save the one, no matter how many headaches we fail to prevent, because the disvalue of headaches is bounded below that of letting one person die.\(^{12}\) This approach uses a theory of value to vindicate moderate absolutism. Call this *axiological absolutism*. The alternative is to argue that, if the headache-sufferers are numerous enough, then saving the many would genuinely be better—it would realise more value—but it is nonetheless wrong. Call this approach *deontic absolutism*. There are many varieties of deontic absolutism. I focus on one, which claims that it would be wrong to allow the aggregate of the trivial costs to the headache-sufferers to outweigh the much more severe cost to the one.

I will call this view anti-aggregationism.\(^{13}\) Though some anti-aggregationists are truly opposed to all kinds of aggregation, the more sensible ones recognise that it is sometimes permissible to add up costs to many so that they can outweigh individually greater costs to one.

In this section I introduce and motivate an objectivist anti-aggregationist principle. This paper, however, is about risk, so I will not try to definitively defend this principle, only to make it clear and appealing enough to start the rest of the discussion.

Clearly aggregation is sometimes permitted. For example, consider *Life for Lives*, in which you can either save \(X_1\)'s life, or save the lives of a hundred people, call them \(Y_{1...100}\).\(^{14}\) Surely

\(^{12}\) See e.g. Dorsey, 'Headaches, Lives and Value'; John Broome, 'No Argument against the Continuity of Value: Reply to Dorsey', *Utilitas* 22/04 (2010), 494-496; James Griffin, *Well-Being: Its Meaning, Measurement and Moral Importance* (Oxford: Clarendon Press, 1986). For an overview, see Seth Lazar and Chad Lee-Stronach, 'Axiological Absolutism and Risk', *Unpublished MS.* (2016). To say that the value of A is bounded below the value of B leaves open the precise character of the relation between them. Perhaps A has diminishing marginal value, or perhaps B has infinite value and A has merely finite value, or perhaps B is lexically prior to A in a way that cannot be represented using infinite sums. None of these differences matter here.

\(^{13}\) For an overview of approaches to moral aggregation, as well as distinctive positive view, see I Hirose, *Moral Aggregation*, 2014.

\(^{14}\) In all of my cases throughout this paper, everyone is innocent, each starts out at the same level of well-being, each has as much to live for as the rest, and besides what I specify all else is equal.
aggregation is allowed: you should save $Y_{1...100}$. And numbers are more than tie-breakers.\footnote{15} Consider *Life for Legs*, in which you can save $X_i$'s life, or save the legs of $Y_{1...n}$. For some value of $n$, you should save the legs of the $Y$s. An anti-aggregationist theory must explain when aggregation is prohibited, when it is allowed, and what makes the difference between these cases.

Several philosophers have sought to do this by understanding these cases as involving competing claims, some of which are 'relevant', others 'irrelevant'.\footnote{17} When a set of claims are relevant to a competing claim, they may be aggregated, so that if the number is great enough, the individually stronger claim can be outweighed; when they are irrelevant, they may not. The headache-sufferers' claims are irrelevant to the one's claim to keep his life, so may not be aggregated. But the claims of those who will die or lose their legs if you don't help them are relevant to the one's claim to survival, so they can be aggregated. This is an appealing idea, but obviously raises the questions: what are claims, and what explains and grounds relevance?

Alex Voorhoeve has an attractive answer to the second question, of which I want to focus on one element.\footnote{18} Voorhoeve argues that $Y_i$'s claim is irrelevant to the competing claim of $X_i$ when $Y_i$ has so little at stake relative to $X_i$ that, faced with the choice of whether to serve $X_i$'s claim or bear that much cost, $Y_i$ would be morally required to bear that cost.\footnote{19} For example, $Y_i$ would have a duty to bear a headache to ensure $X_i$'s life is saved, so $Y_i$'s claim not to suffer a headache is irrelevant to $X_i$'s claim to survival. The same is true for $Y_{2...n}$, so their claims may not be aggregated to outweigh $X_i$'s claim.

\footnote{15} Obviously some philosophers deny that we may ever aggregate in this way. They might argue, for example, that we decide whom to save on the basis of coin toss, or a weighted lottery. Extending that approach to decision-making under risk raises its own interesting problems; I will not consider it further here. Thanks to Christian Barry for raising this point. See Katharina Rasmussen, 'Should the Probabilities Count?', *Philosophical Studies* 159/2 (2012), 205-218; John M. Taurek, 'Should the Numbers Count?', *Philosophy and Public Affairs* 6/4 (1977), 293-316.

\footnote{16} Contra Scanlon, *What We Owe*.


\footnote{18} Voorhoeve, 'How Should We Aggregate' (which explicitly focuses on objective permissibility).

\footnote{19} Voorhoeve attributes this basic idea to Kamm, *Intricate Ethics*. 
Conversely, one would not be required to sacrifice one's legs just in case doing so would save a stranger's life. So in *Life for Legs*, $Y_i$'s claim is relevant to $X_j$'s claim. This is true also for $Y_{2\ldots n}$, so their claims may be aggregated, and for some value of $n$ will outweigh $X_j$'s claim. The same is also true, *a fortiori*, in *Life for Lives*.

This is, I think, Voorhoeve's most important insight. There is a deep connection between relevance and our duties of rescue. Emphasising this connection, however, reveals a tension in Voorhoeve's account: he assumes that to determine which claims count as relevant we must make only one-to-one comparisons between individuals' claims. But duties of rescue work differently from this. I might have a duty to bear a cost $K$ to spare a large enough number of others from each suffering a lesser cost $k$, because none of them would be required to bear $k$ to avert $K$ befalling me, so aggregation is allowed, and there are enough of them that $K$ is a reasonable cost for me to have to bear for their sake. For example, I might be required to sacrifice both of my legs to spare a large enough number of others from each losing a single leg. Their claims are relevant to mine, since one would not have to sacrifice a leg to ensure someone else keeps both of his. And if they are numerous enough, then the aggregate good of saving their legs can be great enough to oblige me to sacrifice my legs for their sake.

In such cases, a claim can be made irrelevant by a large enough number of individually weaker, but still relevant, competing claims. Interestingly, this departure from Voorhoeve's view makes no direct difference to what one objectively ought to do.\textsuperscript{20} If a stronger claim is outweighed by enough to be rendered irrelevant it is, *a fortiori*, outweighed, so would not be served anyway on Voorhoeve's account. As we will see, however, this amendment is crucially important for thinking about subjective permissibility.

With these ideas I can formulate an anti-aggregationist principle. When I introduce risk,
matters will become quite complicated. So to ease the process down the line, I need to start with somewhat different terminology from Voorhoeve and others. I also need to clarify some concepts: first, the difference between interests and claims.

Our topic is whom to help when people's interests compete. One's interests are the constituents of one's well-being: if one's interest is satisfied one's well-being is advanced; if one's interest is thwarted one's well-being is set back. I take no stand on which theory of well-being to adopt (though I do presuppose interpersonal comparability of well-being). Interests compete or (equivalently) conflict when they cannot be jointly satisfied.\footnote{I will not explore what 'cannot' means in this context.} In this paper I am concerned only with interpersonal conflicts, not intrapersonal ones.

I assume that in some situations, some interests can be the objects of a claim. When one's interest is the object of a claim, it enjoys a special kind of moral protection: to fail to advance that interest is to wrong the claim-bearer. The claim-bearer has a valid complaint against you for not advancing that interest. Sometimes overriding a claim is all things considered permissible, and yet it still involves pro tanto wrongdoing, which must be genuinely overridden by some weightier consideration. I will write that an interest is the object of a claim, and that it is protected by a claim, interchangeably.

Sometimes interests which one might think protected by a claim do not in fact enjoy that protection. In other words, what Voorhoeve calls an 'irrelevant claim', I will call an interest that is not the object of a claim. This both simplifies matters down the line, and makes more sense given how I understand claims. One surely does not wrong a person by not serving her irrelevant claim. But then I don't see the difference between something being an irrelevant claim, and simply being an interest that is at stake in a decision. So we can do without the concept of an irrelevant claim.

Interests are protected by claims only if they are not sufficiently outweighed by the
relevant competing interests of others. This is the first place in which my anti-aggregationist principle permits aggregation. I will annotate \( X_i \)'s interest \( S \) as \( S^X_1 \), \( Y_i \)'s interest as \( S^Y_1 \), and \( Y_{1...n} \)'s interests as \( S^Y_{1...n} \). Suppose \( S^X_1 \) competes with \( S^Y_{1...n} \). \( S^Y_1 \) is relevant to \( S^X_1 \) only if \( S^Y_1 \) is not sufficiently outweighed by \( S^X_1 \). Suppose that each of \( S^Y_{1...n} \) is relevant to \( S^X_1 \). Then \( S^X_1 \) is protected by a claim only if it is not sufficiently outweighed by the aggregate of \( S^Y_{1...n} \).

Think of Life for Legs: \( S^X_1 \) is \( X_i \)'s interest in survival. \( S^Y_{1...n} \) are the interests of \( Y_{1...n} \) in keeping their legs. Each of those interests is relevant to \( S^X_1 \). If \( n \) is high enough, then \( S^X_1 \) is sufficiently outweighed, and is not the object of a claim.

But what does it mean to say that one interest outweighs another? In the first instance, the moral weight of an interest is determined by its magnitude. But other factors also affect its importance, for example we might give more weight to the interests of the worst off, or less weight to the interests of those who are responsible for their own plight. I won't dwell on this point, but it is crucial throughout to remember that we can factor in many kinds of considerations by thinking carefully about the moral weight of each interest at stake.

How do we determine the size of an interest? Again for simplicity, I focus on cases in which you have two options, so the size of an individual's interest is the difference between how she fares given that you choose each option. This is indeed a serious simplifying assumption, but I think it is warranted. If we can't extend anti-aggregationism to decision-making under risk even with simplifying assumptions like these, then the project is hopeless. If we can, then that gives us good reason to expend the considerable intellectual

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22 I will offer only this necessary condition for an interest being an object of a claim. I will do the same for relevance. There may be other grounds for one's interest not being protected by a claim, or for it being irrelevant, such as one's blameworthy responsibility for this situation arising.

23 Daniel Ramöller, 'How We Shouldn't Aggregate Competing Claims, and Complaints', Unpublished MS. (2016), raises some ingenious objections to Voorhoeve's proposal by considering multi-outcome cases (drawing on Marc Fleurbaey, Bertil Tungodden, and Peter Vallentyne, 'On the Possibility of Nonaggregative Priority for the Worst Off', Social Philosophy and Policy 26/1 (2009), 258-285). My approach to such cases is to ask, for each individual \( X_i \) in an outcome \( O \), whether there is some alternative that is sufficiently better for others that any additional cost to \( X_i \) is one she is required to bear. If not, or if the alternative that is better for others is also better for \( X_i \), then \( X_i \) does not have a claim in \( O \).
effort required to understand more complicated cases.

$S^x_1$ cannot be the object of a claim if it is sufficiently outweighed by relevant competing interests $S^y_{1...n}$. $S^y_1$ is relevant to $S^x_1$ only if it is not sufficiently outweighed by $S^x_1$. What does it mean for an interest to be sufficiently outweighed? Here we can use Voorhoeve's duties of rescue test. $S^y_1$ is sufficiently outweighed by $S^x_1$ if one would be required to bear $S^y_1$ in order to ensure that $S^x_1$ is served. Assuming that all of $S^y_{1...n}$ are relevant to $S^x_1$, then $S^x_1$ is protected by a claim only if one would not be required to bear $S^x_1$ in order to spare $S^y_{1...n}$.

I think the duties of rescue test is more than just a heuristic device— I think it explains why one should not aggregate irrelevant interests. However, I cannot defend that view in this paper, while maintaining my focus on risk. So I will treat this as simply evidence that one set of interests sufficiently outweighs another.

Anyone who has an interest at stake, which is not sufficiently outweighed by the relevant competing interests of others, has a claim on your aid. What, then, should you do? When claims are at stake, only other claims can outweigh them. No matter how collectively weighty a sum of mere interests should be, if they are not the objects of claims then they cannot outweigh even a single claim. Claims, however, do aggregate: when you face competing claims, you should satisfy the stronger overall set. Hence the principle is called ‘Maximise Satisfaction of Claims’ (MSC).

So, we should serve claims first, and only if the options are on a par with respect to claims should we serve interests that are not protected by claims. I will say little about how to deal with the latter kind of interests. Even if nobody has claim to a particular outcome, further moral principles undoubtedly govern how well-being that is not protected by claims should be distributed—prioritarian and egalitarian principles being the obvious contenders. Accommodating them would add too much complexity, but remember that my approach does not rule out such additional principles. Nonetheless I will ignore them,
and assume that once claims have been optimally satisfied, one is permitted to maximise overall morally-weighted well-being. The key point is that we should first address claims, and only then apply our principles for maximising or distributing well-being.

We now have all the materials in place to state our principle, MSC, more concisely.

**Maximise Satisfaction of Claims (MSC)**

In a choice whether to φ or ψ, in which \(X_{1...n}\)'s interests compete with \(Y_{1...n}\)'s interests:

1. The moral weight of an individual's interest is determined by the difference between their well-being given that you φ and their well-being given that you ψ, subject to other weightings such as responsibility and priority.
2. \(X_i\)'s interest \(S_i^X\) is the object of a claim only if it is not sufficiently outweighed by the relevant competing interests of \(Y_{1...n}\).
3. \(Y_i\)'s interest \(S_i^Y\), which competes with \(S_i^X\), is relevant to \(S_i^X\) only if it is not sufficiently outweighed by \(S_i^X\).
4. The moral weight of a claim is determined by the weight of the interest that is its object.
5. Maximise satisfaction of morally-weighted claims.
6. If no claims are at stake, or they are tied, then you may maximise overall morally-weighted well-being.

MSC can deliver plausible verdicts in our test cases. In *Life for Headaches*, the interest of each of the headache-sufferers \((Y_{1...n})\) is sufficiently outweighed by the interest of \(X_n\), who

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24 Your options are tied with respect to claims if one cannot choose between them on grounds of claims alone. Ramöller (following Fleurbaey, Tungödden and Vallentyne) shows that focusing on claims in multi-option cases can generate prohibition dilemmas. In these cases, my principle will either require us to serve claims in the least worst way possible, or else, if we cannot differentiate between the options with respect to claims, it will apply the appropriate distributive principle for interests that are not protected by claims.
will die if you avert the headaches. So they are not relevant to X₁'s interest, and Xₙ has a claim on your aid. Since X₁'s interest is relevant to each Y's interest, and it sufficiently outweighs each Y's interest, each Y lacks a claim to aid. So the only claim in play is X₁'s, and you must help him, no matter how many headache-sufferers there are.

By contrast, in Life for Legs, X₁'s interest in survival competes with clearly relevant interests, since the interest in survival does not sufficiently outweigh the interest in retaining one's legs. Whether Xₙ has a claim depends on how many Ys there are. And it follows that the Ys also have claims to aid, because, though X₁'s interest is relevant to each Y's interest (weightier interests are necessarily relevant to less weighty interests), it is not weighty enough to sufficiently outweigh it.

We then have a number of possibilities, depending on how many Ys there are. If their number is below some (no doubt vague) threshold t, then there are claims on both sides, and we may aggregate the Ys' claims, but we maximise satisfaction of morally-weighted claims by saving X₁ (the Ys' claims together are not enough to outweigh X₁'s claim). If they number above t, but below a higher threshold t*, then there are claims on both sides, and the aggregate of the Ys' claims is great enough to outweigh X₁'s claim. We therefore maximise satisfaction of morally-weighted claims by saving the Ys. And if their number is greater than t*, then their relevant interests are together enough to sufficiently outweigh X₁'s interest, so only the Ys have a claim to aid, and, again, we must save the Ys (this is the category that Voorhoeve doesn't recognise).

There is much more to say in defence of MSC, which is an innovative principle in its own right. However, in this essay I focus on extending anti-aggregationism to decision-making under risk. MSC is, I think, a clear and plausible formalisation of a basic approach to anti-aggregationism shared by many deontological philosophers. That is enough to provide an adequate foundation for the remainder of this essay.
3. Desiderata for Anti-Aggregationism under Risk

Critics have long argued that anti-aggregationism has counterintuitive results when extended to risky cases. In formulating my response, I extract four intuitive Desiderata that any anti-aggregationist decision theory must satisfy.

1. When the risked harms are relevant to one another, lower individual risks of harm may be aggregated to outweigh higher individual risks of harm.

2. When the risked harms are not relevant to one another, and the probability of the greater harm is high enough, individual risks of lesser harms may not be aggregated to outweigh the risk of the greater harm.

3. When the risked harms are not relevant to one another, and the probability of the greater harm is low enough, individual risks of lesser harms may outweigh a small enough risk of the greater harm.

4. When facing a series of choices to spare people from a risk of a lesser harm, each of which imposes a very low risk of a greater harm, but where the series has a very high risk of the greater harm befalling someone, the individual risks of lesser harms may be aggregated to outweigh the cumulative risk of the greater harm.

Desideratum 1 enjoins that our principle not be too hysterical. If the harms at stake are relevant to one another, then we should allow aggregation regardless of any disparity between the levels of risk to which different people are subjected. This is especially clear when the harms are identical. Suppose you could choose between sparing $Y_{1,n}$ from a

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0.0000001 probability of death, or instead sparing \( X \) from a 0.5 probability of death. Intuitively, as long as \( n \) is above 5,000,000, you should save the \( Y \)'s, even though each individual faces a much lower risk than does \( X \). Suppose \( n \) is 10,000,000. If you save \( X \), then you avert 0.5 expected deaths. If you save \( Y_{1...n} \), you avert 1 expected death. Surely you should choose the latter course.\(^{26}\) Suppose, for example, that the risks to \( Y_{1...n} \) are correlated, such that we know for sure that one of them will die, we just don't know which one. Then it seems obvious that we should avert one certain death, rather than 0.5 expected deaths.

Desideratum 2 balances this anti-hysteria out, by insisting that anti-aggregationism should still be practically relevant. If it had effect only when our probabilities are either 1 or 0, or implausibly close to either extreme, then it would almost never come into play. In some realistic cases, the priority relation must kick in. If the harms are not relevant to one another, and the probability of the greater harm is high enough, but not yet 1, no amount of risks of the lesser harm should be enough to outweigh it—aggregation of those weaker interests should be barred.

Desideratum 3 ensures that one's anti-aggregationism is not paralysing in practice. We have to sometimes tolerate risks of more serious harms in order to avert lesser harms. Its apparent failure to do so is the most common criticism of all forms of moderate absolutism.

For example, many medicines can induce drowsiness. So there is some probability that by taking such medicines I will cause myself to lose focus while driving (for example), and accidentally kill an innocent person. However, the probability that I will do so is low enough that it is clearly permissible to take this tiny risk, even if the benefit to me is trivial. It is also permissible for a doctor to prescribe me such medicine, despite the risk. Cases like

\(^{26}\) Perhaps there are some grounds for preferring risks not to be concentrated. But surely not enough to justify failing to save an additional life. For extensive discussion, see Norman Daniels, 'Can There Be Moral Force to Favoring an Identified over a Statistical Life?', in I. Glenn Cohen, Norman Daniels, and Nir Eyal (eds.), *Identified Versus Statistical Lives: An Interdisciplinary Perspective* (Oxford: Oxford University Press, 2015), 110-123.
this are legion: ordinary modern life inescapably involves imposing small risks of serious harms on some, for the sake of relatively trivial benefits to oneself or to others.

However, as many philosophers have noticed, in a long-enough series of choices like that covered by Desideratum 3, we will eventually become very confident that someone will suffer the risked harm.\textsuperscript{27} Although each individual action imposes only a small risk, for the sake of a small benefit, a longer series of such actions imposes a greater net risk; indeed, if the series is long enough, then we can be statistically certain that the higher order harm will come about, while still realising only trivial goods (albeit for many). This is particularly clear for policies like planting trees by the roadside for the sake of aesthetic benefits, or prescribing medicines that can induce drowsiness. Nonetheless, we still typically think that aggregation is permissible even in these cases, and that the trivial benefits to many add up to an overall benefit that is worth the risk. If we did not, then the problem of paralysis would recur. Many modern practices that impose risks of serious harm for the sake of relatively trivial benefits would be impermissible.

Desideratum 4 states that even if we know that a long series of choices is likely to result in a greater harm at some point, for the sake of averting only lesser harms—and the lesser harms are not relevant to the greater harm—the series can still be permissible if, in each of those choices, the risk of the greater harm is low enough, and the overall expected benefit is high enough.\textsuperscript{28} In other words, we can aggregate the high probabilities of avoiding lesser harms for the many so that they outweigh the high probability that someone will suffer a higher order harm (itself an aggregate of many low risks of serious harm imposed on many people).

Not all anti-aggregationists will accept Desideratum 4. Some will argue that individual

\textsuperscript{27} This point is most adamantly emphasised in Norcross, 'Speed Limits'; Fried, 'Can Contractualism'.

\textsuperscript{28} Notice, though, that whether it is permissible depends on which is the stronger set of claims, and it's perfectly possible that the risks of the severe harm do outweigh the trivial benefits, especially in a long series in which the severe harms will recur.
acts and series of actions must meet different standards. Some will emphasise the distinction between an individual action and an official policy. Others will think that if we have a pure enough case, we should outright reject Desideratum 4, and argue that such cases really are identical to Life for Headaches. Or one could argue that in all the most plausible cases that would motivate Desideratum 4, everyone who faces the risk of serious harm is also an expected beneficiary of the series of actions, so the risk is in everyone’s ex ante interests.

These are all sensible responses. But in this essay, I want to ask whether we can develop a principle that is extensionally equivalent to MSC for decision-making under certainty, but can satisfy all four Desiderata for decision-making under risk. I assume that these Desiderata are intuitively appealing—or else they wouldn't have been used as rods to beat anti-aggregationism with—and that it is worth knowing whether deontological decision theory can satisfy them all.

4. MSC and Orthodox Decision Theory

The first step in developing a deontological decision theory is to seek guidance from orthodox rational decision theory. I argue elsewhere that deontologists can make more use of its formal framework than they might otherwise think. We need only represent our

29 I consider this possibility in Lazar and Lee-Stronach, ‘Axiological Absolutism and Risk’. Thanks in particular to Brian Talbot, Alex Voorhoeve, and Aaron James, for pressing me to see the different ways in which anti-aggregationists might push back against Desideratum 4. See also Ridge, ‘Comment on Norcross’; Sergio Tenenbaum, ‘Action, Deontology, and Risk: Against the Multiplicative Model’, Ethics 127/3 (2017), 674-707.

30 Thanks to Susan Pennings and Brian Talbot for this point.


This 'choiceworthiness function' need not imply anything fundamental about the nature of our moral reasons—it is only a representation. We then multiply the values of those outcomes by their probability of coming about, and choose the option for which the sum of those products is greatest. Of course, we must make \textit{some} changes to the decision rule—in particular, orthodox decision theory enjoins us to \textit{maximise} expected choiceworthiness, but deontological decision theory will provide for options to act suboptimally.\footnote{Lazar, 'Agent-Centred Options'.} But, for most deontological commitments, it seems at least subjectively \textit{permissible} to maximise expected choiceworthiness. Anti-aggregationism, however, poses a bigger problem. The best-grounded representation of MSC in a choiceworthiness function would yield counterintuitive results when plugged into the standard decision-theoretic framework.

MSC distinguishes between claims and mere interests, and gives the former priority over the latter. When interests compete with claims, they have no weight at all. We can represent this in our choiceworthiness function by giving mere interests zero weight whenever claims are in play. When claims are not in play, the interests get their regular weight. The weight of a claim is determined by the weight of the interest that it protects.

This quickly yields counterintuitive results. To illustrate, consider a risky version of \textit{Life for Headaches}. You can save $X$ from a 0.99 risk of death or prevent a 0.1 risk of a headache for $Y_{1,000,000,000}$. To use the expected choiceworthiness model, we need to assign numbers to the possible outcomes of your options, representing a kind of 'deontic value'.\footnote{Holly M. Smith, 'The Subjective Moral Duty to Inform Oneself before Acting', \textit{Ethics} 125/1 (2014), 11-38.} This involves contentious modelling choices, but my central results will bear out for any plausible numbers. So, let's say that if you fail to save someone who goes on to have an
illness, that is worth 0. If \( X \) has a claim, then saving his life is worth 1,000,000. If the \( Y \)s have a claim to a cure for their headaches, then serving it is worth 1. Treating a group that is not in fact sick is worth 0, as does treating them when their interests are at stake, but the claim(s) of others are in play. Here is your decision table

<table>
<thead>
<tr>
<th>( X ) ill</th>
<th>( X ) ill</th>
<th>( X ) not ill</th>
<th>( X ) not ill</th>
<th>Expected choiceworthiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>( Y ) ill</td>
<td>( Y ) is ill</td>
<td>( Y ) not ill</td>
<td>( Y ) ill</td>
<td></td>
</tr>
<tr>
<td>( p )</td>
<td>0.099</td>
<td>0.899</td>
<td>0.001</td>
<td>0.009</td>
</tr>
<tr>
<td>Treat ( X )</td>
<td>1,000,000+0=</td>
<td>1,000,000+0=</td>
<td>0+0=</td>
<td>0+0= 999,000</td>
</tr>
<tr>
<td></td>
<td>1,000,000</td>
<td>1,000,000</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Treat ( Y )</td>
<td>0+0=</td>
<td>0+0=</td>
<td>0+1,000,000,000=</td>
<td>0+0= 1,000,000</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>1,000,000,000</td>
<td>0</td>
</tr>
</tbody>
</table>

Desideratum 2 says that our principle should have practical application in some realistic cases. And yet here you are more confident of \( X \)'s having a claim than you are of almost anything in life, while the risk to the \( Y \)s is of a minor harm and is only a 0.1 probability of that harm, and nonetheless the \( Y \)'s claims win out. If anti-aggregationism is silenced in a case like this, then it is indeed practically irrelevant. This seems a decisive objection to incorporating MSC into orthodox decision theory.

The result is even more extreme when the probabilities of \( X \) being ill and the \( Y \)s being ill are inversely correlated. Suppose either \( X \)'s or the \( Y \)'s interests are at stake. Suppose the probability \( X \) will die is 0.999, so the probability the \( Y \)s will suffer their headaches is only 0.001:

<table>
<thead>
<tr>
<th>( X ) ill</th>
<th>( X ) ill</th>
<th>( X ) not ill</th>
<th>( X ) not ill</th>
<th>Expected deontic value</th>
</tr>
</thead>
<tbody>
<tr>
<td>( Y ) not ill</td>
<td>( Y ) ill</td>
<td>( Y ) ill</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( p )</td>
<td>0.999</td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( X )</td>
<td>1,000,000+0=</td>
<td>0+0=</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>990,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
It again turns out that, since there are enough Ys, you should treat them, even though $X_0$ has a 0.999 chance of dying, and the Ys only a 0.001 chance of suffering a headache. This is clearly inconsistent with the motivation for anti-aggregationism. We can't endorse this conclusion alongside the commonsense verdict in *Life for Headaches*. The difference between 0.999 probability of death and certainty of death can't plausibly be that great.

It should be easy to see the problem here. Anti-aggregationism tells us that when claims are in play, we should ignore mere interests. The decision-theoretic approach respects that condition within a given outcome. But by basing decisions on a probability-weighted average of the possible outcomes, it allows interests in one outcome to counterbalance claims in another. No wonder, then, that it cannot offer a plausible extension of MSC to decision-making under risk.

Perhaps the anti-aggregationist could simply bite the bullet, reject Desideratum 2, and argue that introducing a tiny degree of uncertainty really does justify radically different deontic conclusions. Alternatively, she could develop a more creative choiceworthiness function. As I argue elsewhere, some plausible verdicts can be preserved if we use a bounded choiceworthiness function.36 My main concern about that approach (besides independent worries about whether bounded value functions are plausible) is that it's hard to see how it could be properly anchored in our objective moral theory. The representation of MSC above is clearly motivated by MSC itself. What grounds would we have for endorsing a bounded choiceworthiness function instead? And if we don't have

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36 See Lazar and Lee-Stronach, 'Axiological Absolutism and Risk'.

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independent grounds for the representation, then it will do no more than model judgements of which we are already confident. It won't be able to explain or justify them, or offer guidance in hard cases.\textsuperscript{37}

I think there is a better way. Instead of tinkering with the choiceworthiness function, we should work on the decision rule. This might mean ransacking heterodox decision theory for inspiration (lexicographic decision theory might be one option).\textsuperscript{38} Or it could mean returning to the underlying ideas that ground our moral theory, and trying to build in uncertainty at the ground level. That is what I try to do in the next section.

5. \textit{Ex Ante} and \textit{Ex Post} Approaches

5.1 Introducing \textit{ex ante} and \textit{ex post} interests

The first step is to understand how to count interests in risky cases. There are two possibilities: \textit{ex ante} and \textit{ex post}. I'll start with \textit{ex ante} interests.

In a risky decision whether to \(\phi\) or \(\psi\), everyone who has a non-zero probability of being affected has an \textit{ex ante} interest. The magnitude of a person's \textit{ex ante} interest is the difference between her expected well-being given that you \(\phi\) or \(\psi\). One's expected well-being is the probability-weighted average of one's actual well-being in the different possible outcomes of that option. For example, if \(X_i\) is sure to live if you \(\phi\), but has a 0.5 probability of death if you \(\psi\), then her \textit{ex ante} interest is the difference between life for sure and 0.5(life)+0.5(death). The moral weight of an \textit{ex ante} interest depends on its magnitude, as well as other factors like priority and responsibility.

\textit{Ex post} interests are intuitively easy to grasp, and often quite easy to measure and weigh. Instead of considering the antecedent level of risk to each person who might be

\textsuperscript{37} This is true as long as we affirm \textit{deontic} absolutism. We could instead defend \textit{axiological} absolutism, and then argue that these bounded value functions \textit{do} correspond to something substantive in our objective moral theory. But then we would have to defend those (perhaps rather strange) value functions. See Lazar and Lee-Stronach, 'Axiological Absolutism and Risk'.

\textsuperscript{38} See, for example, Chad Lee-Stronach, 'Lexical Priorities under Risk', \textit{Unpublished MS.} (2016).
affected by your action, \textit{ex post} interests focus on the possible outcomes that one's action might realise, and considers how people fare in those outcomes, relative to how they would have fared had you done otherwise. In other words, where \textit{ex ante} interests focus on what I called above the risk of harm, \textit{ex post} interests focus on what the risked harm is. If everyone whose interests are at stake faces a risk of death, then the salient \textit{ex post} interests are those of people who die in each of the possible outcomes, who would have lived had you done otherwise: for them, it is a matter of life and death. If your action has some probability of leaving some people suffering a headache, who would otherwise have been fine, then their \textit{ex post} interest is the interest in avoiding a headache.

5.2 Ex Ante MSC

\textit{Ex ante} MSC would breach Desideratum 1.\footnote{When the risked harms are of the same order, lower individual risks of harm \emph{may} be aggregated to outweigh higher individual risks of harm.} Suppose that if you \( \phi \), \( X_i \) faces a 0.5 probability of death, and \( Y_{1...n} \) are sure to be fine. If you \( \psi \), \( X_i \) is sure to be fine, but \( Y_{1...n} \) face a 0.0000001 probability of death. Is \( X_i \)'s \textit{ex ante} interest \( S_X^{\phi} \) the object of a claim? Each of \( S_{1...n}^{\psi} \) is an interest in avoiding a 0.0000001 risk of death. Plausibly each of those \textit{ex ante} interests is sufficiently outweighed by \( S_X^{\phi} \). One would be required to bear a 0.0000001 risk of death to avert a 0.5 risk of death for someone else. So \( S_{1...n}^{\psi} \) are not objects of \textit{ex ante} claims, and \( S_X^{\phi} \) is—no matter how high \( n \) gets. So, you would be required to aid \( X_i \) no matter how many \( Y_s \) there are. This is extremely implausible. Nonconsequentialists will often tolerate inefficiency. But surely this is too much. This is a choice of whom to save, where everyone ultimately affected faces the same fate. You should just save the greater number.

\textit{Ex ante} MSC has a somewhat more benign version of the same problem that \textit{ex ante} versions of contractualism face.\footnote{James, 'Slippery'; John, 'Risk, Contractualism'; Kumar, 'Risking and Wronging'; Frick, 'Contractualism and Social Risk.'} On those views, one is morally required to serve the strongest \textit{ex ante} interest, without any qualifications for relevance. So if you could either
spare $X_i$ from a 0.5 risk of death, or $Y_{1:n}$ from a 0.49 risk, you ought to save $X_i$, no matter how high $n$ is. This means averting 0.5 expected deaths when you could have averted 0.49($n$) expected deaths, which is implausible as long as $n$ is greater than 1. Johann Frick’s solution to this problem (also suggested by Stephen John and Aaron James, who also consider something like ex ante MSC) is to be pluralist about permissibility.\textsuperscript{41} Ex ante contractualism tells us only what equity requires. It does not tell us what to do, all things considered. When the numbers mount up, we should save the greater number, because general well-being outweighs equity.

This move has two problems. First, if equity has much moral weight then it should be worth a significant cost in overall well-being. But we should clearly save two people from a 0.49 probability of death rather than one from a 0.5 probability of death. If equity can be overridden so early on, one wonders how important it is.

More troublingly, this pluralist approach yields the wrong verdict in Life for Headaches. If well-being considerations can ultimately overrule equity considerations, then at some point the numbers must mount enough that, on pluralist grounds, we must let the one die in order to avert the headaches. This sacrifices the heart of anti-aggregationism.

Ex ante MSC improves on ex ante contractualism: since a 0.5 risk of death does not sufficiently outweigh a 0.49 risk of death, we can save the greater number. But this is small consolation. Ex ante MSC still fails Desideratum 1, and must be rejected.

5.3 Ex Post MSC
A simplistic ex post MSC would clearly fail. If we judge relevance by looking only at resultant harms, ignoring probabilities, then any risk of suffering a headache would be irrelevant when someone else’s life is at risk. So we would always prioritise risks of death over risks of headaches, with implausible and paralysing results. But we can develop a

\textsuperscript{41} Voorhoeve implies that he endorses a similar pluralism at Voorhoeve, 'How Should We Aggregate'.

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more compelling version of *ex post* MSC that delivers on the first three Desiderata; Desideratum 4 is its downfall. Since some will ultimately endorse *ex post* MSC and reject Desideratum 4, I will explain it in some detail. In order to really get clear on *ex post* MSC, as well as to lay the foundations for the hybrid views that follow, it is necessary to look more closely at *ex post* interests—and the closer one looks, the more intriguing they appear.

Sometimes *ex post* interests are easy to calculate. Suppose $X_i$ faces a 0.5 probability of death if you $\phi$, but will live if you $\psi$. Suppose $X_i$ dies in outcome $O_i$ of $\phi$ing, which I will annotate as $O_i^\phi$. Had you $\psi d$ instead, $X_i$ would have lived.$^{42}$ So his *ex post* interest in $O_i^\phi$ is the difference between life and death. My cases will all be this simple.

However, suppose that, had you $\psi d$, $X_i$ would have faced a 0.25 probability of death. Then we cannot say, at $O_i^\phi$, that had you $\psi d$ $X_i$ would have lived. And this must surely matter: $X_i$’s interest when all options involve at least a 0.25 probability of his dying cannot be as weighty as it would if some were sure to leave him unharmed.

This raises some interesting metaphysical issues, which we must sidestep.$^{43}$ We don’t know what would have happened, at $O_i^\phi$, had you $\psi d$ instead of $\phi d$. Whether that is because it is fundamentally indeterminate, or merely epistemically indeterminable, is most likely irrelevant in practice. To calculate $X_i$’s *ex post* interest, we must identify the difference between how he fares in $O_i^\phi$ given that you $\phi$, and how he would have fared in each possible outcome of $\psi$ing (I’ll write these as $O_i^\psi_{1\ldots n}$). We then weight each of those differences for the salient outcome’s probability conditional on $\psi$ing, and sum the products.

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$^{42}$ Some will question whether *any* counterfactuals like this can be true. But they would at least allow that we can assign them a high probability. As we will see, that’s all I need for this account to work.

Return to the case above. If you \( \phi \), then \( X_1 \) faces a 0.5 probability of death. If you \( \psi \) then he faces a 0.25 probability of death. Consider his ex post interest at \( O_1^\phi \), in which he dies. To gauge its magnitude, we have to compare his well-being at \( O_1^\phi \) with how he would have fared in the different possible outcomes of \( \psi \)ing. Assume, for now, that \( \psi \)ing could have realised four equiprobable outcomes, \( O_1^{\psi} \). In \( O_1^{\psi} \) he would have died, in the others he would have been unharmed. Had \( O_1^{\psi} \) been the case, whether you \( \phi d \) or \( \psi d \) would have made no difference. Had \( O_2^{\psi} \) been the case, he would have lived. So his ex post interest at \( O_1^\phi \) is the probability-weighted average of these differences. Since each is equally likely, this is just the average: 0.75(life) compared with certain death.

In effect, this means comparing how he fares in \( O_1^\phi \) with something quite like his ex ante expectation had you \( \psi d \) instead. However, this is a little simplistic, for three reasons. First, the magnitude of one's ex post interest in \( O_1^\phi \) is the difference between one's actual well-being in \( O_1^\phi \) and one's expected well-being had one \( \psi d \) instead. One's ex ante interest is the difference between one's expected well-being had one \( \phi d \) and had one \( \psi d \).

Second, the baseline for comparison does not depend on knowing \( X_1 \)'s identity. Even if \( X_1 \) is anonymous, we can still assign him an expected well-being given that you had \( \psi d \) instead of \( \phi d \), based on the narrowest causally relevant reference class that we know. Ex ante interests, by contrast, really are particularised to individuals.

And third, the probabilities of each outcome are conditional on \( O_1^\phi \) being the case—if anything that is true at \( O_1^\phi \) is causally relevant to what would have happened if you had \( \psi d \), then it must be held constant when working out the probabilities of each outcome coming about from \( \psi \)ing. For ex ante interests, we care only about the probability of each outcome
coming about given that you ψ, without conditionalising on any elements of \( O_1^\phi \).\(^{44}\)

So, the magnitude of \( X_i \)'s ex post interest \( S_1^x \) in \( O_1^\phi \) given that you \( \phi \) is the sum of the differences between how he fares in \( O_1^\phi \), and how he would have fared in each of the possible outcomes had you \( \psi d \) instead, with each difference weighted for its associated outcome's probability of coming about had you \( \psi d \). I will call this the probability-weighted average of the differences between how he fares in \( O_1^\phi \) and how he would have fared in \( O_1^{\psi d} \).

If \( X_i \) is a net beneficiary of \( O_1^\phi \) relative to \( \psi \)ing, then call his ex post interest in \( O_1^\phi \) positive. If \( \psi \)ing would have been better for \( X_i \), call his ex post interest in \( O_1^\phi \) negative.

How do we determine whether \( S_1^x \) is the object of a claim? First we weight it for responsibility, priority, etc. We then must see whether \( S_1^x \) is sufficiently outweighed by the relevant competing ex post interests \( S_{1...n}^x \). We need to know how ex post interests compete, how to determine relevance, and what 'sufficiently outweighed' means here.

Consider a case: if you \( \phi \), \( X_i \) faces a 0.9 risk of death and \( Y_{1...n} \) are fine. If you \( \psi \), \( X_i \) is fine and \( Y_{1...n} \) face a 0.9 risk of a minor headache. \( X_i \)'s ex post interest \( S_1^x \) in \( O_1^\phi \), which results from \( \phi \)ing, competes with \( Y_i \)'s ex post interest just in case either \( X_i \)'s ex post interest in \( O_1^\phi \) is positive and \( Y_i \)'s is negative, or \( X_i \)'s ex post interest in \( O_1^\phi \) is negative and \( Y_i \)'s is positive. In \( O_1^\phi \) \( X_i \) dies, and \( Y_i \) is fine. Had you \( \psi d \) instead, \( X_i \) would have lived, and \( Y_i \) would have had a 0.9 probability of suffering a minor headache. The magnitude of \( X_i \)'s ex post interest at \( O_1^\phi \), then, is the difference between death and life. The magnitude of \( Y_i \)'s ex post interest at \( O_1^\phi \) is the probability-weighted average of the differences between how she fares in \( O_1^\phi \) and how

\(^{44}\) Suppose you are considering either treating or not treating a patient who might have a genetic condition, which would make either inaction or treatment fatal. Consider the patient's ex post interest at \( O_1^\phi \), in which you have treated him, he has the condition, and he has died. To compare the difference between the patient's well-being at that outcome, and his well-being had you not treated him, we must hold constant his genetic condition. To keep things simple, however, all my examples will have causally independent outcomes.
he would have fared in $O_{1...n}^y$. So her \textit{ex post} interest is equivalent to the difference between feeling fine and suffering a headache, discounted by the 0.1 probability that she would have been fine. We can write this as 0.9(headache).

To work out whether $X_i$ has an \textit{ex post} claim at $O_i^\phi$, we must start by asking whether $Y_i$'s competing \textit{ex post} interest is relevant to $X_i$'s \textit{ex post} interest at $O_i^\phi$. \textit{This is really the key to understanding the \textit{ex post} approach to MSC.} On an \textit{ex post} approach, we ultimately care about \textit{actual costs}, not about antecedent levels of risk. \textit{So we determine relevance by considering actual harms.} To figure out whether $S_i^y$ at $O_i^\phi$ is relevant to $S_i^x$, we must consider every outcome that could have resulted had you \textit{y}d instead, and compare the difference between how $Y_i$ fares in that outcome and in $O_i^\phi$ with the difference between how $X_i$ fares in that outcome and in $O_i^\phi$. We then aggregate only those of $Y_i$'s \textit{ex post} interests that, at their outcome, are relevant to $X_i$'s \textit{ex post} interest.

$X_i$ dies in $O_i^\phi$, $Y_i$ is fine. In each outcome of \textit{y}ing where $Y_i$ fares badly, she suffers only a headache. $X_i$, by contrast, survives in every outcome of \textit{y}ing. So the difference for $Y_i$ in all those outcomes in which \textit{y} is worse for her than \textit{\phi}, is between being fine and suffering a headache. And for $X_i$, it is uniformly the difference between dying and living. The \textit{ex post} interest in avoiding a headache is not relevant to the \textit{ex post} interest in one's life being saved. So $S_i^y$ in $O_i^\phi$ is not relevant to $S_i^x$. The same is true for $Y_{2...n}$. So there is no question of $X_i$ being sufficiently outweighed by relevant competing interests. $X_i$ has an \textit{ex post} claim at $O_i^\phi$.

What about $Y_{1...n}$? Do they have \textit{ex post} claims? Let's focus, again, on $Y_i$, this time at $O_i^y$, at which she suffers a headache, and $X_i$ is fine. To determine if $X_i$'s \textit{ex post} interest is relevant to $Y_i$'s \textit{ex post} interest, we compare $O_i^y$ with each of the possible outcomes had you \textit{\phi}d instead. In all of those $Y_i$ is fine, so the difference, for $Y_i$, is between a headache and
being fine. But in some of those possible outcomes, \( X_i \) dies. Suppose \( X_i \) would have died at \( O_1^\phi \). Clearly, the difference between life and death is relevant to the difference between suffering and not suffering a minor headache. So at \( O_1^\psi \), \( Y_i \)'s \textit{ex post} interest clearly competes with a relevant \textit{ex post} interest.

The question, though, is whether it is \textit{sufficiently outweighed} by \( X_i \)'s relevant \textit{ex post} interest. And here is the next crucial step in \textit{ex post} MSC—the step which ensures that it avoids the absurdly restrictive parody of \textit{ex post} anti-aggregationism described at the start of this subsection. In some of the outcomes of \&ing, \( X_i \) would have lived. We cannot, therefore, give his \textit{ex post} interest at \( O_1^\psi \) the same weight as if he were sure to die if you \&d. We must instead discount his \textit{ex post} interest for the probability that he would have been fine. Instead of comparing a certain headache for \( Y_i \) with certain death for \( X_i \), we must compare \( Y_i \)'s headache with 0.9(death) for \( X_i \). Still, that plausibly does sufficiently outweigh \( Y_i \)'s \textit{ex post} interest. One would be required to suffer a certain headache to avert 0.9 expected deaths. The same is true for \( Y_{i+1} \ldots n \), so none of the \( Ys \) have \textit{ex post} claims. Since \( X_i \) \textit{does} have an \textit{ex post} claim, this means you must save him, no matter how many \( Ys \) there are. This satisfies Desideratum 2: the priority for the stronger claim has practical bite, rather than kicking in only when all probabilities are either 1 or 0.

Desideratum 3 can be satisfied as well—this approach need not be excessively paralysing, at least in one-off cases. Suppose that if you \&i, \( X_i \) faces a 0.0001 risk of death while \( Y_{i..n} \) are fine, but if you \&j, \( Y_i \) faces a 0.9 probability of a headache. In outcome \( O_1^\phi \), in which \( X_i \) is fine and \( Y_{i..n} \) face a 0.9 probability of a headache. In outcome \( O_1^\psi \), in which \( X_i \) dies, the story is the same as before. Compare his interest with \( Y_i \)'s \textit{ex post} interest. \( Y_i \) is fine in \( O_1^\phi \). Had you \&d, in at least some outcomes she would have suffered a headache. But \( X_i \) would have been unharmed. So we determine relevance by comparing the difference between life and death for \( X_i \) with that between a headache and no headache for \( Y_i \). The latter \textit{ex post} interest is irrelevant to the former, so \( X_i \) has an \textit{ex post}
Now ask whether \( Y_1 \) has an \( \textit{ex post} \) claim. Consider \( O_{1Y} \), in which \( Y_1 \) suffers a headache and \( X_1 \) is fine. Had you \( \phi \)d instead, in at least some outcomes \( X_1 \) would have died, though \( Y_1 \) would have escaped the headache. Clearly \( X_1 \)'s \( \textit{ex post} \) interest \( S_{1X} \) is relevant to \( Y_1 \)'s \( \textit{ex post} \) interest \( S_{1Y} \). But to know whether \( S_{1X} \) \textit{sufficiently outweighs} \( S_{1Y} \), we need to again think about how to weigh it. And we must again acknowledge that only in a small subset of the possible outcomes of \( \phi \)ing would \( X_1 \)'s life have been lost.

So, though relevant to \( Y_1 \)'s \( \textit{ex post} \) interest \( S_{1Y} \), \( X_1 \)'s \( \textit{ex post} \) interest \( S_{1X} \) must be discounted by the 0.0001 probability that it would be actualised. So it is not plausible that it sufficiently outweighs \( Y_1 \)'s \( \textit{ex post} \) interest. One would not be required to suffer a certain headache in order to avert 0.0001 expected deaths. So \( Y_1 \) does have an \( \textit{ex post} \) claim, and the same is true for \( Y_{2...n} \). So: there are \( \textit{ex post} \) claims on both sides. Just as with \( \textit{ex post} \) interests, \( \textit{ex post} \) claims are indexed to outcomes, and must be discounted for the probability of the associated outcome coming about. So, we aggregate \( \textit{ex post} \) claims on either side, weighting each for the probability of its outcome being realised. The result: we are simply comparing 0.0001 expected deaths with 0.9\( (n) \) expected headaches. For some value of \( n \), we should avert the headaches. This satisfies Desideratum 3, because we can justify taking small risks in individual cases.

On this approach, assuming that we apply a linear probability discount (which I will do for simplicity), then if two options have the same expected outcome, then the moral weight of the aggregate \( \textit{ex post} \) claims in that option will be the same. E.g. whether \( Y_{1...100} \) each face a 1/10 risk of death, or \( Y_{1...1000} \) each face a 1/100 risk of death, their \( \textit{ex post} \) claims will, by the lights of \( \textit{ex post} \) MSC, weigh the same in the aggregate.\(^{45}\) This ensures that Desideratum 1

\(^{45}\) It is, of course, possible to factor other considerations into the weighting, in order to reflect any warranted intuitive difference. Or we might incorporate some non-neutral attitude to risk by departing from a linear probability discount. Additionally, if \( \textit{ex post} \) claims are tied, we can still appeal to other distributive principles besides 'maximise morally-weighted expected well-being'.

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will be satisfied, because if the risked harms are of the same order, then we will maximally satisfy \textit{ex post} claims by choosing the option with the better expected outcome.

Before showing where \textit{ex post} MSC falls down, it is worth distilling a formal statement of it.

\textit{Ex Post MSC}

In a choice whether to φ or ψ, in which either \(X_{1...n}\) or \(Y_{1...n}\), but not both groups, are at risk:

1. \(X_i's\) \textit{ex post} interest \(S_i^X\) in an outcome of φing \(O_1^\phi\) is the probability-weighted average of the differences between how \(X_i\) fares in \(O_1^\phi\) and how \(X_i\) would have fared in \(O_{1...n}^\psi\).\(^{46}\)

2. \(S_i^X\)'s moral weight at \(O_1^\phi\) is determined by its magnitude, weighted by priority, responsibility etc.\(^{47}\)

3. \(Y_i's\) \textit{ex post} interest \(S_i^Y\) \textbf{competes} with \(S_i^X\) if and only if either \(Y_i\)'s interest at \(O_1^\phi\) is positive and \(X_i\)'s is negative, or \(X_i\)'s is positive and \(Y_i\)'s is negative.

4. \(S_i^Y\) is \textbf{relevant} to \(S_i^X\) only if, for some possible outcome of ψ \(O_{n}^\psi\), the difference between \(Y_i\)'s well-being in \(O_{n}^\psi\) and \(O_1^\phi\) is not sufficiently outweighed by the difference between \(X_i\)'s well-being in \(O_{n}^\psi\) and \(O_1^\phi\).

5. When aggregating \(Y_{1...n}\)'s relevant competing \textit{ex post} interests, each is discounted by the probability of its associated outcome being

\(^{46}\) Remember in all my cases this will be simple: one option involves no risk of harm for \(X_i\), the other involves some risk. Also, to be clear, the relevant probability here is, for each outcome \(O_{n}^\psi\), the probability that \(O_{n}^\psi\) would occur conditional on \(\phi\) occurring if you φ.

\(^{47}\) When calculating whether \(S_i^X\) merits protection by a claim, we conditionalyse on \(O_1^\phi\) being the case, hence 'at \(O_1^\phi\).

The actual moral weight of \(S_i^X\), for example if we determine that it is not protected by a claim, will be discounted by the probability of \(O_1^\phi\) being the case.
actual.  

6. $X_i$’s *ex post* interest at $O_i^\phi$ is the object of a claim only if it is not sufficiently outweighed by $Y_{1...n}$’s relevant competing *ex post* interests.

7. The moral weight of an *ex post* claim at $O_i^\phi$ is the moral weight of the underlying *ex post* interest, discounted by the probability that $O_i^\phi$ will be actual if you $\phi$.

8. Maximise overall satisfaction of morally weighted *ex post* claims.

9. If no *ex post* claims are at stake, or if they are tied, you may maximise overall morally-weighed expected well-being.

*Ex post* MSC fares well with the first three Desiderata, as we have seen. But Desideratum 4 is a problem. Return to a case above. If you $\phi$, $X_i$ faces a 0.0001 probability of death, and $Y_{1...n}$ are fine. If you $\psi$, $X_i$ is fine, and $Y_{1...n}$ face a 0.9 probability of a minor headache. If this choice is considered on its own, then for some value of $n$, you should choose $\phi$, running a small risk of a greater harm to one to avert a high risk of a lesser harm to many.

But now suppose that you can decide whether someone will face this choice multiple times—you are a legislator, for example, deciding whether to prescribe a given medication; or you are a doctor, considering whether to continue your career, which will involve prescribing the same medication to different patients many times over. You can decide either to permit $m$ iterations of the same choice, or to prevent it. Your options are $\phi$, in which $X_{1...m}$ each face a 0.0001 risk of death and $Y_{1...mn}$ are fine, or to $\psi$, in which case $Y_{1...mn}$ face a 0.9 probability of suffering a headache, but $X_{1...m}$ are fine. Suppose that $m$ is 10,000, so that if you $\phi$ the expected deaths is 1. Then *ex post* MSC will tell you that you must $\psi$, which

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48 Again, each is discounted for the probability of its associated outcome conditional on $\psi$-ing, and conditional on the state of the world being as it was in $O_i^\phi$ before you $\phi$ed.
has potentially paralysing implications in practice.\textsuperscript{49}

Here's why: consider an outcome of $\phi$ing, $O_{\phi}$, in which $X_i$ dies. There are no relevant competing interests: in all the outcomes of the alternative, $X_i$ lives, while some of the $Y$s suffer a headache. A headache is sufficiently outweighed by a life (one would be required to suffer a headache to save a life). So those interests are not relevant. Each of the $X$s, therefore, has an \textit{ex post} claim, in each outcome where one of them dies.

Now the $Y$s. Consider an outcome of $\psi$ing $O_{\psi}$, in which $Y_i$ suffers a headache. Had you $\phi$ed instead, then there is an outcome $O_{\phi}^1$ in which $X_i$ would have died. $X_i$'s \textit{ex post} interest is clearly relevant to $Y_i$'s interest in avoiding a headache. And the same is true for each of the other $X$s in each of the other possible outcomes of $\phi$ing in which they would have died. Each of these relevant \textit{ex post} interests has to be weighted by the probability of its associated outcome coming about. We can then aggregate them to determine whether they together sufficiently outweigh $Y_i$'s \textit{ex post} interest in avoiding a headache at $O_{\psi}$.

The net result is that we must ask whether one's interest in avoiding a headache is sufficiently outweighed by the importance of averting $0.0001(m)$ expected deaths. Clearly if $m$ is high enough (e.g. above 1000), then $Y_n$'s interest in avoiding a headache is sufficiently outweighed. Plausibly, one is required to suffer a headache to avert one expected death. So the $Y$s lack \textit{ex post} claims, and the $X$s have them. So we must avoid the risky conduct, and forego the trivial health benefits for many that we could have realised by taking many small risks.

If we face a long enough series of repeated small risks of a serious harm, each time securing a lower-order benefit for some people, then we know that in the long run repeatedly taking that risk will result in the higher-order harm. Consider either

\textsuperscript{49} Most discussions of related problems focus on cases in which the expected deaths would be much higher, and we are statistically certain that, at the limit, someone will suffer the higher order harm. I'm not sure how useful these cases are, though, because I don't think we actually repeat any of our decisions enough to be statistically \textit{certain} that they will result in someone suffering a higher order harm. I think that, in this context, expected deaths are much more morally important.
prescribing or taking medicine that can induce drowsiness, to treat a minor headache. Each instance involves a small risk of an accident that will kill an innocent victim. In the long run, we know that allowing people to take or prescribe such medicines to treat headaches will result in someone being killed. If we look only at the *ex post* claims, then this is simply a stretched-out version of *Life for Headaches*: on average at least one person will die (who would otherwise have lived) if we tolerate these medicines; many will suffer minor headaches if we do not. Since one would be required to endure a minor headache to save a life, the lesser *ex post* interests are irrelevant to the *ex post* interest of the person or people who will ultimately die. So the latter have *ex post* claims, while those who will inevitably suffer minor headaches have no *ex post* claims, only interests. We must, therefore, serve the *ex post* claims of the inevitable victims of the more serious harm.

This is a standard complaint against anti-aggregationism: it would be paralysing, ruling out risky policies that we typically think unproblematic.  

50 Governments and health insurance providers, for example, could not devote resources to treating minor ailments, if those resources could instead save even one life. Those involved in the sports and entertainment industries would be barred from pursuing construction or infrastructure projects that, in the long run, risk causing a very small number of people serious injury. Certain kinds of air travel would be impermissible, because they realise trivial benefits for some at the cost of a small risk of a very serious harm to those who do not benefit from it. There are many different examples, and every one has its own distinctive features. Anti-aggregationists could respond by considering each of these cases, and showing that in fact there are weighty enough interests on both sides for aggregation to be permissible (though one then wonders whether Desideratum 2 would then be threatened—are there any real-life cases in which anti-aggregationism *does* kick in?).  

51 Or they could distinguish between the evaluation of individual choices, and the evaluation of policies, or series of actions.

50 See the papers cited at fn 24.

51 See Ridge, 'Comment on Norcross'.
There are many different moves that one could make, which I will not discuss further. I offer \textit{ex post} MSC as a principle suited to those who take Desideratum 4 less seriously than I do.

6. Hybrid Approaches

6.1 Motivating a Hybrid MSC

On the one hand, both \textit{ex ante} and \textit{ex post} MSC fail to satisfy our desiderata: by those lights, both are flawed. And yet each clearly captures something plausible, which the other neglects. This is \textit{prima facie} grounds to develop a hybrid alternative, which retains the successes of both views but avoids their flaws.

We can find further intuitive support for a hybrid approach in thinking about our duties of rescue. I think they take into account \textit{both ex ante and ex post} interests. To see this, consider the following case:

Two terrorist attacks are going to take place. One in a subway station, one in an airport departure lounge. Blast force, radius etc. the same in either case. Both buildings equally densely crowded. But there is more throughput in the subway, so that attack exposes more people to a lesser risk of harm than does the airport attack. But the expected outcome in either case is the same.

If we construe duties of rescue wholly in \textit{ex ante} terms, then the higher degree of risk faced by the potential victims in the airport lounge would make a big difference to how much risk you would have to bear for their sake. And yet it does not seem to make a difference. Suppose that each attack, if not prevented, will cause 100 expected deaths. The central question is: how much risk are you required to bear to avert 100 expected deaths? Whether those risks are concentrated on a few, or spread across a greater number, seems much less
important—a tie-breaker, at most.\(^{52}\)

But now suppose that I could spare \(Y_{1,n}\) from a 0.9 probability of suffering a headache—but only by enduring a 0.9 probability of losing my own life. Could I be required to bear that risk, to avert \(0.9(n)\) expected headaches? Plausibly not, no matter how high \(n\) gets. \(Y_{1,n}\)'s \textit{ex post} interests are irrelevant to my \textit{ex ante} interest. For example, \(Y_i\)'s \textit{ex post} interest in avoiding a headache is sufficiently outweighed by my \textit{ex ante} interest in avoiding a 0.9 risk of death. One \textit{would} be required to suffer a headache, in order to avert 0.9 expected deaths.

When thinking about duties of rescue under risk, then, we should ask: how much risk can I be required to bear, to avert a bad expected outcome? In other words, how does my \textit{ex ante} interest weigh against the \textit{ex post} interests of those whom I can try to save?

\textbf{6.2 Hybrid MSC I: A First Attempt\(^{53}\)}

Hybrid MSC must start by identifying whose \textit{ex ante} interests are at stake. Then, ask which of those \textit{ex ante} interests is the object of a claim, by comparing each with the relevant \textit{ex post} interests with which it competes. An \textit{ex ante} interest is protected by a claim only if it is not sufficiently outweighed by the relevant competing \textit{ex post} interests. We can be guided by this question: would one be required to bear that much risk, to avert that expected outcome? Finally, maximise satisfaction of \textit{ex ante} claims.

Suppose that if you \(\phi\), \(X_i\) faces a 0.0001 risk of death, and \(Y_{1,n}\) will be fine. If you \(\psi\), \(X_i\) will be fine, and \(Y_{1,n}\) will each face a 0.9 risk of a minor headache. First, work out whether \(X_i\)'s \textit{ex ante} interest is the object of a claim. Clearly the \(Ys\) \textit{ex post} interests compete with \(X_i\)'s \textit{ex ante} interest: \(\psi\)ing is in \(X_i\)'s \textit{ex ante} interest, whereas \(\phi\)ing is in the \(Ys\) \textit{ex post} interests. Are

\(^{52}\) Compare Otsuka, 'Risking Life and Limb'.

\(^{53}\) In 'Can Contractualism Save Us' Barbara Fried issues a challenge to her opponents to develop a hybrid theory that is well-motivated, clear, and resolves the kinds of worries I picked out in my desiderata. Though my principle is not contractualist, it can be viewed as a response to that challenge. For two different hybrid approaches, neither of which would be pertinent here, Lenman, 'Contractualism'; Alex Voorhoeve and Marc Fleurbaey, 'Priority or Equality for Possible People?', \textit{Ethics} 126/4 (2016), 929-954.
their ex post interests relevant to X's ex ante interest? I think they are. One is plausibly not required to suffer a headache in order to spare someone else a 0.0001 risk of death. So we may aggregate the ex post interests of the Ys. Is there a value of n such that they, together, sufficiently outweigh X's ex ante interest? I think there is. One plausibly is required to accept a 0.0001 risk of death, in order to avert 9,000,000 expected headaches, for example. So, if n is high enough, then X lacks an ex ante claim.

What about the Ys? Consider Y. Her ex ante interest is in avoiding a 0.9 risk of suffering a headache. It competes with X's ex post interest in avoiding death. Clearly X's ex post interest is relevant to Y's ex ante interest. But it plausibly does not sufficiently outweigh Y's ex ante interest: as we saw when developing ex post MSC, ex post interests are indexed to particular outcomes, and after establishing relevance, they must be discounted for the probability of that outcome coming about. One would not be required to suffer a 0.9 risk of a headache in order to avert 0.0001 expected deaths. So Y does have an ex ante claim. The same is true for the other Ys. Since only the Ys have ex ante claims, according to a natural extension of MSC, you ought to \( \phi \), saving the Ys.

This shows that the hybrid version of MSC can satisfy Desideratum 3—it need not be paralysing in one-off cases. Before showing how it fares against the other Desiderata, it is worth setting it out. Call this Hybrid MSC I.

**Hybrid MSC I**

In a choice whether to \( \phi \) or \( \psi \), in which either \( X_{1..n} \) or \( Y_{1..n} \), but not both groups, are at risk:

1. X's ex ante interest \( S_X^x \) is the difference between her expected well-being conditional on \( \phi \) and her expected well-being conditional on \( \psi \).
2. The moral weight of an ex ante interest is determined by its magnitude, weighted by priority, responsibility etc.
3. Y_i’s *ex post* interest $S_i^Y$ in an outcome of φing $O_i^\phi$ is the probability-weighted average of the differences between how Y_i fares in $O_i^\phi$ and how Y_i would have fared in $O_{1...n}^\psi$.

4. The moral weight of $S_i^Y$ at $O_i^\phi$ is determined by its magnitude, weighted by priority, responsibility etc.

5. $S_i^Y$ competes with $S_i^X$ if and only if one of the options is better than the other for $X_n$ but worse for $Y_i$.

6. $S_i^Y$ is **relevant** to $S_i^X$ at $O_i^\phi$ only if, for some possible outcome of ψ $O_n^\psi$, the difference between $Y_i$’s well-being in $O_n^\psi$ and $O_i^\phi$ is not sufficiently outweighed by $S_i^X$.

7. When aggregating $Y_{1...n}$’s relevant competing *ex post* interests, each is discounted by the probability of its associated outcome being actual.

8. $X_i$’s *ex ante* interest is the object of a claim only if it is not sufficiently outweighed by $Y_{1...n}$’s relevant competing *ex post* interests.

9. The moral weight of an *ex ante* claim is the moral weight of the underlying *ex ante* interest.

10. Maximise overall satisfaction of morally-weighted *ex ante* claims.

11. If no *ex ante* claims are at stake, or they are tied, you may maximise overall morally-weighted expected well-being.

Hybrid MSC I fares well against Desideratum 2: it can be practically relevant. Suppose, for example, that φ leaves $X_i$ exposed to a 0.9 risk of death, fully curing $Y_{1...n}$; ψ fully cures $X_n$, leaving $Y_{1...n}$ exposed to a 0.9 risk of a minor headache. However high $n$ gets, I think one is

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54 Suppose $Y_i$ dies at $O_i^\phi$ and lives at $O_i^\psi$, while $X_i$ is fine if you φ, and has a 0.5 risk of death if you ψ. Then the question is whether the difference between life and death for $Y_i$ is relevant to the difference between life and 0.5(death) for $X_i$. Obviously it is. But suppose that the probability of $Y_i$ dying given that you φ is 0.0001. Then $S_i^Y$, though relevant to $S_i^X$, must be significantly discounted. So unless there are lot of $Y_i$ with the same *ex post* interests, $S_i^Y$ is most likely still the object of a claim.
not required to absorb a 0.9 risk of death in order to avert 0.9(n) expected headaches. Plausibly, the *ex post* interests of the Ys are not relevant to $X_i$’s *ex ante* interest (one would be required to suffer an actual headache to avert 0.9 expected deaths). So $X_i$ has an *ex ante* claim. $Y_{1..n}$, meanwhile, seem to lack *ex ante* claims: one is required to suffer a 0.9 risk of a headache to avert 0.9 expected deaths; $X_i$’s *ex post* interest in outcomes where he dies is clearly relevant to each Y’s *ex ante* interest, and even after discounting it for probability, it is sufficiently weighty to ensure that none of the Ys has an *ex ante* claim.

Desideratum 4 also poses no special problems. Consider the case used to illustrate Desideratum 3 above: in a one-off version, if you $\phi X_i$ faces a 0.0001 risk of death, $Y_{1..n}$ are fine; if you $\psi$, $X_i$ is fine, $Y_{1..n}$ face a 0.9 risk of a headache. Now suppose that you must consider $m$ iterations of this choice: if you $\phi$, $X_{1..m}$ each face a 0.0001 risk of death and $Y_{1..mn}$ are fine, or you can $\psi$, in which case $Y_{1..mn}$ face a 0.9 probability of suffering a headache, but $X_{1..m}$ are fine. If $n$ was high enough that in the one-shot version of the case $X_i$ lacks an *ex ante* claim, then *a fortiori* none of the Xs has an *ex ante* claim in this repeat version. We know that the *ex post* interests of the Ys are relevant—one isn’t required to suffer a headache to avert 0.0001 expected deaths. And if 0.9(n) expected headaches is enough to sufficiently outweigh a 0.0001 risk of death, then *a fortiori* 0.9(mn) expected headaches will be.\(^{55}\) So, none of the Xs have *ex ante* claims. $Y_{1..mn}$ plausibly lack *ex ante* claims as well, for some values of $m$. $X_{1..m}$’s *ex post* interests clearly are relevant to an *ex ante* interest in avoiding a 0.9 probability of a headache. And though we must weight each *ex post* interest for the probability of its associated outcome coming about, we can then aggregate them. So if $m$ were 10,000, say, then the moral weight of the *ex post* interests of $X_{1..m}$ would be equivalent to one expected death. And one clearly could be required to bear a 0.9 risk of a headache to avert one expected death.

So, for some values of $m$ and $n$, neither $X_{1..m}$ nor $Y_{1..mn}$ will have *ex ante* claims, and we

\(^{55}\) Obviously $m$ and $n$ must be positive and greater than 1 for this to be true.
can simply minimise expected harm—presumably by treating the Ys, though the alternative result is also possible. This means that we get the same verdicts on these choices whether we consider them one by one, or as a sequence. The mere repetition of risk-taking doesn’t threaten to decisively undermine Hybrid MSC I.

However, all is not yet well. Desideratum 1 still remains. Hybrid MSC I improves on *ex ante* MSC, and on *ex ante* contractualism. It will not tolerate prioritising those exposed to the greatest risk at the cost of permitting an arbitrarily high number of deaths among others. But it still tolerates a counterintuitive degree of inefficiency when the risked harms are the same.

So, suppose you can spare $X_i$ from a 0.5 risk of death, or $Y_{i,n}$ from a 0.0000001 risk of death. *Ex ante* contractualism and *ex ante* MSC both say that one should save $X_i$, no matter how high $n$ gets. Hybrid MSC I need not reach that implausible conclusion. Clearly, at some point $X_i$’s *ex ante* interest in avoiding a 0.5 risk of death is sufficiently outweighed by the expected outcome of failing to save the Ys. The *ex post* interests of the Ys are relevant—one is not required to sacrifice one’s life to avert 0.5 expected deaths! And, in the aggregate, these *ex post* interests can sufficiently outweigh $X_i$’s *ex ante* interest. Where is this point? 10, 100, 1,000 expected deaths? I don’t know. But it cannot get arbitrarily high.

And yet, are we satisfied with this conclusion? Suppose one can be required to bear a 0.5 risk of death to avert 100 expected deaths, so that’s where $X_i$’s *ex ante* interest is sufficiently outweighed. Are we prepared to endorse a principle that permits us to avert 0.5 expected deaths when we could have averted 99? Some nonconsequentialists will find this acceptable—we tolerate inefficiencies elsewhere, so why not here? They will therefore reject Desideratum 1, and endorse Hybrid MSC I. But my task is to satisfy *all* the Desiderata from above, and Hybrid MSC I fails to do so. It does, however, light the path to a more successful alternative.
6.3 Hybrid MSC II

Hybrid MSC I says that we should serve *ex ante* claims that are outweighed by relevant *ex post* interests, until they are outweighed by *enough* that the *ex ante* interest is no longer the object of a claim. This generates the implausible results with which the last section concludes. But why exactly should we serve sets of *ex ante* claims that are outweighed by relevant *ex post* interests? Think back to the objectivist version of MSC. If a set of correlated claims is outweighed by relevant interests, then even if they are not *sufficiently* outweighed, one still would not serve those claims.

I think we can satisfy our Desiderata, if we adapt Hybrid MSC I so that we don't serve sets of *ex ante* claims that are together outweighed by the relevant *ex post* interests with which they compete. Call such sets 'defeated'. A principle that maximises satisfaction of undefeated sets of *ex ante* claims will succeed.

Notice that our concern here is with competing *ex post* interests that are relevant to the set of correlated *ex ante* claims. We can aggregate *ex post* interests and weigh them against a set of *ex ante* claims only if each *ex post* interest is not individually sufficiently outweighed by the interests with which they compete.

We already know, for each *ex ante* claim, that it is not sufficiently outweighed by the set of *ex post* interests that are relevant to it (otherwise it would not be the object of a claim). Notice too that aggregation of *ex ante* claims is permitted—our concern is not whether each individual *ex ante* claim is outweighed, but whether all the *ex ante* claims together are outweighed by the relevant competing relevant *ex post* interests.

This new version of Hybrid MSC II raises some challenging questions. Before we get to those, however, it will help to precisify the principle. Since it builds on Hybrid MSC I, its first elements can be reproduced from above. The main challenge is to clarify what is meant by a set of correlated *ex ante* claims being defeated.
**Hybrid MSC II**

In a choice whether to \( \phi \) or \( \psi \), in which either \( X_{1...n} \) or \( Y_{1...n} \), but not both groups, are at risk:

1. \( X_i \)'s *ex ante* interest \( S^X_i \) is the difference between her expected well-being conditional on \( \phi \)ing and her expected well-being conditional on \( \psi \)ing.
2. The moral weight of an *ex ante* interest is determined by its magnitude, weighted by priority, responsibility etc.
3. \( Y_i \)'s *ex post* interest \( S^Y_i \) in an outcome of \( \phi \)ing \( O^\phi_1 \) is the probability-weighted average of the differences between how \( Y_i \) fares in \( O^\phi_1 \) and how \( Y_i \) would have fared in \( O^\psi_{1...n} \).
4. The moral weight of \( S^Y_i \) at \( O^\phi_1 \) is determined by its magnitude, weighted by priority, responsibility etc.
5. \( S^Y_i \) competes with \( S^X_i \) if and only if one of the options is better than the other for \( X_i \), but worse for \( Y_i \).
6. \( S^Y_i \) is **relevant** to \( S^X_i \) at \( O^\phi_1 \) only if, for some possible outcome of \( \psi \) \( O^n \), the difference between \( Y_i \)'s well-being in \( O^n \) and \( O^\phi_1 \) is not sufficiently outweighed by \( S^X_i \).
7. When aggregating \( Y_{1...n} \)'s relevant competing *ex post* interests, each is discounted by the probability of its associated outcome being actual.
8. \( X_i \)'s *ex ante* interest is the object of a claim only if it is not sufficiently outweighed by \( Y_{1...n} \)'s relevant competing *ex post* interests.
9. The moral weight of an *ex ante* claim is the moral weight of the underlying *ex ante* interest.
10. A set of correlated *ex ante* claims is **defeated** if it is outweighed by the set of relevant *ex post* interests with which it competes.
11. An *ex post* interest is relevant to a set of *ex ante* claims only if it is not sufficiently outweighed by that set of *ex ante* claims.

12. Maximise satisfaction of undefeated sets of morally-weighted *ex ante* claims.

13. If no undefeated sets of *ex ante* claims are at stake, or they are tied, you may maximise overall morally-weighted expected well-being.

Hybrid MSC II handles Desiderata 2-4 much as Hybrid MSC I did. Suppose that \( \phi \) leaves \( X_i \) exposed to a 0.9 risk of death, fully curing \( Y_{1...n} \); \( \psi \) fully cures \( X_i \), leaving \( Y_{1...n} \) exposed to a 0.9 risk of a minor headache. The *ex post* interests of the \( Ys \) are not relevant to \( X_i 's \) *ex ante* interest: each \( Y \) is required to suffer a headache in order to avert 0.9 expected deaths. So no matter how high \( n \) gets, \( X_i \) has an *ex ante* claim: one is not required to absorb a 0.9 risk of death to avert 0.9\((n)\) expected headaches, for any \( n \).

The \( Ys \), on the other hand, do not seem to have *ex ante* claims. Their *ex ante* interest in avoiding a 0.9 risk of a headache comes up against the moral significance of 0.9 expected deaths. One is required to suffer a 0.9 risk of a headache in order to avert 0.9 expected deaths. So only \( X_i \) has an *ex ante* claim, and you should help him.

Desideratum 3 is also satisfied. Consider our earlier case: if you \( \phi \), \( X_i \) faces a 0.0001 risk of death, and \( Y_{1...n} \) will be fine. If you \( \psi \), \( X_i \) will be fine, and \( Y_{1...n} \) will each face a 0.9 risk of a minor headache. As before, if \( n \) is high enough, then \( X_i \) lacks an *ex ante* claim: one is required to bear a 0.0001 risk of death to avert 0.9\((n)\) expected headaches. The \( Ys \) do have *ex ante* claims—one isn't required to bear a 0.9 risk of a minor headache in order to avert 0.0001 expected deaths. So you should help the \( Ys \).

And the same is true for Desideratum 4. If we repeat the previous case \( m \) times, we still find that none of \( X_{1...m} \) has an *ex ante* claim. If one is required to bear a 0.0001 risk of death in order to avert 0.9\((n)\) expected headaches, then of course this is also true for 0.9\((mn)\)
headaches. If \( m \) is below some bound then \( Y_{1,\ldots,m} \) have ex ante claims, as in the previous case, and you should help them; if \( m \) is above that bound then \( Y_{1,\ldots,m} \) lack ex ante claims, and you should maximise morally-weighted expected well-being. I think that means that one would help the Ys, but perhaps helping the Xs is the thing to do in such a case. Either way, claims are out of the picture. The key point is that if you pursue the risky policy, you are not subjecting any individual to an objectionably high risk of harm. Given that, it can be permissible for you to proceed even in situations where you are sure that, in the long run, someone will suffer harm.

Finally, Hybrid MSC II can deal with Desideratum 1, which proved the downfall of its counterpart. If you \( \phi \), \( X_i \) faces a 0.5 probability of death, \( Y_{1,\ldots,n} \) are fine; if you \( \psi \), \( Y_{1,\ldots,n} \) face a 0.000001 risk of death, \( X_i \) is fine. Suppose \( n \) is 10,000,000. \( X_i \) plausibly has an ex ante claim: one is not required to suffer a 0.5 probability of death in order to avert 10 expected deaths. Even though the competing ex post interests are relevant to \( X_i \)’s interest, they don’t outweigh it by enough to prevent his interest being protected by a claim. \( Y_{1,\ldots,n} \) on the other hand, plausibly do not have ex ante claims. Their ex ante interest is sufficiently outweighed. One is required to bear a 0.000001 risk of death to avert 0.5 expected deaths.

So far, this is just the same as Hybrid MSC I. But this principle insists that if \( X_i \)’s claim is not part of a set of undefeated ex ante claims, we should not serve it. In this case, the set has a single member. And it is defeated: the ex post interests of \( Y_{1,\ldots,n} \) do outweigh it—10 expected deaths to 0.5. So we have no undefeated sets of ex ante claims to serve. So we should simply maximise morally-weighted expected well-being, by saving \( Y_{1,\ldots,n} \).

So, Hybrid MSC II meets all our intuitive Desiderata. It is also an extension of objectivist MSC. Consider our original case, Life for Headaches. If you \( \phi \), \( X_i \) dies and \( Y_{1,\ldots,n} \) are fine; if you \( \psi \), \( X_i \) is fine and \( Y_{1,\ldots,n} \) suffer a minor headache. \( X_i \) has an ex ante claim: the ex post interests of \( Y_{1,\ldots,n} \) in avoiding headaches are irrelevant to his interest in avoiding death. \( Y_{1,\ldots,n} \) lack ex ante claims, because their interests in avoiding a headache are sufficiently
outweighed by $X_i$'s interest in survival. So you should $\psi$, saving $X_i$.

Now consider *Life for Legs*. If you $\phi$, $X_i$ dies and $Y_{1..n}$ are fine. If you $\psi$, $X_i$ is fine and $Y_{1..n}$ each lose a leg. Suppose that $n$ is low enough that $X_i$ has an *ex ante* claim: he is not required to sacrifice his life to avert $n$ legs being lost. But $Y_{1..n}$ also have *ex ante* claims: one is not required to sacrifice a leg to save someone else's life. If $n$ is above a lower threshold, however, then $X_i$'s *ex ante* claim is defeated, because it is outweighed by the relevant competing *ex post* interests. $Y_{1..n}$'s *ex ante* claims are part of a set of undefeated *ex ante* claims, so you should serve them.

Is Hybrid MSC II genuinely explanatory? If claims get priority over interests, then why should we ignore *ex ante* claims that are merely outweighed (not sufficiently outweighed) by relevant competing *ex post* interests? If those relevant *ex post* interests can genuinely defeat *ex ante* claims, then why not protect them with claims as well?

The first point is perhaps more easily dealt with than the second. My anti-aggregationist principle is hostile only to some kinds of aggregation. And unlike Voorhoeve, I never claimed that we may aggregate only claims. My first insight was that relevant interests can, in the aggregate, undermine a claim. What we have here is another example of the same phenomenon. Relevance to the competing interests, not the fact that it is the object of a claim, is the necessary condition for aggregation of interests being admissible.

But why aren't these relevant *ex post* interests protected by a claim? That would be just as consistent an extension of objectivist MSC, but it would force us more towards the results of *ex post* MSC. Here I think Hybrid MSC II stands in need of more argument. I do think an argument can be offered, however.

Claims are fundamentally grounded in the interactional dimension of morality, and in particular the requirement to treat one another with appropriate respect. Whether or not I treat you with respect cannot simply be determined by objective facts such as whether or
not your interest is satisfied. Instead, there must be subjective elements as well—in particular, the fact that I knew, or should have known, that my action would have the effect, say, of thwarting your interest.56

Protecting only ex ante interests with claims does justice to this interactional dimension of morality: it says that we treat one another with the appropriate respect when we act as the available evidence dictates that we should act. If we get unlucky, and someone's interest is in fact thwarted ex post, we have not shown them a lack of respect, if we did the right thing on the evidence available.

Ultimately the argument for Hybrid MSC II has to be this: anti-aggregationist principles must take both ex post and ex ante interests into account. Hybrid MSC II does so in a way that vindicates the most plausible intuitive verdicts on a range of cases, and is motivated by a compelling account of our duties of rescue. It is also linked to a sensible notion of what claims are fundamentally about: what we can reasonably demand of one another. It gives ex ante interests priority without totally silencing ex post interests, as Hybrid MSC I and ex ante MSC do. So I think its success at delivering intuitively plausible verdicts is not merely accidental: it offers a systematic way to balance competing ex post and ex ante interests in a manner that draws on deep currents of thinking about how to understand moral decision-making under risk.

7. Conclusion

There are many issues yet to work out, in applying anti-aggregationist moral theory to decision-making under risk. I cannot hope to have addressed them all. However, I have offered a menu of options for deontologists tempted by the standard verdict on Life for

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Headaches, but concerned by the criticism that they will not be able to sensibly extend their view to decision-making under risk.

The first option is to look deeper into heterodox decision theory; there may be resources there for improving on the obvious failure of its orthodox counterpart. I am not optimistic, but nothing I have said here rules this route out.

The second viable choice is ex post MSC. This is an elegant and appealing principle, and should suit those who think that the ultimate right- and wrong-makers are facts about the objective world, which don't take our epistemic position into account. Of course, ex post MSC breaches Desideratum 4, so these folks must concentrate their energies on showing that this Desideratum is mistaken. There are some promising avenues that can be pursued here.

The third option is Hybrid MSC I. This is perhaps more elegant than its replacement, and suits those who think that the ultimate right- and wrong-makers take epistemic position into account, and who are ultimately not too opposed to some inefficiency in morality, when it comes to saving lives. The obvious challenge for such a view is to defend that inefficiency.

And finally there is Hybrid MSC II. It hits all the intuitive touchstones, and jibes well with the view that our claims on others must be sensitive to their information. It seems to balance ex post and ex ante interests in a well-motivated and appealing way. This is my preferred approach. Ex post MSC is appealing too, but it is hard to believe that people's ex ante interests can simply be ignored. After all, in almost every decision-making situation that we actually face, people's ex ante interests are all we have to go on.⁵⁷

Of course, even once we have settled on one of these principles, there remain many challenges ahead—in particular, applying them to more complex choice situations than

⁵⁷ And yet some people take quite the opposite view. See, for example, Marc Fleurbaey and Alex Voorhoeve, 'Decide as You Would with Full Information! An Argument against Ex Ante Pareto', in Nir Eyal et al. (eds.), Inequalities in Health: Concepts, Measures and Ethics (New York: Oxford University Press, 2013), 113-128.
those on which I have focused. And no doubt one could complain that all of these options are excessively complex. It is worth finishing, then, by remembering just how flawed the simple versions of these views are. *Ex Ante MSC* is a simple view, but would tolerate permitting an arbitrarily high number of expected deaths, provided each individual faced a low risk, in order to avert a high risk to one person. I also considered a simple version of *ex post* MSC, but that would never tolerate risks of higher order harms for the sake of averting risks of lower order harms, no matter how high the latter risks, and to how many people. The decision-theoretic approach was quite simple, but also was clearly flawed. Perhaps this is all reason to reject anti-aggregationism entirely, and return to the simple comforts of aggregationism. But the implications for *Life for Headaches* remain seriously problematic. And as the history of contemporary decision theory shows, dealing with decision-making under risk generates ample complexities within aggregationist (consequentialist) moral theories as well. Complexity seems to be inescapable. Where aggregation and risk are concerned, there is good reason to think that complexity in the theory mirrors complexity in the moral facts.