THE TWO-STAGE WEIGHTED LOTTERY SOLUTION TO THE NUMBER PROBLEM:
A DEFENCE

A thesis submitted to the University of Manchester for the degree of Doctor of Philosophy

2016

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Abstract

The University of Manchester
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PhD (Politics)
The Two-Stage Weighted Lottery Solution to the Number Problem: a Defence
1st March 2016

The subject of this thesis is the Number Problem, a question of distributive justice in which an indivisible benefit or burden must be allocated to one group of individuals at the expense of at least one other group, where the groups contain different people. When these groups differ in size, the Number Problem asks whether the interests of the largest group should always prevail in virtue of the greater number of people that stand to benefit. My answer is that they should not, that we should hold a two-stage weighted lottery to decide what to do. My method begins by assessing the relative loss facing each person in the problem, connecting the strength of a person’s claim for aid to the magnitude of the potential loss that they face. Claims are then given a chance of selection in proportion to their relative strengths by way of a lottery in the first stage of my solution. The result of the lottery is then optimized in accordance with the Pareto principle in the second stage, giving the overall result that individuals in larger groups stand a proportionally greater ex ante chance of receiving the good under distribution.

The arguments in this thesis divide into two broad thematic sections: arguments in favour of my solution and objections to rival approaches. Included within the former are two arguments that demonstrate how the two-stage weighted lottery result can be derived from the rival positions of equal maximum chances and claim balancing. Similarly, I offer a range of responses to the main objections to the two-stage weighted lottery here. These objections include the ‘incredulous stare’, the criticism that my solution implausibly gives one person some chance of being saved at the expense of everyone else alive.

After considering and rejecting three alternative solutions – equal maximum chances, claim balancing and hybrid – the final part of the thesis addresses the expanded Number Problem where the choice concerns both different sized groups and different potential individual losses. Here I demonstrate that the two-stage weighted lottery approach can solve the most complex expanded Number Problem – even when the choice involves overlapping sets of individuals and different probabilities of successfully aiding each person.
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Acknowledgements

This thesis is the product of a long and difficult process, made easier by some of the people I would like to thank here. My first debt is to my supervisors, all five of them, but particularly to Alan Hamlin and Stephanie Collins. My previous supervisors, Kimberley Brownlee, Thomas Sinclair and Jon Quong, were responsible for my supervision during the first three years on the PhD course. During that time they helped me through a range of personal problems with compassion and understanding, something I will always be grateful for. On a similar note, I would like to thank the administrative staff at the University of Manchester who have shown great patience and kindness towards me over the years. Both Philippa Wilson and Ann Cronley deserve particular praise in this regard. I would also like to highlight the important contribution made by my PhD completion support advisor, Mark Elliot, whose optimism regarding my prospects of finishing was often far greater than my own.

My greatest debt in terms of academic support is to my final two supervisors, Alan Hamlin and Stephanie Collins. Put simply, their contribution to this thesis is so great that I would surely have failed without them. Both Alan and Stephanie have been incredibly generous supervisors, going way beyond what anyone could reasonably expect of their academic advisors. Not only have they helped me to achieve what I thought was impossible in completing the thesis, I am undoubtedly a better philosopher and writer as a result of their efforts. I will always be incredibly grateful for their wonderful support.

I would also like to thank both my friends and my extended family. My friends have listened, encouraged and supported me throughout. While they will undoubtedly be pleased that I have finished writing my thesis, I am certain that they will not miss hearing about the Number Problem in the future! My extended family have had a particularly important role to play, taking care of my immediate family and allowing me to concentrate on the PhD. They should be rightly proud of how they have helped us all.

My final thanks must go to both my girlfriend, Rebecca, and my immediate family. The support I have received from those closest to me has been absolutely essential in finishing this thesis. To Jenny and her new family, your bravery in the face of potential tragedy has been an inspiration. To my Mum, your unconditional love and encouragement has been both overwhelming and humbling. To Rebecca, you have lived and breathed every moment of this
thesis – any success that I have is therefore ours not mine. Lastly, I would like to dedicate this thesis to my Dad. They say that a man is only as good as his word, in finishing this thesis I have kept my final promise to him.
Chapter 1: Introduction

The Number Problem asks an apparently simple question: when a choice must be made between preventing a loss to one of two groups of people, should we always aid the larger group, all other things being equal? In this thesis I will argue that the answer is no, at least in the sense that numbers should count decisively. Faced with a choice between saving the life of either one person or two, some would argue that the numbers should determine the choice and that we should always save the greater number. I disagree; my solution is to use a two-stage weighted lottery to decide. This approach gives those in the larger group a proportionally greater *ex ante* chance of survival, in contrast to the policy of always saving the greater number.

This opening chapter provides a more detailed introduction to the Number Problem and the arguments deployed throughout the thesis; there are three sections. First, I explain the purpose of thesis and set out the main questions that I aim to answer (1.1). Second, I consider a range of practical examples where lotteries have been used as a tie-breaking decision maker (1.2). Third, I describe the structure of the thesis and explain how each chapter connects to the overall argument (1.3).

1.1 Purpose of the Thesis

The primary topic of this thesis is the Number Problem, a question of distributive justice where the decision affects groups of people in potentially different ways and where these groups are of different sizes. If the good under distribution is indivisible and insufficient to satisfy all individual demands simultaneously, who should get what and why? The Number Problem is so named in reference to its key feature, the different numbers of individuals on each side of the problem. The choice may be summarised as the choice of which group of individuals to aid, where the groups are of different sizes and where the smaller group is not a sub-set of the larger. If we must decide whether to save the life of one person or two, the problem disappears if we know that the first person is included in the second group. This is not a Number Problem case; the key question here is whether the interests of one group should prevail over those of another solely because one group is larger. This is the question
posed by John Taurek, whose paper started the Number Problem debate in 1977. He asks: ‘Should the Numbers Count?’.

Taurek’s answer is that the numbers do not count, that the only morally relevant consideration is the loss to each individual rather than the aggregated losses of a group. This argument highlights the first important question that I must answer in this thesis, that of assessment. When two or more individuals call for aid and it is impossible to help them all, our response should reflect the potential loss that each person faces. This requires some method by which each loss can be measured. With an understanding of the magnitude of each person’s potential loss, the next question is how these losses both can and should be compared. Following Taurek, I consider potential losses in terms of individual claims. Each person who stands to suffer a potential loss is acknowledged as having some claim to avoid that loss. Notably, there are actually two questions that need to be answered here: how claims relate to potential losses and how claims interact with one another. The second of these, how to resolve the competition between individual claims, is the essence of the Number Problem.

Taurek’s arguments in ‘Should the Numbers Count?’ are targeted at the consequentialist policy of always benefitting the larger group in the Number Problem. According to the consequentialist view, it is a worse thing that more, rather than fewer, people suffer the same loss. As such, two people dying rather than one is said, by the consequentialist, to be twice as bad as the alternative. Taurek rejects both this agent-neutral reasoning and the notion of aggregation that it involves. Losses are only ever losses to a person, not a group, and no person stands to suffer a potential loss greater than any other in the Number Problem. As such, the death of two individuals is simply two instances of the same loss, not one instance of a loss twice as large. Taurek’s anti-aggregative argument leads him to propose his equal maximum chances solution; the idea that each person should be given the same chance of avoiding their equal potential loss in the Number Problem, consistent with the same maximum chance for all.

Taurek’s proposed solution to the Number Problem provoked considerable debate. Inspired by Taurek’s anti-aggregative argument but unhappy with his conclusion, Kamm (1985, 1998) and Scanlon (1998) proposed a different method for resolving the competition between equal claims: claim balancing. Kamm’s contribution to the debate goes beyond the claim balancing position; she is also responsible for a modified version of Kavka’s weighted lottery solution (1979), which in turn was reinterpreted as a two-stage procedure by Timmermann (2004). The debate focussed attention on four possible solutions to the Number Problem - the
consequentialist policy of always saving the greater number, Taurek’s equal maximum chances, Kamm and Scanlon’s claim balancing and (two versions of) the weighted lottery approach – and these four positions form the basis of the arguments in this thesis. In addition, a hybrid approach has been proposed by Sanders (1988) which combines the first two positions. The original version of the hybrid position uses Taurek’s equal maximum chances solution in some situations and simply saves the greater number in others. A second version of the hybrid account, developed by Peterson (2009), replaces Taurek’s approach with the weighted lottery.

The purpose of this thesis is to argue for and defend the two-stage version weighted lottery solution, demonstrating how it solves both the ideal and expanded versions of the Number Problem. In the ideal case, the choice is between preventing a descriptively identical loss to two groups of anonymised persons. As such, it is reasonable to presume that the loss facing each person is the same and thus that their claims to avoid that loss are equally strong. In the expanded version of the problem, this presumption disappears as the choice is now between individuals who face descriptively different losses. The ideal version of the Number Problem is therefore designed to avoid the difficult question of assessment, limiting the debate to adjudication between claims only. This simplification is useful in the sense that it facilitates an easier comparison between the rival solutions, at the expense of the practical relevance of the problem. The expanded Number Problem is designed to increase the range of practical cases that my argument pertains to.

In summary, this thesis is designed to answer the difficult questions of assessment and adjudication in the Number Problem in favour of the two-stage weighted lottery approach. In order to do so, I will need to demonstrate why my preferred solution is superior to the rival positions of equal maximum chances, claim balancing, one-stage weighted lotteries and both versions of the hybrid method. Before setting out the general structure of the thesis in Chapter 1.3, the next section provides a range of examples where lotteries have been used to make decisions in a practical setting.
1.2 Some Example Lotteries

The idea of using chance as a decision maker is not a new one, dating back at least as far as Ancient Greece. As Jon Elster notes in 'Taming Chance: Randomization in Individual and Social Decisions' however:

Randomization ... as a possible method for allocating resources ... has not, to my knowledge, received sustained and systematic attention.¹

Given that my solution to the Number Problem involves a lottery, the purpose of this section is to highlight some of the most interesting examples of decision making by lottery in real-life cases. Importantly, these examples refer to both unweighted and weighted lotteries.

Perhaps the earliest mention of selection by chance is found in Ancient Greek mythology, where Zeus, Poseidon and Hades drew lots to decide which dominion each would rule over.² The Ancient Greeks also embraced the use of lotteries in political decision making, employing the method of sortition in selecting magistrates and jurors. The same method, with some modifications, is used today for the selection of juries. The process of sortition is relatively straightforward: having identified the eligible candidates, each person is given the same chance of selection by way of a lottery. Allocating the potential benefit of political influence in this way is said to be procedurally fair, in the sense that each candidate has the same chance of selection. Importantly, the overall fairness of the process depends upon the reasons for holding a lottery in the first place; a procedurally fair lottery is not a guarantee of fair outcome.

Another example of an unweighted lottery is conscription by military draft. The United States has utilised a draft lottery during three conflicts: World War I (one draw in 1917, two draws in 1918), World War II (one draw in each of 1940, 1941 and 1942) and the Vietnam War (various draws between 1969 and 1972).³ As with the method of sortition, the draw is made between eligible candidates only. Potential candidates for military service are assessed in terms of a variety of attributes: gender, age, health, occupation, nationality, educational status, family responsibilities, religion, prior service, etc. While each of these potential restrictions can be controversial, the lottery approach avoids the possibility of bribing your way out of military

² The Bible also contains various references to the drawing of lots, this is discussed in Fienberg (1971: 255) and Elster (1989: 117-8).
³ Fienberg (1971) offers a detailed investigation into the 1970 draft lottery.
service. Prior to 1917, potential conscripts could simply make a financial contribution to the war effort in lieu of their service.

The examples of sortition and conscription by draft lottery involve an unweighted lottery, however both of these approaches are compatible with a weighted process. In the conscription example, it is reasonable to presume that certain candidates will be better suited to military service than others. If the probabilities of selection are weighted in favour of selecting the most able soldiers, it is likely that the outcome will be superior from a military standpoint to the alternative under an unweighted lottery. This modified lottery may well be objectionable on the grounds of both justice and fairness however.

A better example of a weighted lottery is found in the NBA draft. Contested between the fourteen US basketball teams with the worst record that year, a weighted lottery is used to decide which three teams have the right to the coveted first, second or third picks of the unattached players available for the next season. Only the first three picks are allocated by the draft lottery, with the remaining players chosen by teams in accordance with the inverse order of their finishing positions. The lottery itself is not weighted; fourteen numbered balls are mixed by machine and four are drawn at random. This generates a four number sequence, like 1-2-3-4. Given that there are fourteen balls and the order that they come out is not important, there are a total of 1,001 possible combinations. The combination 11-12-13-14 is discounted if drawn, leaving a total of 1,000 valid possibilities to distribute amongst the teams.

In the post-2013 version of the draft, the team with the worst record in the previous season (ranked #1 in the draw) is allocated 250 of the possible 1000 combinations. The second worst team has 199, the third 156 and so on. Ultimately, the chances of winning the lottery are dramatically better for the very worst teams; #1 has a one in four chance of getting first pick whereas the best team in the draw, #14, has only a one in two hundred chance of similar success.

The NBA draft is an example of a two-stage weighted lottery procedure, a feature in common with my solution to the Number Problem. In the NBA example, the lottery itself simply selects four balls from fourteen possibilities in the first stage; it is not weighted. The weighting comes in how the 1,000 potential combinations are allocated to the teams in the second stage. The NBA draft has been through a number of iterations. Prior to 1984 a simple coin toss between the two worst teams was used to decide which would get the first of two first picks, with the rest decided by inverse position. Post 1984, all non-playoff teams had an equal chance of picking first, second and so on, and this system lasted until 1987, after which only the first
three picks would be decided in this way. The NBA changed from the standard lottery to a weighted system in 1990, altering the weightings in 1993 to further increase the chance of the worst teams getting the top picks. Interestingly, there are similarities between the changes in the NBA draft procedure and the evolution of the Number Problem debate. Both begin with a coin toss, before moving on to an unweighted lottery and finally a weighted one.

Perhaps the most interesting practical application of a weighted lottery is the ‘Numerus Fixus’ system for allocating university places on oversubscribed courses. Currently used in Holland, notably for medical school applications, the older West German version was described by Elster as:

> Applicants are rated on a point system, with probability of admission proportional to the number of points.

Presuming that each candidate in the lottery has met some threshold requirement, i.e. that they are reasonably likely to pass the course, the weighted element of the lottery gives the best qualified students a higher chance of admission. The Numerus Fixus approach allows for a wide range of possibilities, depending upon how the lottery is weighted. If the best qualified students are given an overwhelmingly greater chance of selection for admission, the overall result will be very similar to a policy of selecting on merit without using chance. Similarly, if the weightings are set up so that there is only a minimal difference between the relative chances of the candidates, the results of holding a weighted lottery will be very similar to that of an unweighted lottery process.

As seen in the NBA draft and Numerus Fixus examples, the intuitive appeal of the weighted lottery approach relies heavily on the justification for weighting the lottery. This refers back to the key questions I must answer in this thesis, set out the first section of this chapter. The Number Problem is a matter of assessment and adjudication, where the former is necessarily prior to the latter. Rival solutions to the problem may concur regarding the assessment of potential individual losses, yet disagree about how we should adjudicate between them. While it is clear why the lottery should be unweighted in the sortition and conscription examples, reflecting the equal status of the candidates in terms of their citizenship, the justification for weighting the NBA draft and Numerus Fixus examples is less straightforward. As such, my argument for the two-stage weighted lottery will also have to answer the key question of why the outcome is weighted in favour of the larger group or why we do not simply follow Taurek and give each person the same chance here.
In summary, there are many practical examples of where a lottery has been used as a decision maker. While there are fewer examples of weighted lotteries, the lesson of the NBA draft and Numerus Fixus cases is that the decision to weight the probabilities must be fully justified. In the next section I set out the details of my argument in this thesis, explaining the main points in each chapter.

1.3 Structure of the Thesis

The structure of this thesis is designed to reflect the evolution of the Number Problem debate over time. As such, I begin with the origin of the problem in Chapter 2, defining the ideal Number Problem alongside Taurek’s equal maximum chances solution. In Chapter 3, I address the claim balancing approach favoured by Kamm and Scanlon before considering the two-stage weighted lottery in Chapter 4. Chapter 5 is the longest of the thesis, beginning with objections to the weighted lottery and my responses before addressing the hybrid solution. The final chapter, Chapter 6, differs from the rest of the thesis in the sense that it refers to the expanded, rather than ideal, Number Problem; here I set out my argument as to why the two-stage weighted lottery can solve even the most complex Number Problem case. The purpose of this section is to set out the structure of the thesis in rather more detail, explaining how each of the main arguments fit together.

Chapter 2 divides into three thematic sections. Beginning with section 2.2, I refer to Taurek’s ‘Should the Numbers Count?’ to define the general form of the Number Problem. At the end of the section 2.2, I then define the ideal Number Problem – a special case Number Problem where the choice concerns anonymised individuals facing descriptively identical losses. The second section, 2.3, concerns Taurek’s arguments against the consequentialist policy of always saving the greater number alongside his equal maximum chances solution. This section is divided into three parts; section 2.3.1 on the moral permissibility of saving one person rather than five, section 2.3.2 on classic utilitarianism and section 2.3.3 on the equal maximum chances solution. The final parts of the chapter, sections 2.4 and 2.5, address a range of objections to Taurek’s position. Section 2.4 considers Scanlon’s ‘Making a Difference’ objection (1998: 234) and Otsuka’s response on Taurek’s behalf (2000, 2006). Section 2.5 relates to two novel objections relating to overlapping sets of individuals and different probability of success cases.
The purpose of Chapter 2 is therefore three-fold. First, to set out a clear definition of the general and ideal versions of the Number Problem. Second, to explain Taurek’s agent-relative reasoning and his anti-aggregative equal maximum chances solution. Third, to justify my rejection of Taurek’s conclusion in light of the objections considered.

Chapter 3 is primarily concerned with the claim balancing solution, although it also includes a section on the Aggregation Argument. Section 3.2 begins with the original form of claim balancing, credited to Kamm (1998: 116-7) and Scanlon (1998: 229-241). Next, section 3.3 considers Otsuka’s ‘Scales of Justice’ objection (2000) to original Kamm-Scanlon claim balancing. Section 3.4 addresses a modification of the claim balancing position in light of Otsuka’s objection, Kumar’s claim neutralising or Scanlon-Kumar claim balancing (2001), before rejecting this revised position in light of a further objection from Otsuka (2006). The final section on the claim balancing approach, 3.5, is of particular significance for my arguments in Chapter 4. This section is concerned with Timmermann’s two objections to claim balancing, ‘interchangeability’ and ‘sequencing’. Chapter 3 finishes with a discussion of Kamm’s Aggregation Argument in section 3.6. This argument, like the claim balancing approach, seeks to justify the consequentialist policy of always saving the greater number without relying on aggregative reasoning. Ultimately, I follow Lübbe (2008) in rejecting the Aggregation Argument.

The purpose of Chapter 3, like Chapter 2, is three-fold. First, to set out both the Kamm-Scanlon and Scanlon-Kumar versions of the claim balancing solution. Second, to demonstrate why Otsuka’s and Timmermann’s objections are sufficient to reject the claim balancing position. Third, to address Kamm’s Aggregation Argument and explain why it should be rejected in light of Lübbe’s objection.

Chapter 4 is concerned with both the derivation and justification for the weighted lottery solution to the Number Problem. The chapter begins, in section 4.2, with Timmermann’s two-stage individualist lottery. In section 4.3 I demonstrate how the claim balancing position can be modified in accordance with Timmermann’s objections from Chapter 3.5 to derive the two-stage weighted lottery procedure. Section 4.4 considers two further methods by which the weighted lottery result can be reached: Saunders (2009) two-stage inverse lottery and my multiple coin flipping approach. The chapter finishes with an overview of the positive features of selecting by weighted lottery in section 4.5.

Chapter 4 is designed to fulfil two important roles in my overall argument. First, to demonstrate a range of potential derivations of the weighted lottery solution. Second, to
highlight the positive properties of using chance as a decision maker in this way. Importantly, my first derivation of the lottery result represents a novel synthesis between Taurek’s arguments in ‘Should the Numbers Count?’ and the claim balancing method of Kamm, Scanlon and Kumar.

Chapter 5 is the longest of the thesis and divides into two thematic parts. The first part of the chapter is concerned with the many objections to the weighted lottery. Section 5.2 addresses two objections from Hirose (2014) relating to ‘none-or-all’ and the ‘inverse lottery’. Section 5.3 examines Scanlon’s ‘reshuffling’ objection and my responses. Arguably the most serious objection to the weighted lottery result is the prospect of saving one person at the expense of a very large number and, in the extreme case, everyone else alive. These kinds of cases, where the choice is between saving a very small group or a very large one, are discussed in section 5.4 on the ‘incredulous stare’ objection.

The second theme in Chapter 5 relates to the hybrid solution to the Number Problem, the idea that the numbers should sometimes count. In section 5.5 I consider three versions of the hybrid position in Sanders (1988), Kamm (1998) and Hirose (2014) alongside my own modified hybrid account. The chapter ends with my rejection of the general principle of the hybrid approach on the grounds that it is implicitly aggregative with respect to group losses.

The purpose of Chapter 5 is therefore two-fold. First, to consider a wide range of objections to the two-stage weighted lottery solution and respond to each with arguments that, I believe, overcome the various objections and leave the weighted lottery solution intact. Second, to introduce and ultimately reject the various hybrid positions.

The final substantive chapter of the thesis, Chapter 6, concerns the expanded Number Problem. Unlike the ideal case, the expanded Number Problem includes descriptively different losses and non-anonymised individuals. The chapter begins by considering a potential simplification of the problem, one that would effectively transform the expanded problem back into an ideal case by invoking ‘irrelevant utilities’. Section 6.2 considers both Kamm’s Principle of Irrelevant Utilities (1998: 146-150) and Scanlon’s broad moral categories (1998: 238) as the potential basis for this simplification, before rejecting both in light of Hirose’s objection (2014: 119). Section 6.3 is then concerned with how the potentially different individual losses in the expanded Number Problem can be assessed, introducing the Quality Adjusted Life Year (or QALY) metric. A modified version of the QALY, the WellbeingAdjusted Life Year (or WALY), is then used in section 6.4 as an interpersonally comparable measure of potential losses. Connecting claims to losses in the same way as set out in Chapter
2.2, I then demonstrate how the two-stage weighted lottery solves the expanded Number Problem. The final section of the chapter, 6.5, considers some potential objections to my solution alongside a range of possible applications.

The final chapter of the thesis differs from the other substantive chapters in the sense that it concerns the expanded, rather than ideal, version of the Number Problem. There are four main points addressed by the arguments in this chapter. First, that the expanded Number Problem cannot be simplified into the ideal case by reference to the notion of irrelevant utilities. Second, that a modified form of the QALY metric – the WALY – is suitable for assessing the potential loss facing each person. Third, that the potential loss facing each person can be compared interpersonally, justifying an unequal weighting of claims in the lottery. Fourth, that the two-stage weighted lottery can be used to solve the wide range of practical cases encompassed by the expanded Number Problem.

Taken together, the arguments in this thesis are designed to show that the two-stage weighted lottery approach offers a robust solution to both the ideal and expanded versions of the Number Problem. In addition, I will argue that all of the other proposed solutions in the literature fail and should be rejected.
Chapter 2: Taurek and the Origins of the Number Problem

2.1 Introduction

The Number Problem debate begins with John Taurek’s 1977 paper ‘Should the Numbers Count?’. In his famous paper, Taurek considers a moral problem in which a choice must be made between saving either one person or five, where it is impossible to save all six. Rejecting the consequentialist policy of always saving the greater number, Taurek suggests an equal maximum chances solution instead.\(^4\) Using a fair coin to decide who to save here, Taurek gives each individual the same one in two (1/2) chance of survival. This controversial conclusion, motivated by a commitment to anti-aggregative and individualist reasoning, is the logical starting point for any enquiry concerning the Number Problem.

This chapter is divided into four substantive sections, each addressing a different facet of Taurek’s paper. Section 2.2 uses Taurek’s examples to help define the Number Problem, setting out the very specific version of the problem under consideration in the first part of this thesis – the ideal Number Problem. Section 2.3 examines the primary argument in ‘Should the Numbers Count?’, including a subsection (2.3.2) on the relationship between Taurek’s position and consequentialism. Section 2.4 considers Scanlon’s objection to Taurek from What We Owe to Each Other (1998) and Otsuka’s reply to Scanlon in ‘Scanlon and the Claims of the Many Versus the One’ (2000). Finally, section 2.5 concerns my own objections to Taurek and the problem his solution faces when dealing with choices involving overlapping sets of individuals and different probability of success cases. Ultimately, I reject Taurek’s equal maximum chances solution in light of these objections but not his anti-aggregative individualism.

At this stage, it is helpful to preface my arguments in this chapter with a brief point of clarification. Section 2.3.2, concerning Taurek’s rejection of hedonistic act utilitarianism, is best understood as an overview of the relationship between the two positions, rather than an

\(^4\) Throughout this thesis I will refer to Taurek as *arguing* for the equal maximum chances solution, rather than merely claiming that this is one possible approach compatible with his agent-relative reasoning. This is in keeping with the vast majority of the literature, however it is important to note that Kavka (1978) understands Taurek’s argument in terms of property rights; that no individual in either group is wronged when the owner of a drug decides to use it to benefit one needy person rather than five (1978: 285).
argument against consequentialism as a whole. While it is true that consequentialism plays a key role in the genesis of the Number Problem, motivating Taurek's arguments in 'Should the Numbers Count?', this thesis presumes an anti-consequentialist worldview at the outset. As such, the goal of the thesis is therefore to demonstrate the superiority of the weighted lottery solution to the Number Problem over all other non-consequentialist approaches, rather than to persuade consequentialists of the flaws in their normative framework.

2.2 Defining the Number Problem

The Number Problem is a matter of distributive justice. As Taurek begins his paper:

We have resources for bestowing benefits and for preventing harms. But there are limitations.5

These limitations fall into two categories. In the first, some people simply lie outside the scope of the problem. No matter which choice is made, it is impossible for us to bestow any benefit upon them. The second limitation is common to all problems of distributive justice, that our limited resources are insufficient to satisfy every demand. When faced with such a problem, the operative question is who should get what and why. These choices often concern trivial matters, questions of convenience or petty preferences. In some cases however, the resource under distribution is a matter of life and death. The classic version of the Number Problem outlined in 'Should the Numbers Count?' is a special version of this second scenario. In this section, I follow Taurek's arguments in setting out three principles which define the Number Problem. These are the absence of special facts, the lack of prior arrangements between the parties and the presumption of equal losses.

Taurek begins his discussion of the Number Problem with the Drug Case example, where he must choose whether to give a life-saving drug to his friend David or five strangers (1977: 294). The asymmetry in the problem is a result of the physiological differences between the six people: David requires the full dose to survive whereas the strangers each require only one-fifth. Before addressing the moral quandary facing him, Taurek considers the problem in terms of a choice between one and five with 'other things being equal':

5 Taurek (1977: 293)
What is being ruled out by the ‘other things being equal’ clause?

One thing … I think, is the possibility of special facts about the one person that would … make his death a far worse thing than one might otherwise have supposed.⁶

What does Taurek mean by ‘special facts’ here? He suggests two positive examples, that of a medical genius on the verge of curing a terrible disease and a master diplomat who alone is capable of bringing peace to an ancient conflict (1977: 294). Similarly, negative special facts may also impinge upon our decision making. The presence of some infamous murderer, despot or malcontent in the problem would likely count decisively against that individual. The purpose of excluding these special facts is easy to understand; when the choice in a Number Problem is between saving your child or a mass murderer, it is really no choice at all. By excluding positive and negative facts about the individuals in the problem at the outset, both from an agent-neutral and agent-relative perspective, Taurek seeks to ensure that the outcome is not predetermined by prior conditions. The Number Problem is therefore designed to reflect our competing intuitions regarding different numbers, rather than kinds, of people.

Later in ‘Should the Numbers Count?’ Taurek considers a potential Number Problem case where ties of duty, rather than friendship or family, seem to automatically decide who survives. In his Volcano Case example, the inhabitants of a small island flee a volcanic eruption, congregating at the two furthest points from the blast to the north and south (1977: 310-5). With only one Coast Guard ship nearby and insufficient time to save both groups, the captain faces the choice between saving the great many islanders to the north or the tiny number in the south. Whether this is a Number Problem case according to the definition used in this thesis depends upon a further fact. If the policy of the Coast Guard is simply to save as many lives as possible in all circumstances, the unlucky smaller group to the south could have no complaints when they are left to die. Similarly, if the islanders had decided prior to the eruption that evacuating the north was the priority, rescuing those in the south only if time permits, this arrangement would also determine the outcome of the problem. In both cases, the question of what should be done has been answered in advance. As such, neither scenario would fall under my definition of a Number Problem case. In light of these examples, it should now be clear why my specification of the Number Problem forbids prior arrangements or agreements between the parties. As with a scientific experiment, we seek to

⁶ Taurek (1977: 294)
investigate one variable at a time by holding all other values constant. To permit the introduction of Taurek's special facts or prior arrangements would be to unnecessarily complicate the moral picture. As mentioned earlier, the only variable in the Number Problem is the number of individuals affected.

The final key characteristic of the Number Problem as set out by Taurek is the equal standing of individuals in the problem. Taurek begins by using Nagel's method of pairwise comparison to assess the relative loss facing each person. Nagel states:

   Where there is conflict of interests, no result can be completely acceptable to everyone. But it is possible to assess each result from each point of view to try to find the one that is least unacceptable to the person to whom it is most unacceptable.\(^7\)

I argue that, following Taurek (1977: 306-7), in the absence of any indication to the contrary, it is reasonable to presume that each individual in the Number Problem is of a similar sort, with a preference for the benefit of selection (survival) over the alternative burden (death). In the Drug example, the question of what should be done simply disappears if we know that David wishes to die and that the other five people do not. It is therefore both reasonable and essential to the functioning of the Number Problem to presume that each person would prefer to live rather than die.

Nagel's method of pairwise comparison comes into play when attempting to answer the next question posed by the Number Problem; if we presume that each person desires the benefit of selection over the burden of non-selection, will each person experience that benefit or burden equally? Taurek focuses on the loss associated with non-selection:

   If I gave my drug to the five persons and let David die I cannot see that I would thereby have preserved anyone from suffering a loss greater than that I let David suffer. And, similarly, were I to give my drug to David and let the five die I cannot see that I would thereby have allowed anyone to suffer a loss greater than the loss I spared David.\(^8\)

This is the first of Taurek's two egalitarian arguments: that individuals in the Number Problem share a common potential loss. The method of pairwise comparison simply takes each possible pair of individuals and compares their relative potential losses as a result of non-selection. When every pair has been assessed, the result in the Drug Case is that each

\(^7\) Nagel (1979: 123)
\(^8\) Taurek (1977: 307)
person stands in an equal relation to one another in virtue of their equivalent potential loss. This assumption of strict equality between the parties is only plausible in an environment of limited information. Consider the alternative: if we know in advance the age or health of the individuals in the problem, these additional factors make assessing the relative loss facing each person much more complicated. Does this imply that we can know nothing about the parties in the Number Problem; that the choice must concern anonymised individuals only? In the idealised version of the Number Problem considered in the main chapters of this thesis, the answer is yes as this permits the purest form of investigation into the competing solutions.9 This contrasts with Taurek’s approach in ‘Should the Numbers Count?’ when considering the Drug Case, as in two versions of the problem the choice concerns his friend David rather than random strangers.

The second of Taurek's two egalitarian arguments concerns the strength of each individual’s claim for aid in the Number Problem. At first it would seem that equality of claims is simply derived from equality of losses and that the latter informs the former. This is indeed my position, that the strength of a claim is proportionally related to the associated potential loss. Taurek’s view is somewhat different:

Here are six human beings. I can empathize with each of them. I would not like to see any of them die.10

The result that each person should have an equal claim over avoiding the burden in the Number Problem is not necessarily a function of equal losses. Taurek grounds his commitment to equality of claims in an empathetic concern for those who stand to suffer, even when their losses are not equivalent. This sentiment echoes the title of Elizabeth Anscombe’s 1967 paper, highlighted in the footnotes of Taurek’s work, ‘Who is Wronged?’ In Taurek’s example of a choice between one individual losing their life against another losing a limb, the loss faced by each person is manifestly unequal. Despite this inequality, Taurek argues that neither individual is wronged when the other is spared their loss (1977: 302-3). This line of reasoning becomes increasingly implausible as the loss to the latter becomes more trivial, yet it is important to note that claims are not necessarily motivated solely by relative losses.11 My

9 Choices involving unequal potential losses are addressed in Chapter 6 concerning the expanded Number Problem.
10 Taurek (1977: 303)
11 Taurek may respond that he is motivated by a concern for those who stand to suffer an avoidable loss, no matter how acute that pain may be. If you stand to lose a leg and I my life, it is no consolation if your loss saves my life; it is a personal tragedy for you all the same. This
initial specification of the Number Problem is designed to avoid these difficult questions; cases under consideration here will therefore be a matter of life and death for all concerned, preserving the reasonable assumption of equal losses. The assumption of equal strength claims follows from my assumption of equal losses, even if there are other ways (such as Taurek’s) of arriving at the same conclusion.

Having set out the main features of the Number Problem in this section, all that remains is to bring these elements together into one coherent definition. To recap, the key properties of a Number Problem scenario (in the order discussed) are:

a) A choice concerning the distribution of a good between two or more sets of individuals where it is impossible to satisfy all demands simultaneously.

b) The good under distribution cannot be shared or usefully divided between all sets of individuals simultaneously, it is indivisible.

c) No special facts pertain to the decision regarding the special positive or negative significance of any individual.

d) No prior arrangements or agreements exist between the parties.

e) Each individual is presumed to desire the benefit under distribution over the burden of non-selection equally.

f) By pairwise comparison, each individual is presumed to experience the potential benefits and burdens equally.

g) The consequences of the decision are a matter of life and death for every individual in the problem.

Expressed in a sentence, rather than as a list of terms, the idealised Number Problem under consideration in this thesis is therefore defined as:

**The ideal Number Problem**: A choice concerning the distribution of an indivisible good between two or more sets of anonymised persons where the decision is a matter of life and death for each individual and it is impossible to satisfy all individual demands simultaneously.

leads to the plausible position that you are owed some consideration here; the loss is avoidable, your pain may be spared.
With a clear specification of the problem in place, it is now possible to address Taurek’s main argument in ‘Should the Numbers Count?’ and his controversial equal maximum chances solution.

2.3 Taurek’s Argument and the Equal Maximum Chances Solution

2.3.1 Taurek’s First Argument: Moral Permissibility

Taurek’s arguments in ‘Should the Numbers Count?’ can be neatly divided into two sections. In the first, he addresses three different versions of the Drug example introduced earlier. Taken together, these three arguments are designed to make the case that it is permissible to save the single person when faced with a choice between rescuing either one individual or five. This leads nicely on to Taurek’s second argument; that the solution to the Number Problem is found in an equal concern for those who stand to suffer. This empathetic concern for the loss to, rather than of, an individual generates his conclusion that we should act to give each person the same maximum chance of avoiding their potential loss. This is the equal maximum chances solution to the Number Problem and it is the subject of the next section of this chapter.

Of the three versions of the Drug example in ‘Should the Numbers Count?’, only the first meets my definition of an idealised Number Problem set out at the end of the previous section. In this formulation of the problem, Drug 1, Taurek has some supply of a life-saving drug and six individuals who will each die without it. Complicating matters is the fact that one person requires all of the drug to survive, while the remaining five need only one-fifth each. After making the basic assumptions that Taurek will not choose to keep the drug for himself and that, if he does distribute it, he will give all of it away, the choice is therefore between saving the life of one person or the lives of five. Asking what ought to be done, Taurek begins his argument by addressing the most common response:

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12 These assumptions are beneficial to overall clarity of Taurek’s argument. Similarly, I have discounted the possibility of Taurek distributing all the drug but in such a way as to save no
To many it seems obvious that in such cases, special considerations apart, one ought to save the greater number. I cannot accept this view.\footnote{Taurek (1977: 294)}

After setting aside the question of special facts (as discussed in the previous section), Taurek offers a potential justification for saving the greater number:

The thinking here is that … the death of five innocent persons is a worse thing, a greater evil, a greater loss, than the death of one innocent person. Since I am in a position to prevent either of these bad things from happening, but not both, I am morally required to prevent the worst.\footnote{Taurek (1977: 295)}

This moral arithmetic has a certain intuitive appeal and the argument underpinning it is deceptively simple. No one would deny that a life saved from a preventable death is a good thing. Similarly, the death of person when they might have been saved is clearly a bad thing. When faced with a Number Problem such as Drug 1, why not act to bring about more of these good things and fewer of the bad by saving the greater number?

If the choice facing Taurek was between saving no one and saving someone, this reasoning would generate the correct conclusion that it is always better to save someone rather that no one. In all three versions of Taurek’s Drug Case however, the choice concerns more than one person. At this stage Taurek introduces a second Drug example, one where the choice is between his friend David and five strangers. Let us call this Drug 2.

Taurek chooses to save his friend David in Drug 2, he states:

\begin{quote}
The fact is that I would act to save David’s life because, knowing him and liking him, my concern for his well-being is simply greater than my concern for the well-being of those others … In securing David’s survival I am acting on a purely personal preference. It is the absence of any moral requirement to save these others rather than David that makes my doing so morally permissible.\footnote{Taurek (1977: 297)}
\end{quote}

It is worth noting here that Drug 2 does not meet my requirements for an idealised Number Problem case as set out in the previous section. The fact that Taurek knows and likes David violates the requirement that the choice be between anonymised individuals. Whether the one (as when giving 50% to the person requiring all of the drug and 10% to each person requiring 20% to live).
relationship between Taurek and David constitutes a special fact or prior arrangement is irrelevant; the anonymised individual requirement is sufficient to rule Drug 2 out as Number Problem under my definition. What is the purpose of discussing Drug 2 here then? I do so as it plays an important role in Taurek’s overall argument.

The final version of the Drug Case in ‘Should the Numbers Count?’ is one where the drug belongs to David, rather than to Taurek. As with Drug 2, Drug 3 is not an idealised Number Problem case for the same reasons. Taken together however, the three Drug examples highlight the first of Taurek’s central points. Consider the following: It is reasonable to presume that the vast majority of people would choose to save the greater number in the first drug example, Drug 1, for reasons similar to those suggested by Taurek. Some of those people would be tempted to help their friend in the Drug 2 Case, even more so when David was someone particularly close to them. Of the majority saving the greater number in the first case, how many would demand that David give up his own drug to the save the five in Drug 3? Taurek argues:

Imagine trying to reason with David as you would, presumably, have reasoned with yourself were the drug yours. "David … you are in a position to prevent either of these bad things from happening. Unfortunately you cannot prevent them both. So you ought to insure that the worst thing doesn’t happen."

Don’t you think that David might demur? Isn’t he likely to ask: ‘Worse for whom?’

This is the primary justification for Taurek’s equal maximum chances solution. When assessed from the perspective of the individuals in the problem, the potential suffering of each person is independent of the numbers concerned. Put simply, the worst possible outcome for David in all versions of the Drug Case is the one in which he is not saved. What David stands to lose in virtue of non-selection is the same as the loss facing any of the other five persons. Presuming that death is equally bad for each person (as we have no reason to think otherwise), this individualistic pairwise comparison of losses generates the result that death in the Drug Case is not ‘worse’ for any individual in particular.

The three Drug examples are designed by Taurek to demonstrate the moral permissibility of saving the lone individual in the first Drug Case. The argument proceeds sequentially. If, as Taurek argues, it is permissible for David to act on his strong personal preference for survival in Drug 3 by saving himself rather than five strangers, why is it morally impermissible for

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16 Taurek (1977: 299)
Taurek to save his friend in virtue of a similar personal preference in Drug 2? Granted, Taurek’s preference for David’s survival in Drug 2 is likely to be less strong than David’s preference for his own survival in Drug 3, but the reasoning behind both positions differs only by degrees of intensity.

Taurek’s final move from Drug 2 to Drug 1 rests on a principle that he recognises as potentially counterintuitive. Put simply, Taurek argues that if it is morally permissible for David to save himself in Drug 3, it must be morally permissible for Taurek to reason from David’s perspective and save his friend in Drug 2. Similarly, if Taurek is permitted to reason from his friend’s perspective and save David in Drug 2, any third-party must be able to use the same reasoning as justification for saving the lone individual in Drug 1. The plausibility of Taurek’s argument here hinges on the loss facing each person. When the choice is a matter of life and death for each, as in the three Drug examples, Taurek’s argument is at its most plausible. When the position is formalised by the following definition, a troubling potential counterargument appears:

If it would be morally permissible for B to choose to spare himself a certain loss, H, instead of sparing another person, C, a loss, H’, in a situation where he cannot spare C and himself as well, then it must be permissible for someone else, not under any relevant special obligations to the contrary, to take B’s perspective, that is, to choose to secure the outcome most favorable to B instead of the outcome most favorable to C, if he cannot secure what would be best for each.\(^{17}\)

Number Problem cases where the parties each stand to suffer the same loss are examples, like the three Drug Cases, where H is the same as H’. When H and H’ are different, Taurek’s view becomes increasingly counterintuitive:

There may well come a point, however, at which the difference between what B stands to lose and C stands to lose is such that I would spare C his loss. But in just these situations I am inclined to think that even if the choice were B’s he too should prefer that C be spared his loss.\(^{18}\)

In his Arm Case example, the choice is between sparing B the loss of an arm or a C the loss of their life. By Taurek’s reasoning, if it is morally permissible for B to choose to save his arm over C’s life, it is morally permissible for any third-party to do the same. Similarly, if the

\(^{17}\) Taurek (1977: 301)
\(^{18}\) Taurek (1977: 303)
choice concerned B’s finger nail and C’s life, Taurek would be permitted to spare B the loss of his finger nail if it was morally permissible for B to do the same. It is important to note that Taurek is not committed to sparing B their potential loss in either case here, merely the view that it is permissible to do so.

Whether these unequal loss cases are a problem for Taurek depends upon the definition of moral permissibility. I have no doubt that many people would choose to save their own arm in the Arm Case, while far fewer would prefer to save their finger nail in the second example. By Taurek’s own definition, the moral permissibility of a third-party choosing to aid B in either case depends upon whether it is morally permissible for B to do so. While many would suspect that there is surely some tipping point, beyond which B’s losses are simply irrelevant in comparison to C’s, this discussion is best left until later in the thesis. Setting the question of tipping points in different loss cases aside for the moment then, what is important here is that Taurek’s argument demonstrates the moral permissibility of saving the lone individual where the loss facing each person is the same (as it is in the three Drug examples).

The first of Taurek’s two key arguments is now in place, that it is morally permissible to save the single person in the Drug 1 Case. His second argument is designed to address not what permissibly could be done in the Drug Case, but what we actually should do. It is important to note that Taurek’s arguments in ‘Should the Numbers Count?’ are targeted at a particular version of consequentialism – hedonistic act utilitarianism. Before moving on to consider his second point and the equal maximum chances solution, it is sensible to first spend some time setting out a definition of the relevant utilitarian position.

### 2.3.2 Taurek’s Target, Classic Utilitarianism, Defined

Consequentialism is the moral theory that determines the normative status of an act solely in virtue of the consequences associated with it. In ‘Should the Numbers Count?’ Taurek aims his argument at hedonistic act utilitarianism or ‘classic utilitarianism’. As such, the discussion of consequentialist theories in this section is limited to classic utilitarianism only.

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19 See Chapter 5.5, notably the discussion of Kamm’s Principle of Irrelevant Utilities, and also Chapter 6.
Before addressing the finer details of the classic utilitarian position, it is helpful to begin with a short definition. Under hedonistic act utilitarianism, actions are assessed in accordance with the net amount of pleasure derived from their consequences. By ranking possible outcomes in accordance with their net hedonistic value, this form of utilitarianism dictates that the only morally permissible act is the one which produces the optimal overall result.

Consequentialist theories function by way of a comparison between outcomes. Before any comparison can occur, the question of intended or actual consequences must be addressed. Under hedonistic act utilitarianism, only the actual consequences of an act matter. As such, the motivation and beliefs behind an act are irrelevant; a benevolent agent who brings about unintentionally negative consequences has still acted wrongly. Similarly, only the direct consequences of an act are relevant. This contrasts with the rule utilitarian position, whereby suboptimal individual acts can be permitted as part of wider system of overall net pleasure maximising rules.

Aside from the fundamental intrinsic value of pleasure and the disvalue of pain, intrinsic values have no place in classic utilitarianism; acts have value in extrinsic terms only. Ultimately, everything is broken down into the same hedonistic calculus. This hedonistic characterisation is deceptively simple: all consequences are assessed in virtue of the pleasure or pain they generate.\footnote{Questions of the potential division between higher and lower pleasures and the differences in quality and quantity of sensation are beyond the scope of this thesis. See Bentham (1825, 1907) and Mill (1861) for further details.}

With an understanding of how consequences are assessed in place, it is now possible for the classic utilitarian position to rank these outcomes. Utilitarianism operates by way of a strict maximisation criterion; only the act producing the optimal balance of pleasure over pain is morally permissible. Similarly, classic utilitarianism is committed to the promotion of the greatest amount of total, rather than average, utility. This principle generates the controversial result that a large, relatively unhappy society is strictly better than a smaller utopian one, if and only if the former contains a greater total amount of net happiness.

The utilitarian edifice rests on an egalitarian foundation. Regardless of status, rank or even species membership, all pleasures and pains are treated equally by the hedonistic calculus. Similarly, outcomes are assessed from an agent-neutral perspective, denying that individuals
can prioritise the interests of their family and friends at the expense of the greater overall good.

The final utilitarian feature is the primary target for Taurek’s arguments in ‘Should the Numbers Count?’: aggregative reasoning. By aggregation, many smaller pleasures or pains can be added together to form one proportionally larger whole. Taurek famously objects that many individuals experiencing a headache does not add up to the same disvalue as one person suffering a migraine (1977: 308), yet this is exactly what the utilitarian commitment to aggregation entails.

With a working definition of classic utilitarianism in place, it is now possible to apply the theory to the Number Problem. In the Drug 1 example, it is reasonable to presume that the burden of non-selection (i.e. death) is equally bad for all six individuals. As such, we assign a negative utility to each death in virtue of the associated presumed pain. By aggregation, the loss of five lives adds up a greater pain, a greater negative utility than the loss of one life alone. The choice is therefore between bringing about either a situation of one or five units of negative utility. By the commitment to maximising total utility, the only morally acceptable action is to save the greater number. The same argument can be made in reverse. Presuming that each person in the Number Problem will lead an equally happy life if rescued, then the act of saving the greater number brings about a state of affairs containing five times as much positive utility as the alternative of saving the one. Given that the classic utilitarian position is committed to the maximising of overall pleasure over pain, it recommends saving the greater number once more.

Classic utilitarianism offers a clear solution to Number Problem: other things being equal, always save the greater number. Taurek’s first argument in ‘Should the Numbers Count?’ objects to the utilitarian conclusion on the grounds of personal prerogative, establishing the moral permissibility of saving the lone individual in his first Drug Case. Taurek’s second argument is designed to answer a second question: if it is morally permissible to save either one stranger or five in the first Drug Case, what should we actually do? Taurek’s solution is to give each individual the same equal maximum chance of avoiding their loss, this is his equal maximum chances approach. In the next section, I consider Taurek’s arguments against agent-neutral and aggregative utilitarian reasoning and set out the terms of his controversial conclusion.
2.3.3 Taurek’s Second Argument: The Equal Maximum Chances Solution

Taurek’s second argument begins with David’s question at the end of Drug 3: ‘Worse for whom?’ (1977:299). Consider the choice from the perspective of a classic utilitarian: David’s decision will allow either one or five people to carry on living. If we presume that each of these six lives will generate a positive balance of pleasure over pain, by aggregation, five lives produce a total positive utility five times greater than that of one. As such, the classic utilitarian view demands that David give up his own drug to save the five. It is this aggregative conclusion that Taurek objects to:

I cannot imagine that I could give David any reason why he should think it better that these five strangers should continue to live than that he should.\(^\text{21}\)

This is not to say that David views his life as more valuable than that of any of the five; rather that from David’s perspective preserving his own life is more important to him. This is an example of agent-relative reasoning; David’s death is the worst outcome from David’s perspective. Similarly, the death of any of the five would represent the worst possible outcome from their perspective. The utilitarian position requires agent-neutral reasoning, suggesting that David’s survival at the expense of the five:

[Is] a worse thing, not necessarily for anyone in particular, or relative to anyone’s particular ends, but just a worse thing in itself.\(^\text{22}\)

I, like Taurek, find it impossible to make sense of such judgements. When something is better or worse, evaluative statements of this nature are incomplete without a subject. Some state of affairs is always better or worse for something, the idea that things might be better or worse \textit{simpliciter} fails to reflect what is of ultimate value. Perhaps the utilitarian could respond by suggesting that David’s survival is worse for the five strangers, for their families and friends. This is undoubtedly true; for each of the five strangers their death is the worst possible outcome. Similarly, from the perspective of their friends and loved ones, the death of someone they care about who might have been saved is a tragedy. The problem here is that the same can be said for David, David’s friends and his family. No one person experiences a

\(^{21}\) Taurek (1977: 300)

\(^{22}\) Taurek (1977: 304)
loss greater than any other in the problem. Losses simply do not aggregate in the way that utilitarians suggest.

Consider the following scenario: six identical objects of value are threatened by fire and you have time to save either five together or one. What should you do? Taurek applies the same decision making procedure to this example as he uses in the Drug Cases:

Each object will have a certain value in my eyes. If it happens that all six are of equal value, I will naturally preserve the many rather than the one. Why? Because the five objects are together five times more valuable in my eyes than the one. 23 Taurek justifies his decision to save the five objects here in virtue of their greater aggregated value. This result suggests a potential contradiction in Taurek’s reasoning, permitting aggregation in some cases but not others. How can Taurek justify this selective use of aggregation? The answer lies in the clear dissimilarity between people and objects:

But when I am moved to rescue human beings from harm in situations of the kind described, I cannot bring myself to think of them in just this way. I empathize with them. 24

This notion of empathy is crucial for Taurek’s position. When cases involve objects, the only relevant decision making criterion is the loss of that object. When the choice is made between people, the loss to each person can be assessed. This crucial difference allows Taurek to reason from an agent-relative perspective in the second case, something that is impossible where the choice concerns objects:

It is not my way to think of them as each having a certain objective value, determined however it is we determine the objective value of things, and then to make some estimate of the combined value of the five as against the one.

It is the loss to the individual that matters to me, not the loss of the individual. 25

Taurek’s solution to the Number Problem is the product of a two-step anti-utilitarian argument. Motivated by empathy, Taurek first rejects the utilitarian agent-neutral perspective and reasons from an agent-relative position instead. Once the agent-relative perspective is in place, Taurek then objects to the use of aggregative reasoning when the

23 Taurek (1977: 306)
24 Taurek (1977: 306)
25 Taurek (1977: 307)
decision affects people not objects. Taken together, these arguments result in the equal maximum chances solution:

Why not give each person an equal chance to survive? Perhaps I could flip a coin. Taurek’s argument for flipping a coin in the Drug Case is intuitively appealing. If, reasoning from an agent-relative perspective, the loss facing each of the six individuals is the same for that person, there is no possible justification for giving any individual anything other than the same chance of avoiding their potential loss. If the choice was between saving only one of three individuals, the same principle would apply: rather than flipping a coin, Taurek could perhaps use a three sided die to give each person a one in three chance of survival.

After setting out the terms of his equal maximum chances solution, Taurek moves to consider the obvious objection to his position. In his Volcano Case, the decision affects the lives of two vastly unequally sized groups. If the choice here is between saving one life or one million, would Taurek still flip a coin to decide? The underlying argument remains the same: the loss facing the lone individual is just as great, from their perspective, as that facing any of those in the larger group. Motivated by a shared concern for those who stand to suffer, Taurek states:

I would flip a coin even in such a case, special considerations apart. I cannot see how or why the mere addition of numbers should change anything. The numbers, in themselves, simply do not count for me. I think they should not count for any of us.

This is the ultimate anti-aggregative conclusion of ‘Should the Numbers Count?’. Taurek answers the title of his paper with a resounding ‘no’, regardless of how many additional lives might be spared by always saving the greater number.

2.4 Scanlon’s ‘Making a Difference’ Objection and Otsuka’s Response

Taurek’s paper received relatively little attention until his arguments were addressed by Kamm in Morality, Mortality I (1998: 99-121). Inspired by Kamm, Thomas Scanlon’s What We

26 Taurek (1977: 303)
27 Taurek (1977: 306)
28 Taurek (1977: 310)
Owe to Each Other (1998) presents a contractualist version of her claim balancing solution.²⁹ Central to Scanlon’s work on the Number Problem is the contention that each person in the problem should impact upon the decision making procedure in some tangible sense. This is the basis of his ‘Making a Difference’ objection to Taurek: that additional persons in the problem do not affect Taurek’s moral deliberation in a suitably weighty manner. The purpose of this section is to address Scanlon’s influential objection and Michael Otsuka’s response on behalf of Taurek in ‘Saving Lives, Moral Theory and the Claims of Individuals’ (2006).

Scanlon begins his argument by introducing a simple Number Problem example known as the Rescue Case. In this scenario, two individuals are stranded on separate islands as the tide rises. A nearby potential rescuer has the option of saving either \(A\) or \(B\), but time constraints dictate that it is impossible to save both. The familiar question is then asked: what ought the rescuer to do?

Following Taurek, Scanlon uses Nagel’s method of pairwise comparison to assess the relative potential loss facing each person. Absent any special facts or prior arrangements, he grants that \(A\) and \(B\) stand in a symmetrical relationship with one another in virtue of their equivalent potential loss. As such, each person has the same-sized claim over the rescuer to avoid that burden. So far, so simple; Scanlon solves the basic Rescue Case by flipping a coin, just as Taurek would. Now a third person, \(C\), is introduced alongside \(B\) on the second island. For Taurek, the solution to this second Number Problem would be to assign each individual the same maximum probability of survival. Once again, a coin flip would suffice for Taurek, granting \(A\), \(B\) and \(C\) the same one in two chance of success. It is at this point where the two approaches diverge; Scanlon objects to Taurek’s result in the second Rescue Case:

> [I]n a case in which we must choose between saving one person and saving two, a principle that did not recognize the presence of the second person on the latter side as making a moral difference, in favour of saving that group, could reasonably be rejected.³⁰

This is Scanlon’s ‘Making a Difference’ objection. He argues that the addition of \(C\) in the second Rescue Case exposes Taurek’s solution to the charge of moral indifference. When the choice concerns \(A\) and \(B\) only, it is easy to see by counterfactual analysis why Taurek’s approach fully acknowledges the presence of both individuals. Had \(B\) not been present, the

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²⁹ Claim balancing solutions are addressed in Chapter 3.
³⁰ Scanlon (1998: 234)
choice would have been between A and saving no one; Taurek would not have flipped a coin to decide. Similarly, the act of flipping a coin when the choice concerns A and B, rather than B alone, signifies the recognition of A’s presence as making a moral difference to the problem. By flipping a coin in the A vs. B case, Taurek gives the claims of each person their full moral weight. When the same method is used in the presence of C, Scanlon argues that C’s equally weighty claims have been ignored by Taurek as they make no difference to the proposed response to the problem. In light of this omission, Scanlon maintains that Taurek’s equal maximum chances solution should be rejected.

Defending Taurek against Scanlon’s objection, Michael Otsuka argues that Taurek’s solution does meet Scanlon’s ‘Making a Difference’ requirement. Otsuka’s argument rests on the potential ambiguity in Scanlon’s terms:

A Taurekian rescuer … fully respects the equal and weighty moral significance of each [individual] by means of her commitment to the principle of giving each person the greatest equal chance of being saved.

The notion of ‘Making a Difference’ implies the existence of a subject, something that a difference can be made to. In Scanlon’s words, the addition of C alongside B in the second Rescue Case should make a difference “in favour of saving that group” (1998: 234). This requirement is less stringent than it first appears; if the addition of C increases the chances of saving the larger group by a trivial but non-zero amount, say by 0.1%, Scanlon’s requirement is met. Otsuka wishes to argue that Taurek’s solution can meet Scanlon’s requirement without altering the assigned probabilities. He states:

It is simply false, however, to say that the third person’s existence makes no difference to what you do under Taurek’s principle. For if the third person’s existence really made no difference, then you would behave just as you do in the two [person] case.

In the two person case, Taurek flips a coin and rescues either A or B. If, as Scanlon maintains, C makes no difference to the second Rescue Case, Taurek would save only B if the coin decided in favour of the second group. Given that C would be rescued by Taurek alongside B here, Otsuka argues that C’s presence in the problem does indeed make a moral difference in favour of saving that group.

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31 Otsuka (2006: 116)
32 Otsuka (2006: 114)
This response may seem somewhat unsatisfactory. Surely, a defender of Scanlon might say, the ‘Making a Difference’ requirement is asking for more than the mere acknowledgement of C’s existence? Otsuka’s point is more sophisticated than it first seems. As mentioned earlier, there is a potential ambiguity in the notion of ‘Making a Difference’. Scanlon requires that the presence of C make a ‘moral difference’ in favour of the B & C group. This moral difference allows for two interpretations. In the first, the presence of C makes a difference to the outcome of the moral deliberation. That is to say that the addition of C changes the actions of the rescuer, either by improving the relative chance of survival for B & C or by simply determining their rescue outright. The second interpretation is more favourable to Taurek’s solution. On this interpretation, C may make a moral difference to the deliberative stage of the moral decision making, even when this does not alter the outcome. According to this second view, Taurek can claim that C’s presence is fully acknowledged by his theory in virtue of the pairwise comparison that takes place before the coin flip. Once more by counterfactual analysis: had C not been present in the problem, only the relative losses of A and B would have been compared. It is precisely because C’s presence makes a moral difference that C’s losses are considered under Taurek’s theory. According to both this interpretation of Scanlon’s requirement and the position of Otsuka, Taurek’s equal maximum chances approach defeats Scanlon’s objection.

2.5 Further Objections to Taurek: Overlapping Cases and Different Probabilities of Success

Scanlon is not alone in objecting to Taurek’s position; in this section I offer two further arguments against the equal maximum chances solution. First, that Taurek’s approach is vulnerable to a *reductio ad absurdum* in cases concerning overlapping sets of individuals. Second, that his theory leads to unacceptable results when the chances of successfully rescuing individuals in the Number Problem vary from person to person. In the latter portion of this section, I consider whether Taurek’s principle could be modified in light of these objections before ultimately rejecting the equal maximum chances solution.

My first objection to Taurek concerns cases where one or more individuals are ‘overrepresented’ in the problem. There are two kinds of overrepresentation discussed in this section: full and partial. Beginning with full overrepresentation, cases of this kind involve a choice in which at least one person is guaranteed to receive the benefit under distribution.
Consider the Escape Case example, where a group of firefighters must leave a burning building that will soon collapse. There are two options here, each of which leads to the same exit door. If the first route is chosen, person A will be freed as a consequence. If the second route is chosen, A will be left to die. In both cases, the act of leaving by the only exit door will free person B who is trapped against it. Presuming that there is only time to escape by one route and that the two options are equally dangerous, the choice facing the firefighters is now: save A and B together or save B alone. In this case, B is ‘fully overrepresented’ in the problem; that is to say that B will receive the benefit under distribution regardless of the choice made.

This first version of the Escape Case does not pose a problem for Taurek’s equal maximum chances theory, as Taurek can simply set the probability of rescue to 100% for both A and B. This generates the obviously correct result that it is better to save two individuals rather than one, where it is possible to save the additional person as no extra cost.

The problem for Taurek’s approach comes when the choice concerns ‘partial overrepresentation’. Cases of ‘partial overrepresentation’ are best described in terms of overlapping sets. In Scanlon’s Rescue Case example, the choice is between saving A on one island and B & C on a second. If Scanlon’s example is modified to include a fourth person, D, on a third island, Taurek’s solution would give each person the same 1/3 equal maximum chance of survival. Consider now the same example where B can swim to the first island if necessary but not to the third. If B sees the rescue boat heading towards A on the first island, he will swim over to A and thus be rescued. If the rescue boat heads towards the second island, B will be saved alongside C. Crucially, no one else in the problem can swim; they are rescued only when the boat heads toward their island. The problem can now be describe in terms of three possible options: save A & B together, save B & C together, save D alone. This is a case of partial overrepresentation; compared to the other three individuals, B is effectively counted twice for the purpose of our moral decision making. This poses a particular problem for Taurek’s equal maximum chances solution.

The difference between partial and full overrepresentation cases is demonstrated by the contrast between the Escape Case and the modified version of Scanlon’s Rescue Case. In the former, B is guaranteed to be rescued no matter which choice is made: they are fully overrepresented in the problem. In contrast, B’s ability to swim between the first two islands in the modified Rescue Case improves his chances of survival but, crucially, does not

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33 The presumption here is that both options include the same person, as in the choice between saving A alone or saving A and B together. The alternative, where the choice concerns three different individuals, is a Number Problem case and should not be solved in the same way.
guarantee it: B is partially overrepresented in this problem. When Taurek’s equal maximum chances solution is applied to the second choice, the result is a catastrophic levelling down of chances. Understood as a requirement for strictly equal chances, the only way in which a Taurekian rescuer can give each of the four individuals in the modified Rescue Case the same chance of survival is when this chance is levelled down to zero. Any other distribution of chances will result in B being counted twice, effectively giving B double the chances of anyone else.

There are two ways in which a Taurekian rescuer might use levelling down when faced with partial overrepresentation in the Number Problem. First, the notion of equal chances can be preserved by levelling the chance of survival for each person down to zero. This is clearly unacceptable; any moral theory that recommends saving no one over saving someone, where the costs of doing so are negligible, should be rejected. Second, a Taurekian rescuer could level the chances of saving B (two in three) down to the same level as that of A, C and D (one in three). While this approach is certainly an improvement over saving no one, it conjures up an equally perverse possibility. Let us presume that the Taurekian rescuer grants each person a one in three chance of survival and that fortune favours A on the first island. Seeing that the boat is heading for somewhere other than island two, B starts swimming towards A. When the rescuers arrive and find B and A together, they must leave B to die as his chance was ‘used up’ alongside C. This formally preserves the equal probability of saving each individual but only by countenancing the prospect of leaving B to die when it would be costless to save him. Surely this second scenario is almost as unacceptable as the first? In both examples, regardless of whether the Taurekian rescuer uses either total or partial levelling down, the results are morally repugnant.

The Taurekian rescuer has a second potential response to the overrepresentation objection that does not rely on levelling down. When faced with the partial overrepresentation of B in the second example, the equal maximum chances approach fails when understood as a commitment to strictly equal maximum chances. Given the requirement of strictly equal chances, B’s overrepresentation necessitates the levelling down of all chances, either to zero or to one in three. If this condition is weakened to concern only the minimum chances for each person, Taurek’s position becomes much more appealing. One such approach is maximin, a decision making principle under which we aim to guarantee the best possible outcome for the initially worst off. By focussing on baseline chances in this way, maximin
respects the egalitarian ethos of Taurek’s original position. The alternative Taurekian maximin approach can now be defined as a policy of assigning the greatest possible chance of avoiding their loss to the person with the overall worst chance in the Number Problem, consistent with the same minimum chance for all. Maximin is therefore both egalitarian and maximising, respecting the Taurekian commitment to equal maximum chances with the addition of a minimum baseline.

When Taurek’s principle is reinterpreted as equal maximum minimum (or maximin) chances, the objection from overrepresentation disappears. In the second overrepresentation example, A, C and D are the worst off as they are saved if and only if the rescuer heads for their particular island. In contrast, B is the best off as B is saved when the rescuer heads to either the first or second island. Under the Taurekian maximin system, each of A, C and D is granted the same one in three chance of survival. This distribution meets the requirement that the worst off receive the maximum possible settlement, consistent with the same guaranteed minimum for all. What of B’s chances? Recall that under the old approach, B’s chances were reduced to meet the equal maximum chances requirement. This gave B either no chance at all or a reduced their chances by half to one in three. When Taurek’s principle is reinterpreted along maximin lines, B’s chances are never levelled down. Because maximin is a conservative principle, concerned exclusively with the position of the least well off, it tells us nothing about what should be done above this baseline threshold. As such, B is entitled to retain their full two in three chance of survival, simply because this meets the maximum minimum chances requirement. With no need to level down, B can be rescued either on their starting island with C or after a swim across to the first island and A. The Taurekian maximin approach therefore avoids the overrepresentation objection, giving the sensible result of saving B twice as often as saving A, C and D while ruling out the morally unacceptable prospect of saving no one.

At this stage, it would seem that the maximin reply defeats my overrepresentation objection to Taurek. Before I provide a rejoinder to the maximin reply, it will be helpful to outline my second objection to Taurek. This is because the rejoinder builds upon my second objection, one concerning cases where the chances of successfully completing a rescue are different for different individuals. Consider the simplest Number Problem case where the choice is between A and B only. When a Taurekian rescuer flips a coin to decide, their aim is to give

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34 The term ‘baseline chances’ will appear throughout this thesis, most notably in Chapter 5.2.1. It simply refers to the equal initially distributed chance of selection in the Number Problem. If Taurek’s equal maximum chances solution is used in the A vs. B Rescue Case, each person is said to have the same one in two (1/2) baseline chance.
each person the same one in two chance of success. What do we mean by success here? Ordinarily the chances of being selected for rescue and the chances of being successfully rescued are presumed to be identical. This is not always the case. Imagine a more complicated version of the A vs. B choice where the odds of successfully rescuing A, conditional on setting out to do so, are only one in two, while B will be saved for certain if the rescuer heads in their direction. This is the first ‘different probability of success’ example and it asks an important question of all potential Number Problem solutions. Is the goal here to give each person the same chance of selection or chance of survival? If Taurek is committed to giving each person the same chance of selection, a coin toss can be used to decide. Using a coin here would give A and B the same equal maximum chance of selection (one in two), but A would have half of B’s chance of survival (one in four versus one in two). But this is not Taurek’s position. He states:

[Let me suggest what I would do in many such cases. Here are six human beings. I can empathize with each of them. I would not like to see any of them die. But I cannot save everyone. Why not give each person an equal chance to survive?]  

Taurek is clear here that his concern is for the survival of each person in the Drug Case, not the mere possibility of their selection for survival. As such, the same kind of objections raised earlier in this section can now be utilised here. When the choice in the Number Problem concerns A vs. B, where the chance of successfully rescuing A is half that of B, there is no way for a Taurekian rescuer to give each person the same chance of survival without levelling down. The consequences of levelling down in this scenario are less severe than in the modified island Rescue Case; B’s chance of survival moves from one in two (flip a coin) to one in three. If this result seems counterintuitive, consider the following: if the probability of choosing A for rescue is two in three, A has a one in three chance of survival. This result is found by multiplying the two probabilities together as A needs to both be selected for rescue and actually be rescued in order to survive. Similarly, when the chance of choosing B for

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35 It is important to note here that Taurek never discusses cases of this kind explicitly. When I state that Taurek is concerned with chances of survival, not chances of selection for potential survival, I base this on more than just the quote below. Taurek frames the Number Problem as a matter of empathetic concern for those who stand to suffer; losses to rather than of individuals. As such, it seems clear to me that the intention of the equal maximum chances approach is to ensure the best possible chance of avoiding the loss in question, consistent with the same chance for all.

36 Taurek (1977: 303)
selection is reduced to one in three, \( B \) has a one in three chance of survival. As before, this result is found by multiplying the two probabilities together.

The Taurekian approach to problems of this nature exposes a key flaw in the equal maximum chances position, including the maximin version of that position. When the chances of selecting \( A \) and \( B \) are altered in order to produce an equal outcome, the result is that \( A \) and \( B \) share the same one in three chance of survival. In other words, either \( A \) or \( B \) is saved in two out of every three cases. The problem with this approach should now become clear: when the probability of saving someone is less than one, there is a non-zero possibility of saving no one. In some scenarios we may accept this risk of saving no one as a trade off against other considerations (equality, fairness, justice, etc.) but there are limits. When the likelihood of saving no one becomes too great, it is clear to me that we must seek a different approach. In different probability of success cases, the Taurekian position leads to an unacceptably great risk of saving no one. Consider the following results when the choice is between \( A \) and \( B \), where \( A \) has \( x \) probability of being successfully rescued once selected for rescue and \( x \) is less than 1: when \( x = 0.5 \), the chance of saving no one is 0.333; when \( x = 0.1 \) the chance of saving no one is 0.818; when \( x = 0.01 \) the chance of saving no one is 0.980 and so on. In other words, as \( x \) falls for any individual in the problem (regardless of how likely it is that others can be successfully rescued), the chances of saving anyone under the Taurekian system fall dramatically. This objection applies both to the original maximum equal chances and the maximin equal chances versions of Taurek’s position.

The upshot is that neither version of Taurek’s approach can offer a satisfactory response to different chances cases. When \( x = 0.10 \), the chances of rescuing either \( A \) or \( B \) are over four times lower than the chances of saving no one. The 81.8% risk of saving no one here is simply too great. Taurek’s solution is therefore forced onto the horns of an impossible dilemma. When faced with partial overrepresentation cases, the original version of Taurek’s equal maximum chances view demands that we save no one every time. If a Taurekian rescuer seeks to avoid this objection by adopting a maximin version of the original approach, the result is a similarly unacceptable chance of saving no one in different chances cases. Either way, both versions of the Taurekian position are fundamentally flawed. In light of the objections set out in this section, I therefore reject the Taurekian solution to the Number Problem.
2.6 Conclusion

Taurek’s arguments in ‘Should the Numbers Count?’ are best understood in terms of a commitment to anti-aggregative individualism. Reasoning from an agent-relative perspective, Taurek succeeds in showing that the loss facing each person in the Number Problem is the same regardless of whether they are in the larger or smaller group. Connecting the strength of an individual’s claim for aid to the magnitude of the potential loss that they face, Taurek concludes that each person should be given the same maximum chance of avoiding their loss in virtue of their equally strong claims. This is the equal maximum chances solution and it is vulnerable to two objections in the form of overlapping sets and different probability of success cases. In light of these objections, I reject Taurek’s solution to the Number Problem.

Later in this thesis, in Chapter 4, I argue that Taurek uses the right premises to reach the wrong conclusion; that his arguments actually support the weighted lottery solution instead. As such, Taurek’s primary contribution to the Number Problem debate is his focus on individualistic reasoning and his anti-aggregative conclusion – not the equal maximum chances solution. In the next chapter I address a different kind of Number Problem solution, one that is designed to show how Taurek’s arguments are compatible with the consequentialist policy of always saving the greater number. This is the claim balancing approach, endorsed by Kamm, Scanlon and Kumar.
Chapter 3: The Claim Balancing Approach and the Aggregation Argument

3.1 Introduction

Having set out a definition of the ideal Number Problem alongside a discussion of Taurek’s arguments in the previous chapter, it is now possible to consider a second solution: the claim balancing approach. Endorsed by Kamm, Scanlon and Kumar, the claim balancing method is best understood as an attempt to use Taurek’s anti-aggregative individualism in order to justify always saving the greater number. The two versions of the position, Kamm-Scanlon and Scanlon-Kumar, face a range of objections from Otsuka (2000, 2006) and Timmermann (2004) which are addressed in detail here. Timmermann’s objections, ‘interchangeability’ and ‘sequencing’, are of particular importance to the overall argument in this thesis. In the next chapter, I demonstrate how the claim balancing approach can be combined with Timmermann’s objections in order to derive the weighted lottery solution. As such, the purpose of this chapter is to set up my arguments in Chapter 4; this requires a comprehensive overview of both the specific (i.e. Kamm-Scanlon and Scanlon-Kumar) and general versions of the claim balancing position along with a clear explanation of why Otsuka’s and Timmermann’s objections are successful. The chapter finishes with a discussion of a different attempt by Kamm to justify always saving the greater number without aggregating claims: the Aggregation Argument.

In total, there are five substantive sections in this chapter. Section 3.2 concerns the original definition of the claim balancing approach found in Kamm (1998) and the later consequentialist version in Scanlon (1998). With a definition of Kamm-Scanlon claim balancing in place, section 3.3 addresses Otsuka’s first objection – the ‘Scales of Justice’. Next, section 3.4 discusses the second version of the approach, Kumar’s Scanlon-Kumar claim neutralising (2001) and Otsuka’s short objection to the revised position. Section 3.5 is of particular importance; here I address Timmermann’s two objections to the Scanlon-Kumar method, ‘interchangeability’ and ‘sequencing’, along with some suggestions for how a defender of the claim balancing approach might respond to these criticisms. The chapter finishes with section 3.6 concerning Kamm’s Aggregation Argument and Hirose’s revised version. Utilising an objection to Hirose from Lübke (2008), I show why both versions of the Aggregation Argument should be rejected.
3.2. Kamm-Scanlon Claim Balancing

The claim balancing position first appears in Kamm’s *Morality, Mortality I* (1998: 116-117). Sympathetic to Taurek’s anti-aggregative focus on individual losses but not his equal maximum chances conclusion, Kamm sought to offer a non-aggregative justification for always saving the greater number. In this section I set out the details of what is known as Kamm-Scanlon claim balancing and explain the features that are common to claim balancing positions in general.37

Kamm begins her argument for always saving the greater number by considering the simplest Number Problem case, that of A vs. B:

Consider a pair of such opposing individuals [A & B]. Since their interests are opposed and of equal weight, it might be suggested that they cancel each other out. If we cancel them out, we will have counted each of these interests and given it all the weight it should be given consistent with equal treatment.38

Kamm identifies a key problem with this approach: the idea of cancelling out has unacceptable implications. Consider a tug of war between two equally matched individuals, where their efforts cancel each other out. The resultant (or net) force between the two is zero, an identical situation to that in which neither person pulls at all. If, as Kamm suggests, ‘the weight of these interests will have been “used up”’ (1998: 116), it would seem that the problem disappears and that we may be permitted to save no one:

It is as if together the equal and opposite interests amount to a zero, leaving only the unbalanced interests with any weight. But … the balancing of equal and opposites need not be understood as a cancellation. It can be understood, rather, as the recognition that neither of two equal and opposing claims can finally decide an outcome.39

In this case, where all relevant moral considerations are in balance, it would be acceptable to follow Taurek and perhaps use a coin to decide (1977: 303). The claim balancing approach

37 This naming convention for the Kamm-Scanlon and Scanlon-Kumar versions of the claim balancing position was established by Otsuka (2000) and later used by Kumar (2001), Hirose (2001, 2007, 2014) and Timmermann (2004).
38 Kamm (1998: 116)
diverges from Taurek’s view when the relative numbers on each side of the problem are unequal, as in the A vs. B & C example. It is the presence of C in this case that is crucial. Following the same method as for A vs. B, one claim from each side is set against the other and, in virtue of their equal and opposing status, the two claims are in balance. The presence of C now acts as a tie-breaker, deciding the matter in favour of the larger group. Kamm explains:

Suppose we continue in this way, taking pairs of individual interests to balance each other out until no unused pairs of opposing interests remain. All the remaining interests (if any) will be for the same alternative.40

In the A vs. B & C example, A and B are paired together and thus balanced off. The remaining individual, C, settles the tie in favour of both B and C in virtue of being the only unbalanced claim. It is trivial to see how this method will always favour the interests of the greater number, as for every individual in the smaller group there is always a counterpart whose interests favour the opposite outcome. In addition, the presence of at least one extra individual in the larger group is decisive with respect to which group should benefit.

Scanlon’s contribution to the position came later, in 1998’s What We Owe to Each Other. Scanlon’s contractualism is motivated by the idea that objections to a principle can only come from the perspective of those individuals who stand to be affected by it. In Taurek’s example of a choice between a large number of individuals experiencing a headache or one person suffering a migraine (1977: 308), it becomes immediately apparent why we cannot allow the one to suffer for the benefit of the many, Scanlon writes:

A contractualist theory … allows the intuitively compelling complaints of those who are severely burdened to be heard, while, on the other side, the sum of smaller benefits to others has no justificatory weight, since there is no individual who enjoys these benefits and would have to forgo them if the policy were disallowed.41

Thus we have a familiar problem: each person in the Number Problem has an equally strong complaint if they are not saved, based on their equal potential suffering. This reasoning extends beyond the example of A vs. B through to any version of the Number Problem: one versus one, one versus many, many versus many. As with Kamm’s earlier argument (1998: 116-7), Scanlon recognises that this line of reasoning leads only to deadlock; each person holds

40 Kamm (1998: 116)
41 Scanlon (1998: 230)
an effective veto over all others as every individual complaint on one side can be cancelled out by an opposing claim on the other.

Faced with a choice between equally strong individual claims on either side, Scanlon’s approach diverges from the Taurekian equal maximum chances position. Taurek simply flips a coin to break the deadlock at this stage, consistent with the greatest equal chance for all. Scanlon is troubled by the counterintuitive nature of this conclusion, describing it as a ‘problem’ for his theory, he explains:

> It therefore seems that as long as it confines itself to reasons for rejection arising from individual standpoints contractualism will be unable to explain how the number of people affected by an action can ever make a moral difference.\(^{42}\)

It is interesting to note that Scanlon considers two other potential solutions to the Number Problem before finally endorsing the claim balancing approach. The first is to permit a limited endorsement of aggregative reasoning. This would require the inclusion of collective complaints within his contractualist framework (1998: 231). Scanlon rejects this approach for two reasons: first, he is unwilling to sacrifice a fundamental component of his contractualism, namely the focus on individuals and individual complaints. Second, it is unclear how it is possible to admit aggregative reasoning in some cases but not others. As such, this modified version of Scanlon’s position is vulnerable to a slide into full blown aggregative consequentialism and the usual difficulties associated with such a view (1998: 231).

Scanlon’s second alternative solution considers a two-aspect ‘hybrid’ approach to the problem. Under this view it is not wrong in a narrow sense to save the smaller group, as this is consistent with the principle of individual complaints. Scanlon considers whether such an action could be morally objectionable in a broader sense, embracing a wider conception of morality. This richer notion of morality permits additional principles, compatible with the primary contractualist focus on individuals but not necessarily derived from the same source. One example might be a wide ranging principle of mutual aid or harm prevention. Despite dismissing this potential solution on the grounds that ‘its hybrid characteristic is unsatisfying’, Scanlon recognises that ‘this approach has some appeal’ (1998: 231).\(^{43}\)

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\(^{42}\) Scanlon (1998: 230)

\(^{43}\) This point relates to the arguments in Chapter 4.2 concerning Scanlon’s unintentional support for the weighted lottery solution.
After rejecting both the limited aggregation and hybrid morality approaches, Scanlon returns to the key principle behind his contractualist view for a solution to Number Problem. Consider the difference between the A vs. B and A vs. B & C cases. In the former, both A and B are afforded the same status in virtue of their equal potential losses. By counterfactual analysis, it is clear why this is so; if the choice had concerned either A or B alone, we would naturally save the lone individual. Given that both are present in the problem, the decision cannot be made in the same way. If a coin toss is used in the A vs. B case, each person can be said to make the same full and equal contribution to the decision making procedure. Now apply the same reasoning to the A vs. B & C case. If, following Taurek, the decision is made by flipping a coin, the presence of an additional person, C, seems to make no difference to how Taurek solves the problem. This is easy to see when understood in counterfactual terms; if C had not been present, Taurek would still have flipped a coin to decide. Scanlon concludes:

This is unacceptable, the person [C] might argue, since his life should be given the same moral significance as anyone else’s in this situation (which is, by stipulation, a situation in which no one has a special moral claim).

This line of reasoning seems to me to have great force.44

Scanlon builds his argument for the claim balancing solution on the foundation of the ‘same moral significance’ or ‘equal moral force’ of each individual claim (1998: 232). When faced with a choice between saving A and saving no one, we do not act to preserve A’s life as a matter of chance or some other misguided principle. Instead, we recognise the potential loss that A faces; A calls for aid and this provides a positive reason for action. Similarly, there can be no justification for an uneven weighting of these positive reasons in balanced Number Problem cases; we recognise that both A and B have an equal positive claim for aid when choosing between A vs. B. When it comes to unbalanced cases, such as A vs. B & C, Scanlon argues that these principles (taken together) demand the rescue of the larger group. This is the primary argument expressed in Scanlon’s ‘Making a Difference’ requirement:45

[In a case in which we must choose between saving one person and saving two, a principle that did not recognize the presence of the second person on the latter side

44 Scanlon (1998: 232)
45 See also: section 2.4 of the previous chapter.
as making a moral difference, counting in favour of saving that group, could reasonably be rejected.\textsuperscript{46}

According to ‘Making a Difference’, A cannot complain that his claim for aid has been ignored altogether when Scanlon chooses to automatically save the greater number here. By counterfactual analysis, A would stand a 1/2 or 50\% chance of survival if C was not present in the problem. It is the addition of C that decides the tie between A and B, where each claim represents an equally forceful reason to save that person.

It should now be clear why the primary claim balancing position is commonly referred to as Kamm-Scanlon claim balancing. Following Taurek, both Kamm and Scanlon reason from the perspective of the individual, accepting that equal potential losses give rise to equally strong claims for aid. The two positions (Taurek and Kamm-Scanlon) diverge at the point of deciding how to assess these equal claims. When the problem is balanced, with equal numbers of individuals on each side, both views permit the flipping of a fair coin to decide. When the problem is unbalanced, Taurek still flips a coin whereas both Kamm and Scanlon balance claims against one another to justify always saving the greater number. This is the classic version of the Number Problem challenge: how to reconcile our competing intuitions regarding process and outcome and justify always saving the greater number without resorting to aggregative reasoning. To date, the claim balancing method is the only proposed Number Problem solution that attempts to meet this challenge. As the remainder of this chapter will show, no version of the claim balancing approach, including the classic Kamm-Scanlon account, succeeds in this task.

3.3 Otsuka’s ‘Scales of Justice’ Objection

The first major objection to the Kamm-Scanlon claim balancing approach is found in Otsuka’s ‘Scanlon and the Claims of the Many Versus the One’ (2000). Otsuka’s paper is divided into two sections; the first sought to defend Taurek from the objection that his coin flipping solution fails to meet Scanlon’s ‘Making a Difference’ requirement,\textsuperscript{47} the second sets out a short argument against the methodology of the Kamm-Scanlon position. In this section I

\textsuperscript{46} Scanlon (1998: 234)
\textsuperscript{47} This argument is addressed in section 2.4 of the previous chapter.
summarise the second half of Otsuka’s paper and his decisive argument against Kamm-Scanlon claim balancing that I will refer to as the ‘Scales of Justice’ objection.

Otsuka prefaces his argument against Kamm-Scanlon claim balancing with an attempt to formalise the structure of the position. He identifies six steps in Scanlon’s argument:

1. The claims of A, B and C should be afforded equal and positive weight. [Premise] (232-3)
2. We accord them equal and positive weight if and only if we add C’s claim to B’s. [Premise] (232-5 and 397, fn. 25)
3. We should add C’s claim to B’s. (from 1 and 2)
4. Adding C’s claim to B’s tips the balance in favour of saving B and C. [Premise] (232)
5. This tipping of the balance in favour of B and C justifies saving B and C. [Premise] (232)
6. Saving B and C is justified (from 3, 4 and 5)\(^4\)

Reasoning from the perspective of a Taurekian rescuer, Otsuka objects to (2). By specifying the Kamm-Scanlon position in terms of an ‘if and only if’ condition, Otsuka allows for two separate objections – one far more damaging than the other. Beginning with the weaker first objection, premise (2) can be defeated by demonstrating that adding C’s claim to B’s is not the only way in which we might accord each claim ‘equal and positive weight.’ The second objection is fatal to the position: that adding C’s claim to B’s is actually the opposite of what is required when granting each claim an equal positive status.

It is trivial to see why the weaker form of the objection does not entail the rejection of the entire position; if adding claims together is not the only way in which we may respect their positive status, it is possible that this is merely one of many possible ways to do so. This still permits the move to (3) and, eventually, (6). The stronger objection is sufficient to reject the Kamm-Scanlon approach; if adding claims together is inconsistent with the demand to treat them as equally weighty, positive reasons for action, then the fundamental mechanism of claim balancing is incompatible with the stated goals of both Kamm and Scanlon. Otsuka’s objection is of the latter variety.

\(^4\) Otsuka (2000: 290), note that the references in brackets are for Scanlon (1998).
After establishing the structure of the Kamm-Scanlon position, Otsuka moves to attack the underlying comparative mechanism. The Kamm-Scanlon approach requires the simultaneous assessment of three distinct claims, two of which are mutually compatible. Otsuka’s objection concerns this notion of comparison:

[T]he Kamm-Scanlon argument rests upon an appeal to the claim of a group of individuals. More precisely, it rests upon an appeal to the claim that one should save the greater number because the claim of a group of individuals to be saved outweighs the conflicting claim of a single individual to be saved.\footnote{Otsuka (2000: 291)}

This is perhaps best understood by way of analogy; Otsuka asks us to imagine the ‘Scales of Justice’ upon which we set the equally weighty claims of A against B (2000: 291). At this stage the scales are balanced, reflecting the moral equivalence between the two claims. According to the claim balancing methodology, C is now introduced alongside B, tipping the scales in favour of the larger group and breaking the moral tie. With the scales now reflecting the imbalance of claims, we recognise the decisive contribution of C and thus save the greater number. The issue here is obvious; it is not the sole contribution of C that decides the outcome, rather it is the combined claim of B & C that carries the day.

Consider the following counterfactual: had B not been present, C’s claim would not have been decisive. As Otsuka notes, the claim balancing narrative of adding C to break the tie between A and B is misleading. As there is no temporal element to a classic Number Problem, C is always present. Put simply, C either sits alongside B on the scales at the outset or not at all. The difference between the claim balancing narrative of adding C to A vs. B and the simultaneous comparison of A vs. B & C is therefore a matter of mere sophistry: they are one and the same problem. By implicitly combining claims in this way, Scanlon is guilty of introducing aggregation by the backdoor. Otsuka thus accuses him of ‘trying having his cake and eat it too’ (2000: 292) and I agree with Otsuka that we should reject Kamm-Scanlon claim balancing on this basis.
3.4 Kumar’s Response: Scanlon-Kumar Claim Balancing

Following Otsuka’s ‘Scales of Justice’ objection, Rahul Kumar was the first to offer a defence of the claim balancing position in ‘Contractualism and Saving the Many’ (2001). Kumar’s argument divides into two parts. First, he reinterprets the mechanism of comparison as claim neutralising, rather than balancing. Second, he analyses the problem in terms of a two-stage decision making process: what to do and who to rescue. In this section I address each of Kumar’s points in turn before considering a response to his revised Scanlon-Kumar position from Otsuka (2006). Combining Otsuka’s two objections together at the end of this section, I conclude that both Kamm-Scanlon and Scanlon-Kumar claim balancing should be rejected.

Kumar’s response to the ‘Scales of Justice’ objection begins with a concession to Otsuka. He agrees that, after adding A and B to the scales, ‘Otsuka is certainly correct to insist that it is C’s claim combined with B’s claim that, in this line of argument, justifies saving B&C’ (2001: 167). This admission does not affect Kumar’s overall argument. Otsuka’s analogy clearly demonstrates that two claims combined can outweigh one, the question for Kumar is whether this is an accurate explanation of how the claim balancing method functions. If this characterisation of claim balancing is accurate, the approach violates the separateness of persons and thus should be rejected on aggregative grounds.\(^50\)

Kumar’s first argument rests on the simple contention that Otsuka has misinterpreted the mechanism of claim balancing. For Otsuka, the decision to save B & C is made in virtue of the combined weight of two claims. According to his scales analogy, this is only possible when both B and C are present on the same side of the balance at the same time. Recall Kamm’s explanation of the claim balancing position: that, after balancing the first pair of claims, ‘we continue in this way, taking pairs of individual interests to balance each other out until no unused pairs of opposing interests remain’ (1998: 116). This explanation permits a second interpretation of the position; Kumar writes:

> A reading of the argument that makes better sense of the Kamm-Scanlon claims, though, is one which sees A’s and B’s claims neutralizing one another, at least for purposes of the decision of where to direct the available lifesaving resources. That is,

\(^50\) See section 3.3.
being perfectly balanced, both claims are set aside for purposes of the rescuer’s decision concerning the direction in which she ought to direct her boat.\(^{51}\)

This highlights the key difference between the two accounts; Otsuka’s scales weigh A’s claim first against B’s, then again opposite B’s and C’s claims simultaneously. Kumar’s alternative interpretation also begins by weighing A’s claim against B’s, before setting these claims aside and placing C’s claim on the balance alone.

It is easy to see why Kumar believes that his neutralising account of claim balancing avoids Otsuka’s ‘Scales of Justice’ objection. If B is removed from the scales after the first stage, it cannot be said that B and C combine to tip the balance; B is not present, C alone must be responsible. This raises a further question, if only C can now be said to have a claim for aid that has not been neutralised, why should we save B alongside C (once the decision has been made to aid C) if B’s claim was neutralised at the outset?\(^{52}\)

Before considering Kumar’s response, it is important to note that this problem is not present in all versions of the A vs. B & C Number Problem. It is possible to construct a Number Problem scenario in which the rescue of one individual automatically determines the outcome for all parties. Consider the format of the traditional trolley problem: the decision to save any one person in the larger group effectively saves them all.\(^{53}\) This is not the kind of Number Problem case that we are concerned with here; if the act of saving C is extensionally equivalent to saving B and C, Kumar can sidestep the problem by arguing that B is rescued as an unavoidable consequence of saving C.\(^{54}\) The question of what to do with neutralised claims is therefore only a problem for Kumar when faced with the option of saving C alone. The second part of his argument is designed to address this issue.

After defending the claim balancing position in terms of claim neutralising, Kumar argues that the Scanlon-Kumar method should be understood as the product of a two-stage process. In the first instance, following Kamm, equally forceful claims from opposite groups are set against each other and neutralised until only claims from the largest group remain. The

\(^{51}\) Kumar (2001: 167)

\(^{52}\) Hirose uses a similar line of argument to object to the two-stage version of the weighted lottery, see Chapter 5.2.2.

\(^{53}\) Here the choice is between allowing five people to be hit by a train, killing them all, or changing its direction towards one person who was not initially threatened. Choosing to save the third person in the larger group (and that person alone) necessitates the rescue of everyone else in that group, as it is impossible to extract just the one person from the problem.

\(^{54}\) This point is distinct from my partial and full overrepresentation examples discussed in Chapter 2.5.
decision regarding what to do is then made in light of this result, where the purpose of the rescue is to save the individual corresponding to this remaining claim. For the A vs. B & C case, Kumar begins by comparing A’s equal and opposing claim against B’s. With the two claims neutralising each other, they are set aside for the purpose of deciding what to do. Now C’s claim is placed on the balance alone, determining the outcome in C’s favour. At this stage the rescuer faces a choice: save C alone or save both B and C. Kumar states:

Now the rescuer finds herself in a position of being confronted with two legitimate claimants, each of whom has a valid claim against her to be aided, and whose claims are not in conflict with one another. Her duty here is a straightforward matter – save both of them.\(^{55}\)

When the problem is understood in terms of two distinct stages, it is clear as to why Kumar saves both B and C. If the second stage is entirely separate from the first, the neutralisation of B’s claim in the first instance is not relevant to the outcome of the second. The problem is therefore reduced to a simple choice between saving one person or two, save C alone or B & C together.

With a clear explanation of the Scanlon-Kumar position in place, it is now possible to consider Otsuka’s objection to Kumar in ‘Saving Lives, Moral Theory and the Claims of Individuals’ (2006). Otsuka’s short argument centres on what it means for a claim to be neutralised; he maintains that Scanlon-Kumar account functions:

[By] treating the first person and the second person’s claims as neutralizing and therefore competitively eliminating, rather than balancing, each other.\(^{56}\)

Under this interpretation it is not the case that A is balanced against B and then set aside; the mutually incompatible claims of A and B annihilate one another, leaving nothing behind. When the problem concerns A vs. B & C, the introduction of C is still decisive. With C as the target of the rescue, the familiar question of whether to save C alone or B and C together takes on a particularly troubling dimension when it is understood that B’s claim was eliminated in the first stage of the problem. Otsuka notes that Kumar’s reply to this challenge would be as follows:

\(^{55}\) Kumar (2001: 168)

\(^{56}\) Otsuka (2006: 119)
[This is the] second stage of the argument involving a new “normative situation” in which the first person, and hence his effect on the second person’s claim, is no longer relevant to our deliberation.57

A more immediate problem arises when there is no second stage, when the choice is between just A and B. If Otsuka is right and claim neutralisation is equivalent to claim elimination, the A vs. B case becomes a non-choice where the only option is to save no one:

Hence neither of them has any claim at all to be saved. It appears to follow that it is permissible for you to rescue nobody rather than save one of them as determined by the toss of a coin. This, however, is an absurd result. If Kumar cannot block this implication, then his argument must be rejected.58

This objection rests on the potential difference between claim balancing and claim neutralising. Recall that Kamm addresses a similar question of balancing versus cancelling at the start of her argument, noting in the footnotes that she had been cautioned against identifying ‘balancing so closely with cancelling’ (1998: 117 fn 16).59 Otsuka’s objection effectively accuses Kumar of committing that very sin; if neutralising is synonymous with elimination or annihilation, it is clear why the A vs. B case dissolves into an empty problem from which both parties have been removed. Kamm goes on to explain that balanced claims do not disappear altogether, they are merely set aside for the purpose of deciding what to do. Can the same be said for ‘neutralised’ claims?

Kumar might reply at this stage that Otsuka is simply mistaken about the mechanism of neutralisation. It is not the claim itself that is neutralised, merely the force of that claim.60 Thus in the A vs. B case, we lack a decisive reason to save A at the expense of B and vice versa. It does not follow from this reasoning that we must now abandon both parties; what remains following the neutralisation stage is two claims for aid, neither of which is decisive. Following Taurek, what is required is a fair decision making procedure, such as tossing a fair coin. Using my alternative explanation, Kumar could therefore claim that his neutralising account would always save someone in the A vs. B case, contrary to Otsuka’s objection.

57 Otsuka (2006: 119)
58 Otsuka (2006: 119)
59 See section 3.2.
60 Or, as in my original tug-of-war example, the participants do not disappear from the contest simply because their efforts cancel each other out.
There is a further problem for Kumar if he elects to pursue this line of defence. As demonstrated in section 3.3, original Kamm-Scanlon claim balancing is vulnerable to Otsuka’s ‘Scales of Justice’ objection. I argue that the modified Scanlon-Kumar account is also vulnerable to the ‘Scales of Justice’ objection. If the result of A vs. B is a stalemate between two ‘forceless’ claims, it must be the case that these forceless claims remain present in the problem after the neutralising stage. When this result is applied to the A vs. B & C case, it is the combination of B’s neutralised (i.e. forceless) and C’s forceful claim that carries the day, not C’s claim alone as Kumar would argue. This can be seen by way of counterfactual analysis: had B’s neutralised claim not been present, C’s claim would have been offset by A’s and therefore would not have been decisive. If Kumar wishes to avoid the ‘Scales of Justice’ objection, he must accept that neutralised claims are removed from the problem, preventing simultaneous comparison. This would be a futile exercise; if neutralisation is equivalent to elimination, Kumar simply faces Otsuka’s second objection instead and endorses saving no one in the A vs. B case.

The Scanlon-Kumar claim neutralising account is trapped between Scylla and Charybdis. If neutralised claims are merely forceless claims, the position falls to Otsuka’s first objection. If neutralised claims are eliminated from the problem, the position falls to Otsuka’s second objection. I therefore reject the Scanlon-Kumar account.

3.5 Timmermann’s First Challenge: Arbitration, not Arbitrariness

In addition to Otsuka’s arguments, the claim balancing position faces two further objections from Jens Timmermann in ‘The Individualist Lottery: How People Count, But Not Their Numbers’ (2004). Timmermann’s first objection relates to the notion of ‘interchangeability’, particularly the idea that Scanlon treats individuals no differently to how he would treat objects in the A vs. B Rescue Case. Timmermann’s second objection concerns ‘sequencing’, the order in which claims are balanced by the claim balancing approach. Arguing that Scanlon-Kumar claim balancing is ‘covertly consequentialist’ (2004: 108), he objects to the fact that the winning claim will always come from the larger group. Taken together, Timmermann’s two objections demonstrate that any version of the claim balancing position will necessarily function by way of aggregating claims together. When combined with
Otsuka’s objections from earlier in this chapter, it becomes clear that the claim balancing approach should be rejected.

Timmermann begins his first argument by questioning Scanlon’s solution to the two person Rescue Case. When the choice is between saving A and saving no one, Scanlon’s claim balancing gives the correct result that we should act to save A. Timmermann then considers Scanlon’s conclusion when the choice concerns A and B:

Add another person, B, and the constraint that we can save either A or B but not both. In this case, Scanlon contends, the situation is changed to the effect that ‘it is permissible to save either of the two people’ (1998: 232).61

Timmermann’s first objection centres on the notion of ‘moral permissibility’ in this example:

Scanlon’s argument falters fairly early on, at the stage of introducing a second person. If we reject consequentialism, the arrival of B does not warrant the conclusion that it is permissible to save either A or B. The two processes or states of affairs of A’s being saved or B’s being saved may be equivalent; but it does not follow that if you went ahead and saved either A or B you would be justified either way.62

In order to understand Timmermann’s objection here, we must return to Taurek’s comparison between cases involving people and those involving objects discussed in Chapter 2.3.3. To recap, Taurek argues that objects are interchangeable in a way that people are not. When faced with a choice between saving one object or five, Taurek saves the five as ‘the five objects are together five times more valuable in my eyes than the one’ (1977: 306). These objects are interchangeable here; the choice facing the rescuer is the same regardless of how the objects are arranged in the problem. Timmermann’s argument rests on the disanalogy between cases involving objects and those involving people. Consider the three person Rescue Case from the perspective of the people in the problem: when the choice is between saving A alone or B and C together, it cannot be said that this is the same choice as when the options are B alone or A and C together. If A, B and C were three identical objects rather than people, it would not matter which order they were arranged in the problem. Unlike in cases involving objects, it is possible to assess Number Problem choices involving people from an agent-relative perspective. This crucial difference motivates Timmermann’s argument here:

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61 Timmermann (2004: 107)
62 Timmermann (2004: 107)
It is true that, \textit{ex hypothesi}, A’s death would be just as bad as the death of B. This entails that we lack decisive reason to save A and equally lack decisive reason to save B – the lesson that any reader of Taurek’s paper must accept. For it simply to be permissible to save A or to save B it would have to be the case that it does not matter whether we save A or B. This is indeed the case with two identical objects ... but in the case of human lives it matters greatly which way the decision goes – to A as well as to B.\footnote{Timmermann (2004: 107-8)}

It should now be clear why Timmermann objects to Scanlon’s conclusion in the A versus B case; faced with a grave decision between two equally appealing options, the rescuer here cannot simply choose one person over the other as a matter of arbitrary preference. Indeed, the problem is perfectly symmetrical from the rescuer’s perspective: every reason to save A is balanced by an equal and opposite reason to save B. Concerned by the potential similarities between this case and the tragedy of Buridan’s ass, Timmermann escapes from this ‘stalemate’ by turning to procedure:

> Anyone stuck in the rescuer’s dilemma requires a fair method to decide which of the two to save, A or B. So grave a decision should not depend on a whims of the agent. Both islanders ought to receive a fair chance; and in the absence of considerations in favour of the one person or the other it must be an equal chance. ... This kind of procedure is not just permissible – which Scanlon, of course, can readily grant. It is a necessary consequence of the command to treat human beings as persons, not as mere objects.\footnote{Timmermann (2004: 108)}

This seemingly minor objection to Scanlon helps to set up a much better second argument. Having established the requirement for a fair decision making procedure when faced with a choice between two equally strong claims, Timmermann now moves to address the underlying mechanism of the claim balancing position in his ‘sequencing’ objection.

Timmermann’s sequencing objection relates to the order in which individual claims are balanced off by the claim balancing solution. In the A versus B & C case, there are two possibilities according to claim balancing: either A’s claim is balanced against B’s claim or A’s claim is balanced against C’s claim. In both cases, the remaining unbalanced claim comes from the larger group and determines the rescue of the greater number. Let us presume that

\footnote{Timmermann (2004: 107-8)}
claims are compared in accordance with the first ordering, so that A’s claim faces B’s first. Timmermann objects to this sequencing:

The move to make C the additional person to be saved lacks justification. It is completely arbitrary. The move from the A/B to A/BC with C as an ‘additional’ islander is not sequential, as Scanlon and Kumar suggest; or rather, in creating a sequence they implicitly aggregate.65

Timmermann is making two separate points here and I will address them in turn. First, the idea that C is the ‘additional’ islander in the A versus B & C example is a mischaracterisation of the choice facing the rescuer here. As with Otsuka’s ‘Scales of Justice’ objection, it is not the case that A’s claim is balanced against B’s before C appears as an additional person to break the tie. Rather, B and C are present together in the larger group at the outset of the problem. As such, the decision to balance A’s claim against B’s rather than C’s is arbitrary in the sense that it ‘lacks justification’ in Timmermann’s terms:

As in the case of A and B, there is no decisive reason to designate B or C the person to be saved ‘first’, or as the person who breaks the tie.66

It is possible to modify the claim balancing approach so as to avoid Timmermann’s objection. If Timmermann is happy to use a coin toss to decide between two equally strong claims in the A versus B case, then perhaps he would also accept the use of a coin toss to decide between the equally valid ways in which the claims can be compared here. Instead of simply choosing one sequence of comparison ‘without justification’, my modified version of the claim balancing approach uses a coin toss (or a similar procedure with equal chances) to decide the order of comparison. Once this preliminary stage is completed, the unbalanced claim will still come from the largest group and the result will be the same. As such, Timmermann can no longer complain that the method of comparison treats B and C as interchangeable persons, contrary to Taurek’s argument above.67

Timmermann’s second point here cannot be avoided by way of a similar modification to the claim balancing account. Arguing that ‘in creating a sequence, [Scanlon and Kumar]
implicitly aggregate’, Timmermann effectively accuses the claim balancing position of rigging the process in order to guarantee that the winner comes from the largest group:

The goodness of actions is still driven by the conjunction of people’s claims. Scanlon’s account relies on aggregation, if not on quantification of a combined objective value. The two should not be confused. Individual claims of persons can never simply be paired up with, and struck off by, the weight of another, admittedly equal claim.68

The key notion here is the idea that claims can never be ‘paired up with’ one another. Returning to Taurek and Nagel once more, each person is said to have the same claim for aid in the Number Problem in virtue of their equal shared potential loss.69 As such, the origin of each claim is found solely in the loss facing each person – not the combined loss facing members of the same group. While it is easy to see why A’s claim is in opposition to the claim of both B’s and C’s here, it is not necessarily obvious why B’s claim is in conflict with C’s and vice versa. To explain, B’s and C’s claims are in conflict in the following way. Understood as a function of purely individual losses, B’s claim for aid is that the rescuer spare B their potential loss only. Had B’s claim for aid been based on the combined potential losses of both B and C, this would be an unacceptably aggregative argument. Timmermann’s assertion that ‘The goodness of actions is still given by the conjunction of people’s claims’ is designed to refer to this exact point. If the strength of an individual’s claim for aid is derived solely from the potential loss facing that person, then it is not possible to combine mutually supportive claims into one decisive ‘super claim’ as there is no associated ‘super potential loss’ to motivate it. As discussed earlier in section 3.2, Scanlon rejects this kind of aggregative reasoning in his contractualism as ‘the sum of smaller benefits to others has no justificatory weight, since there is no individual who enjoys these benefits and would have to forgo them if the policy were disallowed’ (1998: 230). This quote demonstrates why B’s claim cannot be used to support C’s and vice versa; each person asks that the rescuer aid them in virtue of their potential loss, they cannot ask that the rescuer aid their group as to do so would be unacceptably aggregative.

Timmermann’s sequencing objection questions why the results of the claim balancing procedure always favour the largest group. As I argue in the next chapter, the claim balancing solution can be modified according to Timmermann’s objection to produce the same result as a rival theory: the weighted lottery solution. By combining claim balancing and

68 Timmermann (2004: 109)
69 See Chapter 2.2.
Timmermann’s objections, I will provide a new argument for the weighted lottery solution. For now, the important point is the following. By highlighting the purely individual nature of claims, Timmermann’s objection demonstrates why the Kamm-Scanlon and Scanlon-Kumar claim balancing methods function by way of implicit aggregation:

To make numbers matter you have to start aggregating the value of individual lives. Any such claim would have to refer to the alleged greater good of saving a group: save us rather than him. This is what Scanlon rightly seeks to avoid; and it is, in effect, precisely what he ends up doing.\textsuperscript{70}

Taken together, Otsuka and Timmermann’s objections demand the rejection of the claim balancing position. In the final section of this chapter I address a different argument for always saving the greater number put forward by Kamm and endorsed by Hirose: the Aggregation Argument.

### 3.6 The Aggregation Argument

The final section of this chapter concerns a somewhat overlooked contribution to the Number Problem debate: Kamm’s Aggregation Argument (1998: 84-87). Distinct from the claim balancing Kamm-Scanlon account but endorsing the same conclusion, Kamm’s second argument is designed to offer a non-aggregative justification for always saving the greater number. Following Kamm, the Aggregation Argument has since been modified by Hirose (2001) and criticised by Lübbe (2008). I will present each of these positions in turn here, before rejecting the Aggregation Argument in light of a modified version of Lübbe’s objection.

Hirose summarises Kamm’s aggregation argument neatly here:

1. That $A$ alone saved is as good that $B$ alone is saved.
2. That $B$ and $C$ are saved is better than that $B$ alone is saved.
3. Therefore, that $B$ and $C$ are saved is better than that $A$ alone is saved.\textsuperscript{71}

\textsuperscript{70} Timmermann (2004: 110)

\textsuperscript{71} Hirose (2001: 341), numbers added.
Hirose claims that the Aggregation Argument proceeds by the application of two principles, Impartiality and Pareto. These are defined as:

**Impartiality**: Two alternatives are equally good if they differ only with regard to the identities of people.

**Pareto**: If one alternative is better for some person than another alternative, and if it is no worse for any person, then it is better than the other.\(^{72}\)

It is easy to see how these principles apply to the original argument. Beginning with (1): by Impartiality, the outcome of saving A rather than B and the outcome of saving B rather than A are equally good. Step (2) concerns Pareto: saving B and C together is better than saving B alone, since this outcome is better for someone (namely C) and simultaneously worse for no one (as it is impossible to rescue A in either case). Step (3) combines both principles with an unstated third principle – the principle of transitivity. As presented here, Hirose’s argument is incomplete without this third principle. Hirose then offers a second version of the argument:

Now Kamm’s argument can be formalized as follows. Compare:

\[X: \quad (\text{saved, dead, dead})\]
\[Y: \quad (\text{dead, saved, dead})\]
\[Z: \quad (\text{dead, saved, saved})\]

The brackets show the states of A, B and C respectively. By Impartiality, X is equally as good as Y, and, by Pareto, Z is better than Y. Consequently, Z is better than X.\(^{73}\)

Kamm’s original expression of the Aggregation Argument contained mathematical symbols. The full version of her argument states:

That is, where [“>” = “better than,”] if \(B + C > B\) and if \(A = B\), then \(B + C > A\).\(^{74}\)

The natural response to this unusual notation is to question how \(B + C > A\) is possible without aggregating the claims of B and C together. Surely the “+” sign implies some kind

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\(^{72}\) Hirose (2014: 162)

\(^{73}\) Hirose (2001: 341)

\(^{74}\) Kamm (1998: 85). Note that I have expressed Kamm’s equations in terms of a ‘better than’ relation here, rather than the original ‘worse than’, as this is clearer.
of addition? Hirose sidesteps these worries by reformatting Kamm’s description of the Aggregation Argument:

As neither impartiality nor Pareto aggregates the gains and losses of different people, this rephrased argument is not aggregative. It does not include the combination of gains and losses of different individuals at any stage. Nor does it include the “+” sign, which Kamm uses.25

If Hirose is correct, Kamm’s Aggregation Argument solves the classic version of Number Problem, requiring us always to save the greater number without resorting to aggregative reasoning.

Following Hirose’s 2001 paper (and the incorporation of his work into a longer paper in 2004), the most important response to his version of the Aggregation Argument has come from Lübbe (2008). Lübbe’s ‘Taurek’s No Worse Claim’ occupies a unique place in the Number Problem literature as the only paper to focus solely on Taurek and Kamm’s Aggregation Argument. Although Lübbe makes a number of arguments against the position from the perspective of a Taurekian rescuer, I wish to concentrate on just one of these arguments here, namely, that the Aggregation Argument functions by way of an invalid substitution and that Hirose’s attempts to reformulate it in light of this objection are unsuccessful.

Recall that Kamm’s original specification of the Aggregation Argument begins with a pairwise comparison, stating that \( A = B \). The second stage concerns a Pareto improvement, \( B + C > B \) (where “>” is to be understood as “better than”). Finally, the conclusion is reached by substituting \( A \) for \( B \) in the second stage to give the result that \( B + C > A \), determining that we should always act to save the greater number. As noted above, Hirose accepts that Kamm’s informal description of the position using mathematical symbols is unsatisfying. By using the operator “+”, Kamm implies that it is the combined weight of \( B \) and \( C \)’s claims that is decisive in both the second and third stages.

Hirose’s first reformulation of the Aggregation Argument simply removes the mathematical symbols from Kamm’s original account. Step one therefore becomes:

1. \( A \) alone saved is as good as that \( B \) alone is saved.

Lübbe’s objection concerns the relationship between the first and second premises of Hirose’s reformulated Aggregation Argument. Kamm’s second step, where ‘\(B + C > B\)’, now becomes:

2. That \(B\) and \(C\) are saved is better than that \(B\) alone is saved.

It is important to note the difference in emphasis between the two; Hirose’s reformulated point is designed to remove the ambiguity from Kamm’s account. If, as Kamm argues, ‘\(B + C > B\)’, it is not clear whether the death of \(B\) and \(C\) together is worse than the death of \(B\) alone in virtue of the wastefulness of saving \(B\) alone (as \(C\) could be rescued at no additional cost) or whether this is a function of the combined weight of two deaths versus one (which would be aggregative). Hirose’s version of (2) is clear in this regard: saving \(B\) and \(C\) together is better than saving \(B\) alone as this represents a Pareto improvement. This is a non-aggregative justification for the former over the latter. Finally, Kamm’s conclusion that ‘\(B + C > A\)’ becomes:

3. Therefore, that \(B\) and \(C\) are saved is better than that \(A\) alone is saved.

Lübbe objects that Hirose’s reformulated Aggregation Argument is incomplete. Perhaps as a consequence of using faux-mathematical terminology, the substitution of ‘\(A\)’ for ‘\(B\)’ on the right hand side of ‘\(B + C > B\)’, in light of ‘\(A = B\)’, seems entirely reasonable at first. The problem with this description and Hirose’s reformulated version of Kamm’s original argument, argues Lübbe, is that it fails to adequately account for \(C\):

The first premise, as it stands, however, does not give any information to the effect that someone prefers the better alternative. This is because we have, like Kamm, omitted to make explicit how \([C]\) fares on the right side of the alternative.\(^\text{76}\)

Lübbe’s argues that the first premise of the Aggregation Argument is incomplete; that the move from a two person comparison in steps (1) and (2) to a three person comparison in (3) is illegitimate. In order to complete the Aggregation Argument, we need to know what is happening to \(C\) in the first two steps. It is possible to restate Hirose’s first reformulation of the Aggregation Argument to include \(C\) in all steps, the revised argument becomes:

4. That \(A\) alone is saved where \(B\) and \(C\) die is as good as that \(B\) alone is saved and \(A\) and \(C\) die.

\(^{76}\) Lübbe (2008: 78)
This description of the Number Problem is ambiguous as it can apply to two possible kinds of cases. First, the choice might concern the standard $A$ vs. $B$ & $C$ version of the problem where one person is on the first island and two others on the second (where $B$ vs. $A$ & $C$ and $C$ vs. $A$ & $B$ are the other two possible distributions that fit this pattern). Second, the choice might concern three individuals stranded across three different islands: $A$ vs. $B$ vs. $C$.

The problem here is that (4) is false when the choice is understood in terms of $A$ versus $B$ & $C$. When $A$ is saved alone in this example, there is no one else on $A$'s island that we could rescue. In contrast, the decision to save $B$ alone is morally repugnant. Once the decision has been made to save $B$, there are two options: save $B$ alone or save $B$ and $C$ together. By Pareto, saving $B$ and $C$ is better than saving $B$ alone as this outcome is better for someone (namely $C$) and simultaneously worse for no one (as $B$ is rescued either way). If $C$ is left to die when they might otherwise be saved without cost, it can no longer be said that saving $A$ alone is equally good as saving $B$ alone. Saving $A$ alone is consistent with the demands of Pareto, saving $B$ alone is not. As such, (4) is false in cases where $B$ and $C$ are on the same island.

Interestingly, step (4) of the reformulated Aggregation Argument is true when the problem concerns three individuals on separate islands. Here then, the act of saving $A$ alone is equally good as saving $B$ alone as each outcome results in the rescue of every person on that particular island. In the same sense, saving $C$ alone is equally good as the other two alternatives. Unfortunately, this result does not help the Aggregation Argument. Consider now the final two steps of the revised argument:

5. That $B$ and $C$ are saved and $A$ alone dies is better than that $B$ alone is saved and $A$ and $C$ die.
6. Therefore, that $B$ and $C$ are saved and $A$ alone dies is better than that $A$ alone is saved and $B$ and $C$ die.

In the $A$ versus $B$ & $C$ case, it is no longer the case that (4) is equally good as (5) by Impartiality. In this case, (5) is superior to (4) as (5) does not require that we wastefully leave $C$ to die when they might have been saved at no cost. This blocks the first step in the Aggregation Argument: the move from (4) to (5). If it is impossible to get to (5) from (4), then it is impossible to reach the conclusion of (6). In the $A$ vs. $B$ vs. $C$ case, (4) is true but this does not help the Aggregation Argument. Once more, it is impossible to move from (4) to (5), as (5) is impossible given the
specification of the problem. While no one would disagree that it is better to save B and C rather than B alone here, this choice is not valid given that the rescuer only has enough time to reach one island and can therefore only save one person.

For both versions of the three person Number Problem, it is impossible to reach the conclusion of the Aggregation Argument from the stated premises. At best, the Aggregation Argument is incompatible with the specification of the problem; demanding that two people are saved in the A vs. B vs. C case when this is impossible. At worst, it is indifferent between saving every person on one island and wastefully leaving someone to die on another. This is clearly a nonsensical result: any moral theory that recommends saving no one when it is possible to save someone at no cost must be rejected. As a result, I therefore reject the Aggregation Argument.

3.7 Conclusion

Having considered the two main claim balancing positions, Kamm-Scanlon and Scanlon-Kumar, alongside the principle objections from Otsuka and Timmermann, I conclude that claim balancing approach should be rejected. In the next chapter, I argue for my favoured solution to the Number Problem: the weighted lottery. Using Scanlon’s ‘Making a Difference’ principle alongside the lessons learned in light of Timmermann’s sequencing objection, I claim that the weighted lottery is actually derivable from a combination of the claim balancing approach and Taurek’s equal maximum chances solution.
Chapter 4: The Weighted Lottery Solution

4.1 Introduction

After setting out the terms of the claim balancing position in the previous chapter, it is now possible to consider my favoured solution to the Number Problem: the weighted lottery. First suggested by Kavka (1979), versions of the weighted lottery have since been defended by Kamm (1985, 1998), Timmermann (2004), Saunders (2009) and Stone (2009). My focus in this chapter is on two-stage versions of the weighted lottery in particular, as first proposed by Timmermann. In total, I consider four arguments for the two-stage weighted lottery: Timmermann’s individualist lottery, my modified claim balancing account, Saunders’ two-stage inverse lottery and my interpretation of Kamm’s idea of claims in one-on-one combat. The second part of the chapter is concerned with the many positive features of the weighted lottery: that it is impartial, procedurally fair, egalitarian and efficient. Furthermore, the two-stage weighted lottery meets the most stringent interpretation of Scanlon’s ‘Making a Difference’ requirement and, unlike Taurek’s equal maximum chances approach, is capable of solving complex Number Problem cases involving overlapping sets and different probabilities of success.

There are four substantive sections in this chapter. Section 4.2 addresses the first two-stage weighted lottery solution, Timmermann’s individualist lottery, and how this relates to his ‘interchangeability’ and ‘sequencing’ objections discussed in Chapter 3.5. Combining Timmermann’s objections with the claim balancing approach, I offer a novel justification for the two-stage weighted lottery in section 4.3. Next, I consider two further arguments for the position in section 4.4. First, Saunders uses Hirose’s inverse lottery to generate the results of the weighted lottery. Second, I deploy Kamm’s notion of claims in one-on-one conflict alongside Timmermann’s sequencing objection to reach the same conclusion. Section 4.5 is devoted to the positive features of using a weighted lottery in the context of moral decision making. Ultimately, I conclude that the two-stage weighted lottery is a robust and flexible

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77 I do not consider Kavka’s version of the weighted lottery here, simply because his description of the position is so brief (1979: 293). In a similar sense, Kamm’s one-stage Procedure of Proportional Chances does not fit with the overall theme of this Chapter – two-stage lotteries – and therefore is included in Chapter 5.2 instead.
solution to the Number Problem before addressing objections to the position in the next chapter.

4.2 Timmermann’s Individualist Lottery

Timmermann’s solution to the Number Problem is the individualist lottery, a two-stage procedure that combines Taurek’s exclusive focus on the loss to an individual with the Pareto principle. Taken together, these two arguments generate the result that the greater number should be saved on a proportionally more frequent basis: the signature feature of the weighted lottery account. 78 In this section I begin by setting out the terms of Timmermann’s argument before considering his proportional result in light of Scanlon’s ‘Making a Difference’ principle. 79 With a definition of the individualist lottery in place, it is then possible to move onto my justification for the weighted lottery in the next section.

Timmermann sees his individualist lottery as a third way between Taurek’s equal maximum chances approach and the claim balancing of Kamm, Scanlon and Kumar. Beginning with former, he objects that:

For Taurek, one person counts for one but two or five or fifty million equally count for one. Taurek tries to avoid collectivity but fails. 80

There are echoes of Scanlon’s ‘Making a Difference’ objection to Taurek here, with some key differences. For Scanlon, additional persons in the problem should make ‘a moral difference, in favour of selecting [their] group’ (1998: 234). In contrast, Timmermann’s ‘collectivity’ objection to Taurek demands that additional persons make a moral difference in favour of saving themselves. In both cases, the objection is that Taurek’s solution is insensitive to the number of individuals in each group. As discussed at the end of Chapter 2, the recommendations of the equal maximum chances solution depend upon the number of ways in which we can usefully divide the good of being saved in the Number Problem. When the choice concerns A vs. B & C, there are two options: save A alone or save B and C together.

78 Timmermann uses the term individualist lottery to indicate that his position is ‘practically, but not philosophically, equivalent’ to the weighted lottery (2004: 111 fn 6). The point is addressed in the next section.
79 See Chapter 2.4, Chapter 3.2 and Chapter 3.3 for more details on Scanlon’s argument.
80 Timmermann (2004: 110)
Faced with a similar choice between three individuals on three islands, the number of options rises to three: save A alone, save B alone or save C alone. In each case, Taurek’s solution is to divide the chance of being rescued by the number of possible distributions: two in the first example giving a 1/2 chance to each person and three in the second for a 1/3 chance. Timmermann’s ‘collectivity’ objection targets this feature, rejecting Taurek’s solution in light of the insufficient importance it attaches to each individual claim. For Taurek, it simply does not matter how many people are in each group when the choice is between two options; whether the choice is between one person and two or one person and two million, he still flips a coin. This is the result that Timmermann objects to and Timmermann is, in my view, right.

As discussed in Chapter 3.5, Timmermann also objects to the claim balancing approach (notably the Scanlon-Kumar version). Rejecting the notion of claim balancing, Timmermann states:

> For Scanlon, every person counts for one until his or her claim is neutralized by someone else’s equivalent claim. He tries to avoid aggregation but fails.81

The idea that the claim balancing approach is implicitly aggregative or ‘covertly consequentialist’ (2004: 107) will play a key role in my argument for the weighted lottery later in this chapter. For now, it is sufficient to note that Timmermann’s solution is motivated solely by reasons relating to individual claims:

> Let us try to give each individual islander his due, avoiding the pitfalls of both extremes. If we reject group claims, it must be our duty first and foremost to save an individual person in need. If we reject group claims, it must be our duty first and foremost to save an individual person in need. Saving no one is the only course of action that is uncontrovertially morally wrong. Each individual in need calls for our help; and we need to decide who ought to be saved.82

This is the fundamental idea behind both the individualist and weighted lottery positions; the Number Problem is a matter of adjudication between individual, not group, claims for aid. Understood in this way, the choice facing the rescuer in the A vs. B & C case is now between three options not two. Rather than choosing between saving A alone or B and C together, the rescuer must decide which of three equally strong claims to recognise. Returning to

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81 Timmermann (2004: 110)
82 Timmermann (2004: 110)
Timmermann’s ‘interchangeability’ objection from Chapter 3.5, what is required here is a fair decision making procedure to adjudicate between the three options:

To give the claims of A, B and C equal weight, a coin will not do. We need a wheel of fortune with three sectors, each of which bears the name of one islander. The person whose sector comes up is saved. If this person is A, both B and C perish. If B’s sector is selected, B is saved. Having reached the island, the rescuer then incurs an obligation to save C. Similarly, if C wins B is also saved.\(^{83}\)

This is Timmermann’s individualist lottery, a two-stage decision making procedure that saves the greater number on a proportionally more frequent basis. When Timmermann talks of the rescuer incurring an obligation to save the extra person if B or C are selected by the wheel of fortune, this obligation is best understood in terms of the Pareto principle. Using Hirose’s definition from Chapter 3.6, Pareto is defined as:

\(\text{Pareto}^*: \text{If one alternative is better for some person than another alternative, and if it is no worse for any person, then it is better than the other.}\)\(^{84}\)

When A is chosen by the wheel, no Pareto improvement of the outcome is possible as A can only ever be rescued alone. In contrast, B and C may be rescued together. When the wheel chooses B or C, the rescuer heads towards their island and now faces a second choice: save B alone or save B and C together (presuming B was chosen by the wheel). Given that the latter outcome is better for someone, namely C, and worse for no one, Pareto demands the rescue of both individuals here. The second stage of Timmermann’s individualist lottery is therefore best understood in terms of a Pareto optimisation. Combined with the individualist wheel of fortune in the first stage, the overall result is that A has a \(1/3\) chance of rescue while B and C enjoy a higher \(2/3\) chance of being saved. In this sense, B and C have ‘a good chance of benefitting from someone else’s good luck’ (2004: 111).

Timmermann’s individualist lottery meets the requirement of Scanlon’s ‘Making a Difference’ principle in an intuitively plausible way. Scanlon demands that:

\[\text{In a case in which we must choose between saving one person and saving two, a principle that did not recognize the presence of the second person on the latter side}\]

\(^{83}\) Timmermann (2004: 110)

\(^{84}\) Hirose (2014: 162)
as making a moral difference, in favour of saving that group, could reasonably be rejected.\textsuperscript{85}

It is somewhat ironic that Scanlon’s favoured solution, the claim balancing approach, arguably fails to meet his own requirement in certain cases. Consider the effect of adding a fourth person, $D$, to the $A$ vs. $B$ & $C$ problem where $D$ sits alongside $B$ and $C$ in the larger group. According to the claim balancing approach, the result in the $A$ vs. $B$ & $C$ case is that we should always act to save the greater number. Adding $D$ alongside $B$ and $C$ does not change this result; is $D$ ‘making a moral difference, in favour of saving [their] group’ here? Saunders (2009) offers a potential reply on Scanlon’s behalf:

Scanlon could reply that being counted does not require that one changes the actual outcome of the procedure, only how one decides what to do. It seems to be a counterfactual notion: had matters been otherwise, one could have made a difference.\textsuperscript{86}

Contrast this with the recommendations of the individualist lottery when faced with the same choice: before $D$ is added to the largest group, $B$ and $C$ share the same $2/3$ chance of being rescued. After $D$ is added, the chances of saving the larger group rise to $3/4$; $D$ can therefore be said to make a tangible difference to the outcome here, in favour of saving their group. Surely this result is much more in keeping with the intention of Scanlon’s requirement? There are similarities between Saunders reply on behalf of Scanlon and Otsuka’s defence of Taurek in light of Scanlon’s objection, discussed in Chapter 2.4. Otsuka argues that additional persons make a moral difference to the deliberative stage of Taurek’s equal maximum chances solution, similar to the counterfactual analysis offered by Saunders. Interestingly, the idea that $D$’s claim could have been the decisive here relates to my argument for the weighted lottery in the next section. Using Otsuka’s ‘Scales of Justice’ metaphor, $D$’s claim could have been the one to tip the scales in the favour of the larger group. This argument refers to the notion of sequencing and Timmermann’s objection to the claim balancing position discussed in Chapter 3.5. In the next section, I present an argument for the weighted lottery that modifies the claim balancing approach in light of Timmermann’s objections.

\textsuperscript{85} Scanlon (1998: 234)
\textsuperscript{86} Saunders (2009: 283)
In this section I set out my own justification for the weighted lottery solution, a two-stage decision making procedure that gives the larger group in the Number Problem a proportionally greater chance of selection. As with Timmermann’s individualist lottery, my version begins by selecting one individual claim from many before optimising the result according to the Pareto principle. This two-stage approach is in contrast to the one-stage version of the Procedure of Proportional Chances (PPC) endorsed by Kamm (1998: 146-8), hence Timmermann’s use of a different name for his solution. I will not address Kamm’s version of the PPC here, as it is covered in detail as part of Hirose’s objections to the weighted lottery in Chapter 5. As a point of clarification however, it is worth noting that the term PPC can be used to refer both to Kamm’s one-stage version of the position and the two-stage approach endorsed by Timmermann. My argument in this section makes use of Timmermann’s two objections discussed in Chapter 3.5, ‘interchangeability’ and ‘sequencing’, to demonstrate that the result of weighted lottery solution can be reached by modifying the claim balancing approach in light of Timmermann’s objections. In the next section, I set out a second justification for the weighted lottery before considering a similar argument from Saunders (2009). Ultimately, the goal here is demonstrate that there are a variety of ways to justify the weighted lottery approach, at least three of which are consistent with Timmermann’s objections and his own individualist version of the position.

My argument begins with the modified version of the claim balancing position discussed in Chapter 3.5. Recall that Scanlon faces an objection from Timmermann with regards to ‘interchangeability’, the idea that Scanlon’s claim balancing treats people as interchangeable objects in the Number Problem. When faced with a choice between saving A alone or B alone, we lack a decisive reason for preferring one option over the other as all morally relevant considerations are in balance. Unlike for Scanlon, who argues that it is morally permissible to simply choose one option over the other as a matter of arbitrary preference, Timmermann demands that a fair decision procedure be employed to decide between the two options:

The conclusion for the case of equal claims cannot therefore be that anything goes – quite the opposite: nothing goes. We have reached a stalemate.87

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87 Timmermann (2004: 108)
As a result, he flips a coin and acts to recognise the claim associated with the winner of the coin toss. This is the first step in my argument for the weighted lottery; the idea that ‘equal claims call for arbitration, not for arbitrariness’ (2004: 109), that a choice between equally good but incompatible options must be made by way of a fair decision making procedure.

Timmermann’s second objection to Scanlon, ‘sequencing’, can be combined with his first to generate the weighted lottery. Timmermann does not make this point explicit in his work, claiming only that ‘the preceding criticisms strongly suggest the ‘individualist’ lottery procedure’ (2004: 108). This is a missed opportunity on Timmermann’s behalf; I believe that his arguments can be substantially improved by arranging them in a particular order. As set out in Chapter 3.5, I understand Timmermann’s sequencing objection in terms of two related points. The first concerns the way that the claim balancing position chooses which order to compare claims in. According to the claim balancing method, the outcome of the A vs. B & C Rescue Case is determined in favour of the larger group in virtue of the unbalanced claim of C. Once A’s claim has been set alongside that of B, where the two are understood to balance, cancel, neutralise or annihilate one another (depending on the version of claim balancing under consideration), it is said that the force of C’s claim now decides the outcome in favour of the larger group. This is not the only possible order of comparison however, rather than C’s claim breaking the tie between A and B it could be B’s claim breaking the tie between A and C instead. The first version of Timmermann’s sequencing objection questions why the claim balancing position chooses one ordering over the other here. Like with his interchangeability argument, it seems that the choice of the first ordering over the second is arbitrary. My response on behalf of Scanlon is simple: introduce a pre-balancing stage, a fair decision making procedure to select between the two options. My revised version of the claim balancing method now begins with a coin toss in the A vs. B & C case to decide which order the claims will be compared in. We can think of this as a coin toss between B and C, to determine which of them will face A. This is the second part of my argument for the weighted lottery, that the claim balancing approach is incomplete and arbitrary without the introduction of an additional and fair pre-balancing stage.

The final part of my argument for the weighted lottery concerns the second element of Timmermann’s sequencing objection. In the A vs B & C Rescue Case, there are two possible ways in which claims can be compared according to the claim balancing approach. It does not matter here whether the tiebreaking claim is B or C, the result is still the same: we act to save the greater number every time. Timmermann’s objection is that ‘in creating a sequence [Scanlon and Kumar] implicitly aggregate’ (2004: 109). My understanding of Timmermann’s
point here relates to the order in which claims are compared, that the claim balancing approach effectively ignores a third possibility that would see A’s claim recognised. So far I have considered two possible ways in which claims can be ordered in the A vs. B & C case, where the winner comes from the larger group every time. There is a third possible ordering of claims here however, one in which B’s claim is set against that of C (or vice versa) before A’s claim breaks the tie in favour of the smaller group. This point relates to the three, rather than two, sectors of Timmermann’s wheel of fortune. At this stage it is worth clarifying a point: following Taurek and Nagel, we know that the strength of an individual’s claim in the Number Problem is derived from the potential loss that they face. As such, the claim that breaks the tie here actually decides the matter in favour of that individual’s claim – not the interests of their group. While the two are often extensionally equivalent, as when B or C prevail in this case, it is possible to conceive of Number Problem scenarios where this is not so. This important point reinforces the idea that the Number Problem is a matter of adjudication between individual, not group, claims for aid.

It is now possible to combine the three arguments and derive the weighted lottery solution from the claim balancing account. Beginning with the first point, a decision between two or more equally good but incompatible options must be made by a fair decision making procedure on pain of arbitrariness. Second, the claim balancing method is incomplete without the addition of a fair pre-balancing stage. The second point is best understood as a specific instance of the general principle, which is described by the first. Therefore, if there are two ways in which claims can be compared according to the claim balancing narrative, what is required is a fair procedure to decide between them. My third and final point concerns a further modification to the claim balancing approach: understood as a choice between individual, not group, claims, the claim balancing approach must consider a third combinatorial possibility for assessing claims. In this alternative ordering, the winning claim is that of A rather than B or C. Returning to my first point once more, the claim balancing account now faces a choice between three (rather than two) equally good but mutually incompatible options. What we require here is something like Timmermann’s wheel of fortune with three sectors, each pointing to one of the three combinations. Giving each combination the same chance of selection is consistent with the demands of fairness, hence the outcome in which A’s claim is the winner is chosen with a probability of 1/3. If the B vs. C then A combination is chosen in the first stage of the process, the result is that A’s claim is

See Chapter 2.5 and Chapter 6 for a discussion of Number Problem cases involving overlapping sets of individuals.
recognised – we therefore act to save A. If the A vs. B then C combination is chosen by the wheel, we act to save C. Similarly, the A vs. C then B order demands that the rescuer head towards B. At this stage, following Timmermann, we test for a potential Pareto optimisation of the result.\(^9^9\) If A is rescued, no improvement in the outcome is possible as B and C cannot be saved alongside A. In contrast, the rescue of either B or C opens up the prospect of a Pareto improvement, where both individuals in the larger group are saved together. The overall result of this two-stage procedure is therefore that those in the larger group are given a proportionally greater chance of selection in the Number Problem: the result of the weighted lottery.

There is an obvious objection to this line of reasoning that must be addressed here: why are the claims of B and C balanced against each other in the third ordering when they belong to the same group? Are their claims not mutually compatible, perhaps even mutually supportive? This point is first touched upon in Chapter 3.5 and it concerns the fundamental nature of claims in the Number Problem. There are actually two objections here and I will consider them in turn. The first concerns the more potentially damaging idea that B and C’s claims are mutually supportive. In order to explain why B’s claim cannot support C’s and vice versa, I will make reference to an argument discussed in Chapter 3.5 once more. Timmermann states that:

> To make numbers matter you have to start aggregating the value of individual lives. Any such claim would have to refer to the alleged greater good of saving a group: save us rather than him.\(^9^0\)

The Number Problem is a matter of adjudication between individual claims, where these claims are understood in terms of the potential loss facing each person. Put simply, the death of A is equally bad for A as the death of B is for B or C’s death is for C. As a result, each person is said to have the same strength claim in virtue of their equal potential loss. B’s claim cannot support C’s claim, as C’s potential loss is no greater for the fact that B dies alongside them. As Timmermann rightly states, the logic of mutually supportive claims rests on an implicit

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\(^{9^9}\) Note that the Pareto principle is also applied to the first stage of the process, however the problem is predicated on the idea that it is impossible to aid all individuals simultaneously. Cases where it is possible to aid each person are addressed in Chapter 2.5 concerning ‘full overrepresentation’. Similarly, individuals who can no longer be aided regardless of our decision effectively drop out of the problem. This second point effectively delineates the scope of the Number Problem, describing the choice exclusively in terms of those who can be aided.

\(^{9^0}\) Timmermann (2004: 110)
appeal to aggregation – the combined loss of both B and C. Given that neither B nor C will experience this combined loss as a result of not being rescued, their claims are given the same weight as that of A. This explains why B’s claim is not mutually supportive of C’s.

The second objection, that there is no conflict between B’s claim and C’s as the two are mutually compatible, is more difficult to answer. I have two replies to this objection: first, that no claims are mutually compatible in the context of the first stage of the weighted lottery process; second, that mutually compatible claims are recognised as such by the Pareto optimising second stage. My first reply refers to the individual nature of claims in the Number Problem once more. The strength of an individual’s claim is derived solely from the potential loss facing that person. As such, A’s claim is simply that the rescuer aid A, without reference to either B or C. Similarly, B’s claim is that the rescuer aid B, without reference to A or C. Given the choice between saving B alone or B and C together, it is clear that C would prefer the latter outcome to the former. This choice only appears however, once the decision has been made to recognise either B’s or C’s claim. The first stage of the Number Problem according to weighted lottery is not a choice of this kind at all, it is a matter of adjudication between three individual claims. As such, each person can only ever ask that the rescuer aid them in virtue of their potential loss; at this stage, B’s claim really is in conflict with C’s after all. The difference between the two kinds of choices here, concerning mutually supportive and unsupportive claims, is the basis for my second reply to this objection. When the decision has been made to save B or C, the outcome in which both individuals are rescued is strictly better than saving one person alone according to the Pareto principle. It is at this stage that the weighted lottery recognises the mutually compatible claims of B and C, as the conflict with A has been resolved by the result of the lottery. In summary, mutually supportive and mutually compatible claims are set aside for the purpose of our decision in the first stage as this decision must be made between competing individual claims only. When this conflict between competing claims disappears, the second stage of the process optimises the result in accordance with the Pareto principle.

4.4 Two Additional Versions of the Weighted Lottery

In addition to Timmermann’s individualist lottery and my repurposed version of the claim balancing position, there are two further arguments for the proportional chances result that
must be considered here. Best understood in terms of Kamm’s idea that competing claims are in ‘combat’ with one another in the Number Problem (1998: 134), the two arguments reach the same conclusion by working from opposite ends. In the first case, Saunders uses the idea of Hirose’s inverse lottery (2014: 212-4) to demonstrate how the result of a two-stage inverse lottery between individual claims is equivalent to the weighted lottery (2009: 287-8). In the second case, I describe the Number Problem in terms of a fully ordered series of one-on-one contests between claims and show how this approach necessarily leads to the weighted lottery result. Along with Timmermann’s individualist lottery and my version of claim balancing, these additional arguments also meet the requirements of Timmermann’s ‘interchangeability’ and ‘sequencing’ objections. By the end of this section, I will have shown that the two-stage version of the lottery procedure is supported by a wide range of potential arguments.

Saunders (2009: 287-8) considers the implications of holding a two-stage lottery in light of Hirose’s ‘inverse lottery’ objection. In brief, Hirose’s argument sets out a version of the individualist lottery where the first stage is used to decide who not to save. There are three possible outcomes in the A vs. B & C Rescue Case: either A, B or C is selected ‘not-to-be-saved’ by the inverse lottery, where each option is equally likely with a probability of 1/3. Contrary to Hirose’s view, Saunders argues that a second draw is necessary in order to generate a complete set of results here:

If we do not assume the pooling of chances (i.e. that B and C must be saved or left together) from the start, then … we do not get an inverse lottery by focusing on who not to save. Instead, having picked B as not-to-be-saved, we still face a choice between A and C. Then we must flip a coin between A-alone and C-alone.

Following the first draw of the inverse lottery, we know that one person’s claim has been selected as ‘not-to-be-saved’. This result is incomplete: according to Saunders, the outcome is not settled – we require a second draw to decide between the remaining two claims. If each claim in the A vs. B & C case has the same 1/3 chance of being selected in the first draw and, if not selected, a 1/2 chance of not being selected by the second draw (as there are only two balls left in the lottery at this stage), then there are six possible outcomes as a result of holding two consecutive draws. Each outcome is equally likely, with a probability of 1/6, and each person’s claim is recognised as the winner (i.e. the only ball not to be drawn in the inverse lottery) in two out of the six possibilities. As such, each person has a 2/6 or 1/3 chance of

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91 Hirose (2014: 212-4), see Chapter 5.2 for a full discussion of Hirose’s argument.
92 Saunders (2009: 287)
winning the inverse lottery. If B or C is the winner, the result can be improved according to Pareto by saving the other member of the larger group, giving B and C a 2/3 chance of rescue. This is the result of the weighted lottery.

A second argument for the proportional chances result can be made in light of Kamm’s notion of ‘one-on-one combat’ between claims (1998: 135). Kamm considers two possibilities, serial and non-serial orders of comparison, and it is the former that I am concerned with here. Consider the two person Rescue Case, A vs. B, in terms of ‘one-on-one combat’ between the claims of A and B. Given that each claim is of equal strength, a fair decision making procedure is required to decide between them. Following Taurek and Timmermann, each claim is given the same 1/2 chance of defeating the other – perhaps by flipping a coin to decide. Now imagine the same mechanism of comparison applied to the A vs. B & C version of the problem; when compared sequentially, one claim will be advantaged relative to all others. This is best understood by way of a worked example: if A’s claim faces B’s first, before the winner faces C, then C only needs to win one coin flip to prevail while A and B must each win two. As a result, C’s chances of winning the sequential competition are twice as great as that of either A or B (1/2 vs. 1/4). Returning to Timmermann’s sequencing objection, we see that there are actually three ways in which claims can be ordered here: A vs. B then C, A vs. C then B and B vs. C then A. Faced with three equally acceptable possible orderings, a fair decision making procedure is required. As with my modified version of the claim balancing account, Timmermann’s wheel of fortune would suffice here; selecting each ordering with the same probability (1/3). When Timmermann’s first stage wheel of fortune is combined with Kamm’s ‘one-on-one’ combat between claims, the result is the same as the individualist lottery. This requires further explanation.

There are a total of twelve possible outcomes when using this method to solve the A vs. B & C Rescue Case and each is equally likely. The first stage of the procedure selects one ordering from three, with three possible results. Next, the second stage of the procedure selects one claim from three given the ordering chosen by the first stage – generating four possible results. Given that each of these options is equally likely, there are three different ways in which the second stage can produce four results: this gives a total of twelve possible outcomes of the two-stage procedure. Across the twelve results, A’s claim is victorious four times and the same is true for both B and C. As such, this decision making procedure gives a 4/12 or 1/3 chance of selection to each claim – the result of individualist lottery. Combining this with the Pareto principle once more, the final result is that the greater number are saved on a
proportionally more frequent basis. To help explain this point, here are the twelve possible outcomes:

1. A vs. B then C chosen by Timmermann’s wheel, A defeats B then A defeats C: A wins
2. A vs. B then C chosen by Timmermann’s wheel, A defeats B then C defeats A: C wins
3. A vs. B then C chosen by Timmermann’s wheel, B defeats A then B defeats C: B wins
4. A vs. B then C chosen by Timmermann’s wheel, B defeats A then C defeats B: C wins
5. A vs. C then B chosen by Timmermann’s wheel, A defeats C then A defeats B: A wins
6. A vs. C then B chosen by Timmermann’s wheel, A defeats C then B defeats A: B wins
7. A vs. C then B chosen by Timmermann’s wheel, C defeats A then C defeats B: C wins
8. A vs. C then B chosen by Timmermann’s wheel, C defeats A then B defeats C: B wins
9. B vs. C then A chosen by Timmermann’s wheel, B defeats C then B defeats A: B wins
10. B vs. C then A chosen by Timmermann’s wheel, B defeats C then A defeats B: A wins
11. B vs. C then A chosen by Timmermann’s wheel, C defeats B then C defeats A: C wins
12. B vs. C then A chosen by Timmermann’s wheel, C defeats B then A defeats C: A wins

Each outcome is equally likely to occur and each claim is victorious in 4/12 scenarios. As such, this process gives each person’s claim the same chance of recognition in the first stage of the deliberation. Combined with the Pareto principle, B and C are saved together when either B or C prevails in this process. The chances of saving the greater number are therefore 8/12 or 2/3: the proportional result of the weighted lottery.

While there are similarities between my two arguments for the weighted lottery solution, it is important to note that the first functions by way of balancing claims while the second utilises the notion of sequential combat. If, like Timmermann, you object the ‘Individual claims of persons can never simply be paired up with, and struck off by, the weight of another, admittedly equal claim’ (2004: 109) then the second argument still applies. Taken together, the four arguments for the weighted lottery discussed in this chapter demonstrate the wide range of possible ways to arrive at its proportional chances conclusion.
4.5 Positive Reasons to Endorse the Lottery Solution

The arguments in this thesis are designed to offer a range of both positive and negative justifications for adopting the weighted lottery solution to the Number Problem. While the arguments presented in Chapter 2 on Taurek and Chapter 3 on the claim balancing approach are mostly negative, highlighting the flaws in rival theories, the purpose of this section is to explain the many positive aspects of the weighted lottery.\(^{93}\) Perhaps the best known feature of selecting by lottery is the impartial nature of the process, a mechanical method of distributing a good free from human interference or biases. As a result, lotteries are widely understood to be procedurally fair; treating like cases equally in virtue of the equal probability of success attached to each possibility. In the sense that each person’s equal claim counts for one and only one entry into the lottery, the procedure is also egalitarian. Once the decision has been made to select by lottery, the procedure is also highly efficient; capable of producing results almost instantaneously and without additional costs. Furthermore, the act of entrusting a lottery with the weighty decision of who to save in the Number Problem can potentially minimise any potential guilt felt by the rescuer.\(^{94}\) Finally, the weighted lottery is uniquely sensitive to the distribution of persons across the Number Problem – thus meeting Scanlon’s ‘Making a Difference’ requirement – and capable of succeeding where rival theories fail when confronted with overlapping sets and different probability of success cases. I will discuss each of these points in order here.

John Broome’s first paper on the Number Problem, ‘Selecting People Randomly’, begins by discussing the trial following the sinking of the William Brown in 1841.\(^{95}\) When the ship hit an iceberg and sank, the surviving crew and passengers crammed into two lifeboats. After 24 hours in the freezing north Atlantic, the larger lifeboat began to take on water amid high waves and rain. It was against this bleak backdrop that the man in charge of the boat, former first mate Francis Rhodes, implored his fellow crewmen to lighten the load by throwing most of the surviving male passengers overboard.

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\(^{93}\) Note that objections to the weighted lottery solution and my responses are addressed in Chapter 5.

\(^{94}\) See Chapter 5.2 and Hirose (2014: 209) for more details.

\(^{95}\) This example is also discussed in Fienberg (1971: 256).
On Rhodes’ command, twelve men were forced from the boat, with a further two men following later upon the discovery of their hiding place. When the survivors arrived at their destination in Philadelphia, their reports led to the arrest of the only crewman still in port, Alexander Holmes. Indicting Holmes for manslaughter but not murder, Judge Henry Baldwin argued that it was wrong to use only unmarried male passengers to save the lifeboat and that the decision should have been made by lottery instead:

"This mode [of selection],” he said, "is resorted to as the fairest mode, and, in some sort, as an appeal to God, for selection of the victim ... In no other than this or some like way are those having equal rights put upon an equal footing, and in no other way is it possible to guard against partiality and oppression.”

Judge Baldwin’s summary captures many of the points I wish to make in this section. Although I do not argue that using chance is akin to asking God to decide for us, the idea that the weighted lottery somehow diminishes the burden of responsibility upon the rescuer is a useful one. Baldwin’s claim that lotteries protect the decision making procedure from ‘partiality and oppression’ is also important, as is his first point concerning fairness. Although Broome does not endorse the weighted lottery solution, his William Brown example is nevertheless an interesting starting point for discussing the merits of my favoured approach.

Beginning with the notion of impartiality, Stone argues that the pros and cons of using a lottery are ultimately reducible to the ‘sanitizing effects of ignorance’ (2009: 375). In this sense, the lottery is nothing more than a simple mechanical procedure by which an outcome can be generated. The normative work of selecting by lottery is therefore concerned with the decision to select by chance, rather than the mechanism itself. Provided that the lottery meets certain basic requirements, i.e. that it gives each person the same chance of selection, there is very little to say about the procedure itself. It is the decision to hold a lottery, not the process itself, that moral philosophers should be most concerned with.

Lotteries are impartial in the sense that each outcome is equally likely. They are therefore blind to reasons, both good and bad, for preferring one outcome over another. This impartiality is useful in the way that Stone suggests, effectively placing the decision making

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96 Two women also left the lifeboat at this stage, although it is unclear whether they were forced to do so. One theory is that they followed their brother into the water and perished as a result.
97 Broome (1984: 38)
98 Note that ignorance is one (amongst many) potential sources of partiality, the lottery approach is designed to avoid all of them.
procedure outside the realm of human influence. Once the decision to select by chance has been made, the die has literally been cast. The fact that lotteries, correctly run, are free from potential biases goes a long way towards explaining why they are widely accepted as appropriate for making tie-breaking decisions.

The impartial nature of the lottery approach is a guarantee of procedural fairness. When Judge Baldwin’s ‘partiality and oppression’ is ruled out, all that remains is a choice between equivalent options. As such, the lottery is both procedurally fair and egalitarian in the most commonly understood sense of both terms. Put simply, procedural fairness demands that we treat like cases equally. If the choice at the heart of the Number Problem is between equally strong individual claims for aid, it would be both unfair and unjustifiable to treat these claims differently. The weighted lottery approach is not the only Number Problem solution that claims to be egalitarian. Indeed, the principal opponent of Taurek’s famous argument – act utilitarianism – is egalitarian in the sense that each person’s potential gains and losses are counted equally for the purpose of deciding what to do. The lottery is similarly justifiable on egalitarian grounds, recognising the equal potential loss facing each person in virtue of their equal presence in the lottery: one potential life lost equals one ball in the draw.

Lotteries are capable of deciding between many equally strong competing claims in a highly efficient manner. Presented with a range of options to choose from, the lottery gives a result almost instantaneously and free of any significant decision making costs. Once again, it is important to note that the quality of this result depends entirely on the background conditions – the reason for holding a lottery in the first place. To draw a parallel between the lottery and computer programming, false inputs generate false outputs. Holding a lottery for the wrong reasons will therefore not improve the situation; lotteries are only capable of preserving normative justification, rather than enhancing it.

One of the most significant features of the weighted lottery solution is the way in which it meets Scanlon’s ‘Making a Difference’ principle. As discussed earlier in Chapter 4.2, one interpretation of Scanlon’s requirement is that additional claims should make a tangible difference in favour of saving their group. While I reject the notion of group reasoning here, it is clear how the weighted lottery meets Scanlon’s requirement in an intuitively plausible manner. For each person added to the Number Problem, the probability of saving their group increases on a proportional basis. As Saunders rightly notes, it is possible to add more than

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99 In Chapter 6 I expand this argument to cover cases where the loss facing each person is not equivalent.
one person to the problem and not alter the relative size of each group (2009: 284). When a choice between one and two becomes two against four or three against six, the relative size of each group is unaltered. Crucially, the probabilities associated with saving each group will always change when people are added to the problem on an individual basis.

The weighted lottery represents a significant improvement over Taurek’s equal maximum chances solution when faced with overlapping sets and different probability of success cases, as discussed in Chapter 2.5. Recall that an unmodified version of Taurek’s position levels every person’s chance of survival down to zero when faced with the choice between saving $A$ & $B$ together, $B$ & $C$ together or $D$ alone. This example demonstrates the contrast between Taurek’s position and the weighted lottery approach: Taurek distributes the chance of survival between different distributive options while the weighted lottery distributes the chance of selection between individuals. By selecting between individuals, the weighted lottery always chooses a single person as the winner of the first stage. In this example, the presence of $B$ in more than one group is problematic for Taurek’s approach but not the weighted lottery. When the first stage individualist lottery is run, one individual claim from many is selected. If $A$ wins the lottery, the rescuer heads towards $A$ and saves $B$ alongside them in accordance with the Pareto principle. Similarly, the selection of $C$ determines the rescue of both $B$ and $C$ together. The crucial result here is when $B$ wins the lottery; in the original specification of the problem I described $B$ as being on $C$’s island with the ability to swim to $A$’s island if required. If $B$’s claim is chosen by the lottery, the rescuer heads towards $B$. At this stage, $B$ can still choose to swim to first island and $A$. If $B$ stays with $C$, $B$ and $C$ are rescued together. If $B$ swims to $A$, $A$ and $B$ are rescued together. The weighted lottery solution can even accommodate the bizarre scenario where $B$ swims away from $C$’s island and does not head towards $A$. Committed to rescue $B$ by the result of the initial lottery, the lifeboat simply picks $B$ up from the water. In all cases, someone is saved as a result of holding a weighted lottery. No one has their chances levelled down here: the weighted lottery is a clear improvement over Taurek’s equal maximum chances solution in this case.

A modified ‘maximin’ version of Taurek’s solution can escape my objection from overlapping sets, however it is vulnerable to a second criticism concerning different probability of success cases. When the choice is between saving $A$ or saving $B$, where the chances of successfully rescuing either person (contingent on attempting to do so) are $1/10$ and $1$ respectively, Taurek’s approach risks saving no one with a chance of $9/11$ (approximately $82\%$ of the time). Faced with the same choice, the weighted lottery gives each person’s claim the same chance of selection in the first stage of the procedure. As such, $B$ has a $1/2$ chance of selection and
therefore being rescued. A’s claim also enjoys the same 1/2 chance of selection which, combined with their 1/10 chance of being successfully rescued if an attempt is made to do so, gives a 1/20 *ex ante* chance of survival. Combining these results shows that the weighted lottery runs the risk of saving no one with a probability of 9/20 (exactly 45% of the time); this is a significant improvement over Taurek’s position. At this stage, critics of the weighted lottery will raise an obvious objection: why run the risk of saving no one at all, albeit a lesser one compared to Taurek’s approach? If we act to save the greater number here, the risk of saving no one falls to zero – a dramatic further improvement. While I recognise the appeal of always saving the greater number here, my justification for holding a weighted lottery in situations such as these refers back to the fundamental nature of claims for aid in the Number Problem. Just because your claim is unlikely to lead to a positive outcome, it does not follow that we should simply ignore the equal potential loss that you face. Returning to Taurek’s key point: no person stands to suffer a loss greater than anyone else in the Number Problem, all claims for aid are therefore equally valid.

In summary, the two-stage weighted lottery offers an intuitively appealing solution to the Number Problem. When two choices differ by way of one extra person, the weighted lottery adjusts the *ex ante* chance of survival for each group accordingly. This proportional relationship between group sizes and chances of survival extends across all kinds of cases, even when faced with difficult choices involving overlapping sets and different probability of success cases. By choosing one individual claim from many by way of an impartial procedure, the weighted lottery answers the key question of adjudication posed by the Number Problem in a fair and egalitarian manner. Ultimately, the weighted lottery takes the potential loss facing each person seriously, staying true to the agent-relative reasoning of Taurek’s individualism in all circumstances. As such, the two-stage weighted lottery rests on a solid theoretical foundation: a fair, impartial and plausible solution to the Number Problem.

4.6 Conclusion

As demonstrated by the arguments in sections 4.2, 4.3 and 4.4, the two-stage weighted lottery solution to the Number Problem can be justified in a variety of different ways. In addition, the use of lotteries in moral decision making also brings numerous benefits. Lotteries are inherently impartial, efficient and procedurally fair. When deployed in the context of the
Number Problem, a two-stage weighted lottery is uniquely sensitive to the numbers of individuals in each group. The weighted lottery therefore meets Scanlon’s ‘Making a Difference’ requirement for acceptable Number Problem solutions in an intuitively plausible way. By choosing between individual claims, the initial lottery guarantees that at least one person will be saved in the standard Number Problem. When the choice concerns overlapping sets or different probabilities of success, the two-stage weighted lottery represents a significant improvement over Taurek’s equal maximum chances approach.

In summary, there are many reasons to endorse the two-stage weighted lottery solution. In the next chapter I consider a range of objections to the position, including the ‘incredulous stare’ – the idea that it is morally repugnant to give one person any chance of survival at the expense of millions or even billions of others. These objections and my responses are the subject of the next chapter, alongside the hybrid solution to the Number Problem that combines either Taurek’s equal maximum chances or the weighted lottery with the consequentialist policy of always saving the greater number.
Chapter 5: Objections to the Weighted Lottery and the Hybrid Approach

5.1 Introduction

Having set out the features of the weighted lottery solution in the previous chapter, it is now possible to address the main objections to the position. The arguments presented here divide into two thematic sections: individual objections and the hybrid approach. Included in the former are four notable objections to the weighted lottery: Hirose’s ‘none-or-all’ (5.2.1) and ‘inverse lottery’ (5.2.2) objections, Scanlon’s ‘reshuffling’ objection (5.3) and what I refer to as the ‘incredulous stare’ objection (5.4). The hybrid approach (5.5) is both a rival solution to the Number Problem and a special case response to the incredulous stare objection, questioning why the weighted lottery gives any chance of rescue to those in very small groups when the decision concerns a great number of people. Taken together, these five arguments represent the primary objections to the weighted lottery approach and the most significant potential obstacles facing my account of the weighted lottery solution to the Number Problem. By the end of this chapter, my responses will have demonstrated the flexibility and resilience of the two-stage weighted lottery; meeting some objections head on and adroitly adapting the theory in light of others.

5.2 Hirose’s Objections to the Lottery Solution

In his book Moral Aggregation (2014), Iwao Hirose offers four arguments against using lotteries to solve the Number Problem. Hirose divides his objections into two categories: those that apply to the Procedure of Proportional Chances (PPC) and those that apply to the General Weighted Lottery (GWL). According to Hirose’s definition, the PPC is a special case of the GWL whereby the chance of saving the smallest group in the Number Problem is directly proportional to its size relative to the largest group. The term GWL simply refers to the broader position whereby the smaller group has some chance of selection relative to the larger group, but where this chance is not necessarily proportional. This is best explained by referring back to a familiar example from Taurek: when the choice is between rescuing either one stranger or five, the PPC gives the smaller group a 1/6 chance of rescue. In contrast, the
requirements of the GWL are satisfied when the probability of saving the lone individual is greater than zero but less than or equal to 1/2.

Before beginning his argument against the PPC and GWL, Hirose offers four reasons in favour of selecting by lottery. These short points form the basis of Hirose’s objections, with the ultimate goal of demonstrating that ‘the fundamental motivation of the GWL is psychological, not philosophical’ (2014: 218). Referring to the PPC only, Hirose suggests that the position is motivated by a sense of egalitarian injustice. Given the facts of the Number Problem, that the good under distribution cannot be usefully divided or shared and that each person has the same strength claim for aid, the act of distributing that good will necessarily be unfair to some. The PPC therefore offers a kind of ‘surrogate satisfaction’ to those with unrecognised claims, distributing an alternative good equally – the chance of being selected for rescue – when distributing the good of being saved in the same way is impossible. Thus Hirose’s first point is that the PPC is egalitarian, effectively that:

We can distribute at least something equally.101

Hirose’s remaining three points apply to both the PPC and the GWL. In Kamm’s Sore Throat Case, the choice concerns either saving A’s life alone or saving B’s life and curing C’s sore throat together.102 Kamm’s example is usually deployed to demonstrate the problem of irrelevant utilities, that the potential to cure one person’s sore throat is morally irrelevant when compared to saving the life of another. According to Hirose, the weighted lottery approach offers an elegant solution to the problem: recognising C’s small but morally significant potential loss, the lottery can adjust the probability of selection to reflect C’s interests. This compares favourably with the two alternative approaches under which C’s loss is either given too much or too little importance (i.e. where it decides the outcome in favour of B and C or where it is ignored completely and a coin tossed instead). Hirose suggests that a revised probability of 55% in light of C’s presence would be perhaps be appropriate (2014: 208), a figure I find implausibly high. Regardless of the specific numbers he uses in this example, Hirose is right to highlight the intuitive solution to the problem of irrelevant utilities offered by the lottery (2014: 205-9).103

100 Broome (1998: 956) uses the same phrasing to describe Taurek’s equal maximum chances solution.
101 Hirose (2014: 208)
102 This example is discussed at length in the final section of this chapter and in Chapter 6.
103 The idea that the weighted lottery can be used to solve Number Problem cases concerning unequal losses is the subject of Chapter 6.
Hirose’s third point relates to his second, that the PPC and GWL offer an intuitively plausible response to slight changes in the specification of the problem (2014: 209). In this case the change is the addition of a third person facing the same loss, rather than C’s potential sore throat in the previous example. Consider the effect of adding C alongside B to the balanced A vs. B case in terms of the impact on A. For both the claim balancing and consequentialist positions, C’s presence alongside B determines the rescue of that group. Under the PPC, A’s chance of rescue does not collapse from 1/2 to 0 as it would under claim balancing, but rather drops to 1/3 instead. Hirose’s third point is therefore that the PPC and GWL offer a more consistent response to similar Number Problem cases than other solutions, mirroring minor changes in the problem with slightly altered probabilities of selection.  

Hirose’s fourth and final point concerns the notion of rescuer’s guilt. Given the facts of the Number Problem as set out in Chapter 2.2, it is inevitable that the rescuer’s choice will fail to prevent the death of at least one person. Hirose suggests that weighted lotteries can relieve some of this heavy psychological burden, even when the lottery selects the smaller group for survival. No matter what the outcome, the rescuer can claim that the result was a matter of bad luck for those who died. Thus the PPC and the GWL offer a psychologically less demanding decision making procedure from the rescuer’s perspective.

5.2.1 Hirose’s First Objection: ‘None-or-All’

Having set out one intuitively appealing feature of the PPC and three of the GWL, Hirose then moves to demonstrate why the rationale behind the first three of these features is flawed. He begins with the claim that the PPC distributes the chance of selection in an egalitarian way. Recall that in the six person Rescue Case detailed earlier, the PPC gives the lone individual a 1/6 chance of selection. Similarly, each member of the larger group is granted the same 1/6 chance of winning the lottery (where the prize is being selected for rescue). In this sense the PPC claims to be perfectly egalitarian, distributing the chance of selection equally between all six persons. Hirose’s objection echoes that of Broome (1998: 960) in focussing on how the PPC moves from six individuals with the same a 1/6 chance of selection to two groups, one of which

104 This point becomes clearer as the number of people in the initial balanced problem increase (i.e. adding one extra person to a balanced problem with one thousand people on each side).
has a 5/6 chance of selection. Broome’s point refers to the pooling of ‘baseline chances’, where baseline chance is defined as the equal initially distributed chance of selection in the Number Problem (1/6 in this Rescue Case example):

There is no distinction between baseline chances and final chances in this case. If you adopt the procedure of proportional chances, you are simply making the chances of the six people unequal; you are giving a five-sixths chance to five of them and a one-sixth chance to one. This cannot possibly be justified by appealing to the fairness of equal chances.\(^\text{105}\)

Before moving on to Hirose’s adaptation of Broome’s criticism, it is sensible to spend a moment addressing the initial objection. Broome is replying to Kamm (1998) in these comments and it is from her work that Hirose takes the term ‘PPC’. Kamm’s version of the PPC is superficially similar to both my weighted lottery and Timmermann’s individualist lottery. Like both Timmermann and myself, Kamm begins by distributing an equal baseline chance to each person in the problem. The positions deviate when Kamm permits the individuals in the larger group to pool their baseline chances, creating an unequal distribution of final chances. How does this happen? Kamm suggests that the process is natural, that ‘they started off on five separate icebergs. ... The icebergs then floated into an island’ (1998: 133). This seems implausibly convenient. By allowing the second stage of the process (pooling) to interfere with the first (equal baseline chances), Kamm introduces aggregation by the back door. As suggested by Broome’s criticism, Kamm’s PPC cannot claim to be the product of a two-stage process when pooling is permitted. Effectively, the second stage simply collapses into the first, where the first is now understood as an unequal distribution of baseline chances. What is required is a two-stage procedure where baseline chances remain equal throughout, i.e. one that is motivated solely by reasons arising from individual losses. Broome’s objection succeeds in demonstrating that Kamm’s one-stage PPC fails to distribute chances equally, however the same cannot be said for a genuinely independent two-stage solution.

Hirose’s adaptation of Broome’s objection is designed to force defenders of the PPC onto the horns of a dilemma. He begins his argument by introducing his ‘none-or-all’ condition:

\(^{105}\) Broome (1998: 960)
Let me propose one uncontroversial condition. It is what I call the *none-or-all condition*. This condition holds that it must be the case that either (1) we save all individuals in a group or (2) we save none in the group.\(^{106}\)

The first part of Hirose’s objection is designed, like Broome’s, to target the egalitarian claims of the PPC. Returning to the six person Rescue Case, Hirose suggests that the correct response to B winning the lottery (where B is in the larger group) would be to save B alone. This would avoid the problem of pooling baseline chances in Kamm’s PPC and preserve the idea of wanting to give ‘an equal chance to each stranger’ (2014: 212). Aside from the moral repugnancy of letting four people die when we could save them all at no cost, Hirose argues that this approach is wasteful in another sense:

> It is, however, a pity to waste the 1/6 baseline chance given to each of the other four.

> If we wish to hold on to the equal distribution of chances, we should not pool the baseline chances of the five strangers, but rather give an equal and maximum chance to each stranger when we divide up the chances.\(^{107}\)

If Hirose is correct, defenders of the PPC face an unpalatable choice. The PPC stands accused of answering equal claims for aid in the Rescue Case with unequal chances of survival, contrary to the demands of egalitarianism. Hirose suggests two potential responses: first, forbid the pooling of baseline chances; second, embrace the least worst egalitarian distribution of baseline chances and follow Taurek’s equal maximum chances approach. If the first option is chosen, four people are left to die when one of the five in the larger group wins the lottery. If the second option is chosen, the PPC collapses into Taurek’s theory. How might the defender of the PPC respond? My answer lies in Hirose’s ‘none-or-all’ condition.

Hirose uses his ‘none-or-all’ condition as the anvil in his argument, blocking the escape route for the PPC from the hammer of Taurek’s equal maximum chances solution. The issue with the ‘none-or-all’ condition is that it is far from uncontroversial, as Hirose claims; in certain circumstances it actually leads to nonsensical recommendations. Recall my objection to Taurek in Chapter 2.5 concerning overlapping sets. Taurek’s equal maximum chances solution is vulnerable to a *reductio ad absurdum* when the choice is between saving either A & B together, B & C together or D alone, as there is no way of giving each person the same chance of rescue without levelling all their chances down to zero. How might such a situation arise?

\(^{106}\) Hirose (2014: 211)

\(^{107}\) Hirose (2014: 212)
In Taurek’s Drug Case, the choice concerns the distribution of a life-saving drug. Imagine now that each of A, B, C and D need that drug to live, but in different quantities: A and C each need 75%, B only 25% and D the full 100% dose. In virtue of their equal potential loss, we hold a lottery to decide between their claims for aid and each person has the same 1/4 chance of winning. If A wins the lottery, we should give A 75% of the drug and the remaining 25% to B. According to Hirose’s ‘none-or-all’ condition however, members of a group must be either rescued together or not at all. Given that B is also in the same group as C and that C cannot be saved when A has used up 75% of the drug, Hirose’s condition demands that no member of the B & C group be rescued when we cannot save C. As a result, we cannot save either B or C. This result also affects the first group: if we cannot save B (as B is in C’s group), then we cannot save A either as both A and B are in the first group together and group members must be either saved together or not at all. Ultimately, the only result of the lottery that leads to anyone being saved according to Hirose’s condition is when D wins and uses 100% of the drug. Hirose’s principle therefore recommends saving no one with a probability of 3/4 in this version of the Drug Case: a farcical result. Any moral principle that recommends saving no one when it is possible to save someone at no cost should be rejected; I therefore reject Hirose’s ‘none-or-all’ condition.

Before moving on to Hirose’s second objection to the PPC, it is perhaps sensible to first spend a moment clarifying the differences between his ‘none-or-all’ condition and the Pareto principle. Recall that the Pareto principle is an optimising rule for choosing between distributions, where one distribution is strictly Pareto superior to another if and only if it is better for someone and simultaneously worse for no one. In the Drug example where A wins the lottery, there are just two options consistent with that lottery outcome: save A alone or save A and B together. Of these two distributions, the latter is a clear Pareto improvement over the former as it is better for someone (B) and simultaneously worse for no one (A is saved either way, C and D could not be saved once A has used 75% of the drug). This is in clear contrast with the recommendations of Hirose’s ‘none-or-all’ condition, which prefers distributions that are strictly worse for some people and simultaneously not better for anyone else. When A wins the lottery, Hirose’s condition prefers saving no one over the rival options of saving A alone and saving A and B together. As this example demonstrates, the similarities

108 The third option of saving no one is not a distribution under consideration for Pareto optimisation as it would worsen the position of A relative to the original distribution recommended by the lottery result.
between Hirose’s condition and the Pareto principle are merely superficial. Rejecting Hirose’s condition therefore has no bearing on the Pareto component of my weighted lottery solution.

In summary, Hirose’s ‘none-or-all’ objection fails to force the two-stage PPC onto the horns of his dilemma. With the ‘none-or-all’ condition rejected, defenders of the PPC are free to endorse the two-stage version of the position and the underlying Pareto principle. Indeed, the correct interpretation of Hirose’s ‘none-or-all’ requirement might well be the Pareto principle; simply, that we are morally required to bring about a benefit to someone if it is both simultaneously worse for no one else and without cost to ourselves.\footnote{Although this second condition (no cost) is a subset of the first (no worsening), it is a special case pertaining to the decision maker and therefore worth including here.} As shown with Kamm’s PPC, the real target of both Broome and Hirose’s arguments is an aggregative one-stage lottery where the second stage collapses into the first. When the first stage of the lottery is genuinely independent from the second, the first stage tells the rescuer which individual’s claim to recognise and nothing else. No pooling of baseline chances is possible or permitted, nor is aggregation by the back door.

5.2.2 Hirose’s Second Objection: The Inverse Lottery

Hirose’s two arguments against the PPC are designed with the two versions of the weighted lottery position in mind. His first objection, ‘none-or-all’, is targeted at Kamm’s PPC in which baseline chances are pooled at the outset. Recognising the limitations of this argument, Hirose then takes aim at the alternative form of the PPC: the two-stage lottery endorsed by Timmermann and myself (amongst others) in which baseline chances are not pooled and the first choice is between individuals only.\footnote{See Chapter 4.4 for a discussion of how the inverse lottery connects back to Saunders’ version of the two-stage weighted lottery.} Hirose’s second objection rests on a deceptively simple question: what if the lottery is used to distribute something bad rather than good? In the first version of the objection, Hirose argues that combining the inverse lottery with his ‘none-or-all’ condition inverts the result of the standard lottery and saves the greater number on a proportionally less frequent basis. In the second version of the objection, Hirose argues that the effect of not pooling baseline chances in the inverse lottery is to collapse the position back into Taurek’s equal maximum chances approach. As with his arguments in the previous section, Hirose’s aim is to force both the one-stage and two-stage versions of the PPC onto the...
horns of a dilemma, where each option entails the rejection of the position. In this section I begin by setting out the two versions of Hirose’s inverse lottery and explain why each is structurally flawed. Next, I consider two alternative interpretations of Hirose’s objection, one-shot and multiple draw, that attempt to avoid my structural criticisms. Ultimately, I conclude that Hirose’s inverse lottery actually supports the recommendations of the two-stage PPC: saving the greater number on a proportionally greater basis.

Hirose’s first version of the inverse lottery objection begins with a standard six person Rescue Case, where A is alone on one island and B, C, D, E and F are together on another. According to the standard (i.e. non-inverted) version of the two-stage PPC, each person enjoys the same 1/6 baseline chance of selection by the lottery. As such, the chance of the winning person being on the larger island is 5/6. Hirose’s objection concerns the good under distribution in the lottery, effectively asking why the ‘prize’ of winning is something good rather than bad. When the purpose of the lottery is inverted in this way, Hirose argues that the prize of selection by the lottery is ‘not being saved’ rather than the standard ‘being saved’. Accordingly, the effect of inverting the lottery is to ultimately invert the chances of rescue for each group. There are now two possibilities according to Hirose: either A wins the lottery or someone from the larger group does:

If the one stranger (call him A) is drawn, we will not save him: we will save the five strangers. This is straightforward. What if one of the five strangers is drawn? Suppose that B is drawn. In this case, we will not save B. Given the none-or-all condition, the other four strangers must have the same fate as B. Therefore, we will let the five strangers die and save A alone.\footnote{Hirose (2014: 213)}

If Hirose’s interpretation of the inverse lottery is correct, the result is the reverse of the standard lottery. Instead of A being saved only when A is picked by the standard lottery, A is now rescued when any of the five strangers win the inverse lottery. This result is the product of pooling baseline chances, giving the larger group a combined 5/6 chance of winning the dubious prize. When this result is combined with Hirose’s ‘none-or-all’ condition, it is easy to see why the selection of one individual in the larger group determines the fate of the others.\footnote{Hirose offers a similar version of this argument in Hirose (2007: 51-2) where he does not use the term ‘none-or-all’. The argument is structurally identically however.} If B is chosen by the inverse lottery and wins the ‘prize’ of ‘not being saved’, then B cannot be rescued according to Hirose. According to the ‘none-or-all’
condition, either all members of a group are rescued or none of them are. As such, not rescuing \( B \) is the same as not saving anyone in \( B \)'s group and we should therefore rescue \( A \) instead. This is the reverse of the standard lottery result; the inverse lottery recommends saving the greater number on a proportionally less frequent basis.

The logical response to the first version of Hirose’s objection is to question why those in the larger group would want to increase their chances of winning an undesirable prize by pooling their baseline chances together. Hirose pre-empts this response by offering a second version of his argument, one in which the baseline chances of the larger group are not pooled. In this second version, each person begins with the same baseline 1/6 chance of winning the inverse lottery:

But suppose that the five strangers do not pool their chances of not being saved. This means that we give a 1/6 chance of not being saved to \( A \) and a 1/6 chance to the group of five strangers. In turn, the total chance of not being saved adds up to 2/6. But in the Rescue Case, it is assumed that we cannot save all six strangers. This means that at least one person must die. It follows that the chance allocated to these strangers must add up to 1. Therefore, we must increase the chance from 1/6 to 1/2 for each side.\(^{113}\)

Something has gone wrong with Hirose’s understanding of probabilities here. At the outset of this section, I explained that Hirose’s two versions of the inverse lottery objection were aimed at different targets. The first target, Kamm’s PPC, is effectively a choice between two groups. The second target, Timmermann’s (and my own) two-stage lottery begins with a choice between individuals. This crucial difference is not reflected adequately in either version of Hirose’s inverse lottery objection: in the first, he allows the five individuals to pool their individual chances as a group; in the second, he assigns ‘a 1/6 chance to the group of five’. Both of Hirose’s inverse lottery objections are therefore only targeted at Kamm’s one-stage version of the PPC, not the two-stage version.

Hirose’s inverse lottery objection mischaracterises the two-stage version of the PPC as a choice between groups, rather than individuals. As a result, it is possible to ignore his objection on the grounds of irrelevance. A better approach is to modify his argument so that it genuinely objects to the two-stage PPC, before ultimately demonstrating that the inverse lottery supports the conclusions of the standard version. There are two possible ways of doing so:

\(^{113}\) Hirose (2014: 213-4)
first, by making the inverse lottery a single draw, producing a winner in the same way as the standard version; second, by interpreting the inverse lottery as a process of elimination, selecting the winner by logical exclusion.

The first reinterpretation of the inverse lottery seeks to preserve the fundamental structure of the standard version of the position. According to the standard lottery, a choice is made between individuals by way of a single draw. The prize for winning the standard lottery is ‘being saved’ and, in the second stage of the deliberation, this result is optimised by the Pareto principle to produce the familiar proportional chances result. In both versions of Hirose’s inverse lottery, he gives each individual the same baseline chance of winning. Using the three person Rescue Case example, where A is alone on one island and B and C together on the second, each person enjoys the same 1/3 baseline chance of winning the standard lottery. When the lottery is drawn, there are three possible results which divide into two groups: either A, B or C is selected and the winning individual will be in either the larger or smaller group. If A wins the standard lottery, A is selected for rescue. Similarly, B’s prize for winning the lottery is that B is selected for rescue and the same applies for C. When the inverse lottery is run, A winning the lottery determines that A will not be selected for rescue. The crucial result here is when either of B or C wins the inverse lottery. If B wins the inverse lottery, B will not be rescued. According to Hirose’s ‘none-or-all’ condition, this determines the rescue of A as C cannot be saved alone. Thus the choice in the inverse lottery is not between three individual options, rather it is between two possibilities corresponding to two groups. Contrast this result with the standard lottery: here one individual (more accurately, one individual claim) is selected from many by way of a single draw. In order to preserve this structure, Hirose’s inverse lottery should also choose one individual from many.

When reinterpreted as a one-shot choice between individual claims, Hirose’s inverse lottery must assign a different baseline chance of selection to each person. Rather than the 1/3 baseline chance in the three person Rescue Case, this chance must rise to 2/3 in order to match the standard lottery structure. How can three people each have a 2/3 chance of selection in the inverse lottery when these probabilities sum to 2 not 1? The answer lies in the prize under distribution: ‘not being selected for rescue’. As a result, the one-shot version of the inverse lottery must choose which pair of individuals (in the three person case) will receive the booby prize of not being rescued. Each ball in the lottery therefore corresponds to two individuals:

\[114\] This is the example discussed in Hirose’s earlier 2007 version of the inverse lottery objection.
(A & B), (A & C), (B & C). No matter which ball is drawn, two people will receive the prize and the remaining individual is left as the victor in a more traditional sense (i.e. that they will be selected for rescue). This first reinterpretation of the inverse lottery, the one-shot version, therefore matches the structure of the standard lottery exactly: it chooses one individual claim from many by way of a single draw. Similarly, the result of the one-shot inverse lottery selects one claim from three in the Rescue Case with a probability of 1/3. When combined with the Pareto principle in the second stage of the process, the final result is that the greater number are saved on a proportionally more frequent basis: the exact same result as the non-inverse version of the lottery.

A second interpretation of the inverse lottery is the multiple draw version. As before, each person enjoys the same equal baseline chance of winning the prize, i.e. not being selected for rescue. Using the three person Rescue Case example again, the first draw chooses between A, B and C where each outcome is equally likely. According to the multiple draw version of the position, the first stage of the inverse lottery produces incomplete results. If A’s ball is drawn by the lottery, the result is that A is not selected for rescue. What about B and C? At this stage we still have two individual claims for aid, each of which is grounded solely in that person’s potential loss. This may seem somewhat counterintuitive; surely B would prefer the outcome in which B & C are saved together rather than the one in which B was saved alone and C left wastefully to die? This is undoubtedly true, but B’s claim is grounded solely in B’s potential loss – not the combined potential loss of both B & C together. As a result, their claims are purely individual in nature; anything else would be unacceptably aggregative. So what does this mean for the multiple draw version of the inverse lottery? As with the standard version, the goal is to choose one claim from many. If A has been chosen by the first draw, we do not recognise A’s claim. In order to decide between B’s claim and C’s claim, a second draw is required. Effectively, the multiple draw version of the inverse lottery begins with three balls in a bag and draws one ball at a time until only one remains. At this stage, after dismissing every claim bar one, the individual claim associated with the final ball is recognised and we save that person. This result is the product of simple logical exclusion; if the lottery chooses ‘not A’ and ‘not B’, then C is the only claim left standing. As with the standard version of the lottery, the result is that one individual claim is selected from many. Similarly, the result of holding a multiple draw inverse lottery in the three person Rescue Case is that each person shares the same 1/3 chance of being the last ball drawn. As such, their claims are equally

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115 This version is discussed in Saunders (2009).
likely to be recognised in the first stage of the process. Combining this result with the Pareto principle in the second stage then generates the proportional result of the standard lottery: saving the greater number on a proportionally more frequent basis.

In both the one-shot and multiple draw versions of the inverse lottery, the result is the same as the non-inverted weighted lottery approach. Hirose’s two versions of the position, with and without pooling of baseline chances, are both flawed as they reason from the perspective of groups rather than individuals. While this objection is a problem for Kamm’s one-stage version of the PPC, it fails to challenge the two-stage account. When understood as a matter of adjudication between individual claims, the inverse lottery is simply the standard lottery in a different form; supporting the same proportional chances conclusion. Rather than exposing a flaw in the weighted lottery position, Hirose’s objection actually serves to illuminate a strength of my view: I therefore reject Hirose’s inverse lottery objection.

5.3 Scanlon’s Reshuffling Objection

In this section I address Scanlon’s ‘reshuffling’ objection to the weighted lottery. In short, Scanlon’s objection is that the weighted lottery takes the results of the ‘natural lottery’ and randomises them again for no reason. If Scanlon is correct, the weighted lottery is at best unnecessary and at worse sub-optimal with regards to ex ante chances of survival. Using Saunders’ (2009: 281-3) discussion of Scanlon’s objection as the basis of my response, I offer three arguments in defence of the weighted lottery solution. First, that risk-averse parties in an ‘original position’ scenario might prefer the lottery over Scanlon’s saving the greater number policy even when this results in a lower ex ante chance of survival. Second, that prior randomisation cannot be presumed in the majority of Number Problem cases thus ruling out the notion of reshuffling. Third, that by focussing on ex ante survival chances only, the reshuffling objection ignores the wider incentive effects of using a weighted lottery to decide.

Scanlon’s reshuffling objection is closely related to his ‘Making a Difference’ principle. As discussed in Chapter 4.2, Scanlon requires that any successful solution to the Number Problem must recognise each person as making ‘a moral difference, counting in favour of saving [their] group’ (1998: 234) on pain of rejection. Scanlon acknowledges the suitability of the weighted lottery in this sense, asking ‘Why, then, does this not settle the matter?’ (1998: 234). He answers the question with a single sentence:
There is no reason, at this point, to reshuffle the moral deck by holding a weighted lottery, or an unweighted one.\textsuperscript{116}

This is the reshuffling objection, a single sentence argument that poses a significant threat to the weighted lottery approach. The objection is discussed in more detail by Saunders (2009: 281-3), who focusses on the notion of ‘reshuffling’:

The argument seems puzzling, but I believe the ‘reshuffling’ metaphor is revealing and crucial to understanding Scanlon’s thinking. A lottery is only re-shuffling the deck if it has already been shuffled to begin with.\textsuperscript{117}

What does it mean for the moral deck to be shuffled or reshuffled? According to Saunders, and as seems plausible, reshuffling is only possible in Number Problem cases where prior randomisation has occurred.

The concept of prior randomisation is crucial in understanding both Scanlon’s objection and Saunders’ interpretation. Saunders considers the case of five individuals, David and $A$, $B$, $C$, $D$, who are together on a boat which sinks in a storm. If we know that only four people can fit into the lifeboat, at least one person will be left to drown in the water. According to Saunders, this is a case of prior randomisation; that there is a randomisation involved in who gets into the lifeboat that is prior to any lottery to determine whether to save those in the lifeboat or the individual in the sea:

It is a matter of chance who ends up where—i.e. each of them had a roughly equal probability of being stranded on his own\textsuperscript{118}

If we presume that the four people in the lifeboat will ultimately be rescued and that the unfortunate person in the water will drown, each person shares the same $4/5$ (80\%) \textit{ex ante} chance of survival. Consider now the implications of holding a weighted lottery to determine whether to save those in the lifeboat or the individual in the sea. Ordinarily, the weighted lottery would give those in the lifeboat a $4/5$ (80\%) chance of rescue and a $1/5$ (20\%) chance to the lone individual. In this case however, the policy of using a lottery to decide when the boat has already sank might be viewed as a \textit{second} randomisation and this changes the probabilities. Let the first stage lottery, the prior randomisation, be known as the ‘natural lottery’ for the purposes of this discussion. If David is unlucky in the natural lottery and ends

\textsuperscript{116} Scanlon (1998: 234)  
\textsuperscript{117} Saunders (2009: 282)  
\textsuperscript{118} Saunders (2009: 282)
up in the water, he still has an outside chance of winning the weighted lottery and thus being rescued. As the winners of the natural lottery, the four men already in the lifeboat enjoy a much higher chance of survival compared to David. For a person to survive in this case, the only requirement is that someone within their lifeboat is selected by the second stage of the process – the weighted lottery. The first stage lottery, the natural lottery, is not decisive in this regard although it does affect the overall *ex ante* probability of any individual being saved.

Holding a weighted lottery once the results of the natural lottery are known is sub-optimal with respect to *ex ante* chances of survival. There are two possible ways in which someone can be rescued in this scenario:

1. They win the natural lottery, ending up on the lifeboat, then someone in the lifeboat wins the weighted lottery

2. They lose the natural lottery, ending up in the water, then win the weighted lottery

In the first case, the chances of winning the natural lottery are 4/5 (80%) and the chances of being saved as a result of the weighted lottery when in the lifeboat are also 4/5 (80%). Given that both events need to happen in order for a person to be rescued this way, the probability of survival due to the first option is simply the product of the two conditional events which is 16/25 (64%). The second option is much less likely. In this case, a person must lose the natural lottery with a probability of 1/5 (20%) and then win the weighted lottery despite the low odds of 1/5 (20%). Once more, the probability of this happening is found by multiplying the probabilities of the two conditional events giving 1/25 (4%). Combining these two results, the first and second cases, shows that the *ex ante* chance of survival for each person before the boat sinks is 17/25 (68%).

When compared to the result of the natural lottery alone, choosing to hold a second stage weighted lottery lowers the *ex ante* chances of survival from 80% to 68% in this example. Thus:

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Saving the greater number increases everyone's *ex ante* chance of being saved, without being unfair to anyone. This makes sense of Scanlon's claim that it is a better procedure.119
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119 Saunders (2009: 282)
Saving the greater number will provide an equal or better *ex ante* chance of survival for everyone in prior randomisation cases compared to the weighted lottery approach.\(^{120}\) This is easy to see by way of a simple proof:

Let \( N \) be the number of people in the smaller group, \( M \) the number of people in the larger group, \( P(N) \) the probability of saving the smaller group, \( P(M) \) the probability of saving the larger group and \( P(Saved) \) be the *ex ante* probability of being saved in cases involving prior randomisation.

The probability of winning the natural lottery and ending up in the larger group is: \( \frac{M}{N+M} \)

The probability of losing the natural lottery and ending up in the smaller group is: \( \frac{N}{N+M} \)

The chance of being saved when in the larger group is: \( P(M) \frac{M}{N+M} \)

The chance of being saved when in the smaller group is: \( P(N) \frac{N}{N+M} \)

The overall chance of being saved is therefore the sum of the previous two equations:

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P(Saved) = P(M) \frac{M}{N+M} + P(N) \frac{N}{N+M}
\]

Given: \( P(N) + P(M) = 1 \), \( P(Saved) \) is maximised when \( P(M) = 1 \) in all cases except when \( N = M \), where the result is simply the same as the weighted lottery approach.

When presented in this way, it is easy to see why saving the greater number gives a better *ex ante* chance of survival than the weighted lottery approach in cases involving prior randomisation. Scanlon’s objection is now clear: holding a second lottery is not just a matter of reshuffling the moral deck for no reason, it is actually harmful to the *ex ante* chances of survival for individuals in the Number Problem.

My first response to Saunders’ version of Scanlon’s objection focusses on the notion of prior randomisation. Saunders offers a second version of his five man Rescue Case in which prior randomisation does not apply. In this example, David is alone on one boat and \( A, B, C \) and \( D \) are together on another. If David is a lone fisherman and \( A, B, C \) and \( D \) are pleasure sailors who only ever venture out together, Saunders argues that the distribution of persons across

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\(^{120}\) When the Number Problem is ‘balanced’, i.e. the number of individuals in each group is the same, the two approaches result in the same *ex ante* chance of survival.
the problem is not random in this case. Knowing that he will always be in the smaller group, would David agree to the policy of always saving the greater number?

David knows, when he goes to sea, that if both groups get into trouble he will be the one not saved. In this case, would it be unreasonable of him to object to the saving the greater number policy? There is no real sense in which he—as a concrete individual—has any chance of being in the greater number or being saved. He had a chance only if we appeal to something like an ‘original position’, in which his identity was unknown and he could have been one of A–D (Rawls 1999, pp.118–23).121

Saunders’ reference to Rawls and the ‘original position’ is illuminating here. Consider David’s choice in terms of a hypothetical consent scenario, such as Rawls’ original position. David knows that there are five individuals, four on one boat and one on another, who will each die without assistance and that only one group can be saved. If David does not know which boat he will be on, Scanlon would argue that he should choose the principle of always saving the greater number as this maximises his ex ante chance of survival. This result is true regardless of whether the distribution of individuals across the problem is a matter of prior randomisation or not.

When faced with a choice under conditions of uncertainty, such as David’s in Saunders’ Rescue Case example, the policy of maximising ex ante chances of survival is not the only possible option. If parties in the original position are sufficiently risk-averse, they will arguably choose a maximin distribution which gives strict priority to the worst off. In David’s case, this means giving the best possible chance of survival to the person in the smallest group consistent with the same chance for everyone else. As a result, a maximin policy will endorse Taurek’s equal maximum chances solution and give everyone the same 1/2 (50%) chance of rescue here. In this sense, the weighted lottery approach is inferior to Taurek’s solution but better than Scanlon’s preferred policy of always saving the greater number. Whether parties in the original position would choose Taurek’s solution or the weighted lottery is debatable; indeed, it is likely that the choice will vary depending upon the specification of the problem.122 If the numbers on one side are very great, parties in the original position will most likely prefer the weighted lottery to Taurek’s principle and perhaps even Scanlon’s approach to both. The important result here however, is that we cannot simply assume that parties will

121 Saunders (2009: 282)
122 If the parties are extremely risk-averse, then they will always choose the maximin policy in fear of ending up in the smaller group.
choose to always save the greater number. This is the first of my three responses to Scanlon: that risk-averse individuals in an original position scenario will not necessarily choose his solution over the weighted lottery.

My second response to Scanlon relates to the idea of randomisation. In Saunders’ first example, we presume that each sailor has ‘a roughly equal probability of being stranded on his own’ (2009: 282). While this presumption is helpful in terms of simplifying the problem, it is highly unlikely to be true in any practical case. When a ship sinks in a storm, it stands to reason that the four men who end up in the lifeboat will most likely be the strongest and fittest of the five. If it comes down to it, knowing that only the men in the lifeboat will be saved, it is not unreasonable to think that the desperate sailors would fight for the places on the lifeboat. My point here is not that Saunders’ example is poorly constructed, rather that it is indicative of wider problem regarding randomisation. When the rescuer arrives on the scene of the sinking boat, he sees four men in a lifeboat and one in the sea. How can we say that this is the result of prior randomisation? In the absence of any reliable method to prove that the distribution is purely a result of chance, we may presume that Scanlon’s prior shuffling of the moral deck has not occurred. As such, the choice facing the rescuer is that of Saunders’ second example and not his first. If David is in the water and his fellow sailors in the lifeboat, this is presumed to be no different to the case where David is the lone fisherman and the four others are pleasure sailors. As a result, the rescuer cannot presume that David would have agreed to the policy of always saving the greater number as there is no guarantee that the person in the smallest group is there as a product of chance.

My final response to Scanlon’s objection concerns the relationship between always saving the greater number and the broader notion of incentive effects. If Saunders is right in suggesting that parties in an original position scenario would probably prefer a policy of always saving the greater number, then this has potentially significant consequences for those that find themselves in the smaller group. In Taurek’s Volcano Case, the choice concerns rescuing either a very large number of people in the north of an island or a relatively small number in the south (1977: 310). If the decision has been made in advance as a matter of policy, it is possible that the lives of those in the doomed south will be quite different to those in the north prior to the eruption. While a full discussion of these effects is outside the scope of this thesis, it is reasonable to presume that there are negative consequences for those in the smaller group beyond the simple fact that they will not be rescued in the event of an eruption. One notable example of this kind of fatalistic attitude amongst a supposedly abandoned group, including

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a documented rise in risky behaviours and mental illness, is found in the populations of Western Russia, Belarus and the Ukraine following the Chernobyl nuclear accident in 1986:

[It] has been argued that a culture has developed in which people perceive themselves to be victims, where there is a lack of trust, where ill-health is expected, where there are general feelings of anxiety, instability, helplessness and a generalized fear about the future; all of which have resulted in an increased inability to adjust to changed circumstances (Mozgovaya 1993, Grey 2002).

While the analogy between Taurek’s Volcano Case and my Chernobyl example is imperfect, it serves to demonstrate the potential link between living with the knowledge that you are in a ‘doomed’ group and how that might affect your life. This is my third response to the reshuffling objection: that the Number Problem cannot be assessed solely in terms of ex ante chances of survival. Complex decisions call for careful and thorough analysis of all options, something that I discuss at length in the next chapter.

In summary, Scanlon’s reshuffling objection is best understood as an argument for maximising ex ante survival chances in cases involving prior randomisation. In response to Saunders’ interpretation of Scanlon’s argument, I maintain that risk-averse parties in an original position scenario would not necessarily choose Scanlon’s policy of always saving the greater number. Scanlon’s argument is predicated on the idea that nature has already shuffled the moral deck in the Number Problem. Given the difficulty in identifying whether the deck was shuffled fairly or even at all, I propose that we should presume no prior randomisation in all Number Problem cases. If that is the case, the distribution of individuals across the problem is not necessarily random or fair and it would be unreasonable to conclude that those in the smaller group would choose to save the greater number. Similarly, the Number Problem cannot be reduced to a simple choice between different probabilities of survival. When addressing the complex problem of which rescue policy to adopt, it is important to account for the wider incentive effects with particular emphasis on the interests of those in the smaller group. Ultimately, Scanlon’s reshuffling objection functions by way of a dubious presumption of prior randomisation. When combined with a more risk-averse interpretation of how parties would reason before the event, it is not clear that Scanlon’s preferred policy of always saving the greater number would be chosen. The moral deck is only ever shuffled

123 Abbot et al. (2006:106)
once in almost all instances of the Number Problem, not twice, and that is why I therefore reject Scanlon’s reshuffling objection.

5.4 The Incredulous Stare Objection

In this section I address the most famous criticism of weighted lottery solution: the objection from counterintuitive outcomes or the ‘incredulous stare’ as I will refer to it. This objection questions why the interests of the few should stand any chance of prevailing at the expense of a great many, particularly when lives are at stake. The paradigm example of this is found in the Apocalypse Case: a choice between saving either one individual or everyone else alive. Apocalypse Case examples are distinct from Apocalypse-type Cases, with the difference being that the former concerns the potential collapse of civilisation while the latter simply involves very large numbers. All Number Problem solutions that give some chance to the selection of the smaller group are vulnerable to the incredulous stare, from Taurek’s equal maximum chances position at one extreme to the weighted lottery at the other. This section is divided into two parts: first, I set out the details of the incredulous stare objection and explain why it is problem for the weighted lottery; second, I offer three responses on behalf of the lottery account. Ultimately, I conclude that the target of the incredulous stare objection is actually a strength, not a weakness, of the weighted lottery solution.

Taurek’s claim that ‘The numbers, in themselves, simply do not count for me. I think they should not count for any of us.’ (1977: 310) raises an interesting question: if he flips a coin to decide between saving one life or two, would he do the same when the choice was between one life and two million? Taurek’s Volcano Case is designed to answer this question. He suggests that:

I suppose that some will take the apparent absurdity of the following scene as constituting a formidable embarrassment to the opinions I have stated thus far.

In the Volcano Case, a volcanic eruption places two groups of people in mortal danger. The only hope of rescue comes in the form of a nearby coastguard vessel, which can reach either

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124 My use of the term ‘incredulous stare’ is in tribute to the work of David Lewis, particularly his ‘On the Plurality of Worlds’ (1986).
125 Taurek (1977: 310)
the great many islanders in the north or the comparatively few in the south. At this stage the captain of the ship faces a decision: should he save the greater number? According to the definition set out in Chapter 2.2, this example does not necessarily meet the requirements of an idealised Number Problem case. If the coastguard is bound by law to assist as many people as possible, i.e. those in the north, then the captain’s actions are a matter of duty not deliberation. Presuming that is not the case, the key question is whether Taurek would still recommend a coin flip to decide:

Having been persuaded by my argument, to the amazement of his crew and fellow officers, the consternation of the government, and the subsequent outrage in the press, he flips a coin and makes for the south.

Taurek’s solution to the Volcano Case is to flip a coin, just as he would if the choice was between two groups of any size. Put simply, Taurek is fully committed his numbers scepticism; for him, the numbers never count. This is source of Scanlon’s ‘Making a Difference’ objection to Taurek, while Sanders (1988) and Lawlor (2006) offer a similar criticism.

There are two ways of interpreting the incredulous stare objection to Taurek. For supporters of the weighted lottery like myself, the criticism is that Taurek gives the smaller group too high a chance of survival in the Volcano Case. For Sanders and Lawlor, the objection is that Taurek gives the smaller group any chance at all. Under the weighted lottery, the islanders in the south would stand a proportionally smaller chance of rescue compared to those in the north. If there were four thousand people in the north and one thousand in the south, the chances of saving the smaller group would be four times smaller than that of the larger one (1/5 vs. 4/5). Here the numbers in each group are relatively similar, within one order of magnitude of each other, and the result of the lottery retains some intuitive plausibility. The challenge of the incredulous stare objection comes when the numbers in each group are wildly different.

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126 This example is also discussed in Chapter 2.2.
127 Taurek contrasts this case where ‘the captain is seen as deploying a resource that is not his own, not exclusively anyway.’ (1977: 311) with a similar choice faced by the captain of a private vessel.
128 Taurek (1977: 310)
129 See Chapter 2.4 for a more detailed discussion of Scanlon’s objection and Otsuka’s response on behalf of Taurek. Hirose (2014: 217) raises a similar objection to the weighted lottery solution.
The apparent *reductio ad absurdum* argument against the weighted lottery is found in a version of Kamm’s objection to Taurek in *Intricate Ethics* (2007). In the original argument, Kamm considers a trolley problem where the choice is between three options: do nothing thus allowing a nuclear weapon to destroy civilisation, kill one person or kill five (2007: 49). If Kamm’s doomsday device is deployed in a Number Problem scenario, the choice becomes the Apocalypse Case. In the Apocalypse Case, two options are possible: either save one person alone or everyone else alive. Presuming that there are roughly seven billion people on Earth, Taurek’s solution is to give the lone individual a 1/2 chance of survival – a farcical result. Similarly, the weighted lottery assigns a one in seven billion probability to saving the single person. According to the incredulous stare objection, it is simply inconceivable to give a single person any chance of survival in the Apocalypse Case. Yes, it is highly unlikely that the lottery will pick out the doomsday result, but why even take the risk?

At this stage a defender of the weighted lottery can offer three possible responses to the incredulous stare objection. First, they can argue that the equal distribution of baseline chances across all parties, even those in the smallest group, is the only way to properly respect the equal loss facing each person. Second, they can point to the effect of using the lottery solution across many similar Number Problem cases and argue that this demonstrates the fairness of the position. These first two replies work for both the Apocalypse and the Apocalypse-type versions of the objection. Finally, they can argue that the most extreme version of incredulous stare objection, the Apocalypse Case, is a non-Number Problem in virtue of an asymmetry between the benefits and burdens of selection for those involved. This third reply applies only the full-blown Apocalypse Case.

The first two responses to the incredulous stare objection are linked. Effectively, the best reply to the Apocalypse-type Case version of the incredulous stare is to reiterate that the lottery result is fair, even if it picks out a member of the smaller group. To better understand why this is the case, consider the justification for holding a two-stage lottery in the first place. The individualist lottery gives each person the same chance of success in recognition of their equally strong claim for aid. Recall the fundamental argument: equal losses give rise to equally strong claims, equally strong claims motivate equal baseline chances. The only way to avoid the incredulous stare objection is to give those in the smaller group no chance at all in Apocalypse-type Cases. This would require the weighted lottery to simply save the greater number when some threshold difference in group sizes is met, violating the fundamental

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130 This choice is structurally similar to the ejecting astronaut example in Sanders (1988).
egalitarian motivation behind the position. As such, the first stage of the lottery must remain as it is on pain of inconsistency. To permit unequal baseline chances in Apocalypse-type Cases would open up the two-stage lottery to Hirose and Broome’s objections to Kamm’s one-stage PPC. If the second stage of the lottery procedure is allowed to influence the first in certain cases, i.e. by reducing the baseline chances of those the smaller group to zero to avoid a counterintuitive outcome, the weighted lottery is no longer the product of a genuinely independent two-stage process. This would be fatal to the position, as it is for Kamm’s version of the PPC. Altering baseline chances in Apocalypse-type Cases is therefore ruled out as inconsistent with the stated aims of the lottery.

The second response to the incredulous stare objection seeks to demonstrate more specifically why the lottery result is fair in Apocalypse-type Cases rather than relying on the general argument for fairness. Consider the implications of using a weighted lottery to solve many similar Number Problem cases. In Chapter 2.2 I defined the Number Problem in terms of a single choice. The problem with a ‘one-shot’ Number Problem is that the outcome of the lottery is indistinguishable from a policy of either always saving the many or always saving the few, depending upon the result. In the three person Rescue Case, the weighted lottery either saves A alone or B and C together. When presented with this result alone, it is not possible to identify the method of selection as a lottery; in order to understand the full implications of the position we need more than one example. If the weighted lottery is used to decide between three Rescue Cases of the kind described, the most likely single result is that A will be saved once and B and C will be rescued twice (occurring with a probability of 12/27). Importantly, there are three other possibilities: either A will be rescued twice (6/27), A will be rescued every time (1/27) and B and C will be rescued every time (8/27). In total, the three lotteries produce 81 results where A wins 27 times. This gives the result of 1/3, consistent with the proportional demands of the weighted lottery. Look again at the probabilities; there is a 12/27 chance that the proportional result (save A once and B and C twice) will occur across the three cases. Accordingly, there is a greater than one in two (15/27) chance that the proportional result will not occur in this example.

The three Rescue Cases example demonstrates a contrast at the heart of the weighted lottery solution. Although the proportional result of saving A once and B and C twice is the most likely single result, this occurs less than half of the time. The problem here is that the sample size is small; as the number of trials increases, the overall result will tend towards the underlying probabilistic distribution. In other words, if we could test the weighted lottery solution against an infinite number of three person Rescue Cases, A would be saved with a
1/3 probability overall. Because we only have access to a limited number of trials, it is more likely than not that the result will be counterintuitively non-proportional. The issue with Apocalypse-type Cases is therefore that we cannot see the effect of using a lottery solution across many such examples. When the smaller group wins in a one versus one million scenario, our natural reaction is that this is unfair or that something has gone wrong. On the contrary, this uncertainty is built into the lottery approach; it is only when we step back and observe the distributive pattern across many cases that the proportional result emerges. In this sense it is not counterintuitive that the smaller group should sometimes win the lottery, rather this is exactly what proportionality demands.

The final response to the incredulous stare objection concerns the Apocalypse Case, rather than the Apocalypse-type Case. The choice between one person and everyone else alive poses a particular problem for the weighted lottery, as it seems to rule out the prospect of future Number Problem cases if the lone individual wins. If there are no more people to choose between, my second reply to the incredulous stare concerning fairness across multiple trials cannot function. Thus my defence of the weighted lottery hinges on removing the threat of the Apocalypse Case.

My response to the Apocalypse Case focuses on a potential asymmetry between the relative benefits of selection for those in each group. Consider the opening lines of Taurek’s famous paper: ‘We have resources for bestowing benefits and for preventing harms. But there are limitations.’ (1977: 293). The ‘limitations’ he refers to define the nature of the problem: we know that the resource under distribution is scarce and that it will bring about a benefit for those who receive it. Similarly, according to the method of pairwise comparison, we presume that the burden associated with not receiving the good is equally great for each person. The Number Problem is usually characterised in terms of this loss, as a question of preventing a harm rather than providing a good, with some justification. Consider the relative impact on each of the three people in the Rescue Case when the lottery saves the greater number. For the two survivors, they have faced a 1/3 risk of death and lived to tell the tale, a potentially life changing experience. For the unfortunate lone individual, their loss is absolute. Now imagine a similar Rescue Case scenario, this time with two million people in the larger group. If the weighted lottery once again favours the many, the decision will not resonate with the two million as it did with the two.

There is a crucial difference between the Apocalypse Case and a Rescue Case involving very large numbers (i.e. Apocalypse-type Cases). If the lone individual in the one versus two
million Rescue Case wins the lottery, it is reasonable to presume that their life will still be
worth living afterwards. In contrast, the potential existence for a lone survivor in the
Apocalypse Case is likely to be solitary, short and miserable. Aside from the obvious
downsides to being the last person alive, the lack of basic medical facilities alone would make
previously minor injuries and infections a potentially fatal problem. Put simply, the potential
benefit of selection in the Apocalypse Case is so radically different for the lone individual
compared to everyone else alive that the choice ceases to be a Number Problem case. The
twin presumptions at the heart of the Number Problem are that the good under distribution
is both scarce and widely desired. I argue that the good of selection for the lone individual in
the Apocalypse Case is not desirable at all, rather it is something that most people would fear.
In a distributive justice scenario, there is no sense in allocating a resource to someone who
does not want it at the expense of others that do. The good under distribution in the
Apocalypse Case is not widely desired by the members of both the larger and smaller groups,
as such it is not a problem of distributive justice and therefore cannot be relevant to the
Number Problem. I thusly reject the Apocalypse Case version of the incredulous stare
objection.

As a final comment, it is worth noting a potential problem with my third response to the
incredulous stare objection. My response functions by way of a tipping point, beyond which
the good under distribution is would no longer be desirable for certain individuals. The
tipping point is located somewhere on a spectrum between the two extremes posited by the
exemplar version of the Apocalypse Case, a choice between saving one person or everyone
else alive. The potential lone survivor sits at one end of the scale; here we presume that their
life is definitely not worth living and that this outcome is therefore most undesirable. At the
other end of the scale we find everyone else; presuming that their lives were worth living
beforehand, it is reasonable to conclude that their lives in a world missing one person will
also be worth living and that the benefit of selection is clearly desirable. In Apocalypse-type
Cases, the choice is between saving a small number of lives or a great many. As the numbers
in the larger group increase, Apocalypse-type Cases eventually turn into Apocalypse Cases
where the rescue of the smaller group effectively causes the collapse of civilisation (and
probably the end of humanity). My final response to the incredulous stare argument only
applies to Apocalypse Cases, not Apocalypse-type Cases. As such, I endorse the use of a
weighted lottery to decide between Apocalypse-type Cases and simply save the greater
number in Apocalypse Cases. This raises an important question: when do Apocalypse-type
Cases become Apocalypse Cases? Furthermore, is the potential benefit of rescue in the
Number Problem the same for each person in all Apocalypse-type Cases? I would suggest that the transition between the two is not seamless, that there is likely to be a zone of indeterminacy around the tipping point in which the good of selection is only marginally desirable. Similarly, it seems likely that the value of selection in the Number Problem varies according to the specification of the problem in Apocalypse-type Cases. Contrast the one versus one million and the one versus one billion examples: in the former, the loss of million lives is tragic but relatively insignificant on a global scale; in the latter, the loss of one billion lives is likely to significantly impact the wellbeing of everyone on the planet. As a result, it cannot be said that the benefits and burdens facing each person in the latter case are equivalent and therefore the standard Number Problem narrative of equal potential losses generating equal claims does not apply. What is required in these boundary cases is an account of how unequal losses relate to claims, this point is addressed in Chapter 6.

In summary, my defence of the weighted lottery from the incredulous stare rests on two arguments. First, that giving those in the smallest group a proportional chance of survival in the Number Problem is entirely consistent with the demands of fairness and egalitarianism, even when the relative group sizes are very different. Second, that the most extreme version of the incredulous stare objection, the Apocalypse Case, is not a Number Problem at all and therefore is irrelevant to the weighted lottery. In light of both replies, I therefore reject the incredulous stare objection.

5.5 The Hybrid Solution

It is sometimes helpful to consider the Number Problem as a conflict between two intuitions: fairness of procedure and goodness of outcome. When the former prevails over the latter, the result is that it is possible to save the smaller group. In contrast, when the goodness of outcome takes primacy over the fairness of procedure, the solution is to always save the greater number. Each of the positions discussed in this thesis so far can be described in these terms: Taurek and the weighted lottery in the first camp, claim balancing and consequentialism in the second. The hybrid solution resists a similar classification, making different recommendations depending upon the details of each case. When the numbers in each group are relatively similar, the hybrid approach uses chance to decide – either by flipping a coin or holding a lottery. When the numbers are sufficiently different, the hybrid
solution simply saves the larger group. First proposed by Sanders (1988) and later defended in different forms by Kamm (1998), Hirose (2004), Lawlor (2006) and Peterson (2009), the hybrid solution is defined by a belief that the numbers only count decisively in the Number Problem where they pass some threshold value. I consider three versions of the hybrid position in this section: Sanders’ balance between losses of and losses to a person, Kamm’s notion of irrelevant utilities and Hirose’s formalised relationship between fairness and goodness of outcome. Criticising these positions on the grounds of either arbitrary reasoning or implicit aggregation of losses, I ultimately conclude that the hybrid solution should be rejected.

Before introducing Sanders’ original version of the position, it is sensible to begin by relating the hybrid theory back to the weighted lottery solution. As discussed in the previous section, the incredulous stare objection is designed to show how the intuitive appeal of the weighted lottery dissolves in the face of Apocalypse-type Cases. Setting my own response aside for a moment, the temptation for defenders of the lottery is to simply concede that we should save the greater number when faced with such a choice. This modified version of the weighted lottery is now effectively a hybrid; one which recommends radically different solutions to different Number Problem cases. Given the obvious and superficially appealing nature of this transformation, it is essential that I defend the weighted lottery from the threat of the hybrid lottery approach.\textsuperscript{131}

Sanders’ contribution to the Number Problem debate is best understood as a response to Taurek’s controversial conclusion in ‘Should the Numbers Count?’. In Sanders’ first example, an astronaut is piloting an out-of-control ship which will soon collide with a populous planet. The astronaut has two options when ejecting from the craft: either direct the explosive cargo away from the planet towards another small craft, killing the one person on board, or do nothing before ejecting and allow the ten billion people on the surface to perish (1988: 3). Setting aside the question of doing versus allowing here, Sanders’ example is designed to illustrate how flipping a coin to decide between one life and ten billion is both highly counterintuitive and morally repugnant. That is not to say that Sanders is unsympathetic to Taurek’s individualist reasoning:

\begin{quote}
I do not intend to argue that Taurek is wrong regarding the additivity of people’s losses or sufferings. I agree with Taurek that these simply do not sum. ... It is not that
\end{quote}

\textsuperscript{131} This potential connection between the weighted lottery and a hybrid solution is first hinted at in Lawlor (2006: 162) and discussed in Peterson (2009).
there is a greater loss to the ten billion, but rather that more people suffer an equal loss. ... Nevertheless, even granting Taurek all of this, there are reasons to think that the numbers should count, at least sometimes. 132

This raises an immediate question: what makes the numbers count in some cases but not others? For Sanders, the answer lies in the notion of 'losses-of'. Recall that for Taurek:

It is the loss to the individual that matters to me, not the loss of the individual.133

According to Sanders, Taurek's view implies that the only justification for saving an individual in the Number Problem is to prevent their potential suffering:

This, then, is the real force of Taurek's argument: his principle of equal concern must rule out any thought that persons are worth saving because they are persons, or that human life is valuable or worth saving in and of itself. We must never consider the loss of persons, only the loss to persons. Taurek gives no argument that would provide independent reasons for rejecting such thoughts, yet his position requires that they be rejected.134

If Sanders is correct, Taurek's sole focus on the loss to persons is grounded in nothing more than a mere intuition. As such, it sits alongside the intuitively plausible claim that 'losses-of' persons also matter. If, as Sanders states, 'Total victories do not come easily in wars of intuitions' (1988: 13), then his flexible hybrid approach might well be the most reasonable response when faced with the complexities of the Number Problem:

Perhaps the question should be when the numbers count. It might be that Taurek's principle of equal concern ought to be decisive in some cases, but that the numbers become decisive when they are substantial - perhaps when they cross some threshold.135

This is the original definition of the hybrid solution: an approach that allows for either the rescue of the smaller or larger groups in certain Number Problem cases and, beyond a certain threshold, demands the rescue of the larger group in others.

132 Sanders (1988: 5-6)
133 Taurek (1977: 307), see also: Chapter 2.3.2.
134 Sanders (1988: 13)
135 Sanders (1988: 14)
Sanders’ version of the hybrid solution functions by way of a comparison between losses of and losses to the persons in the problem. Depending upon the relative weighting given to each, the original hybrid approach can be made either more like Taurek’s equal maximum chances position or the consequentialist policy of always saving the greater number. If Sanders were to put a great emphasis on losses to at the expense of losses of, his hybrid solution would follow Taurek and flip a coin in almost all Number Problem choices. If the weightings were similarly reversed, the recommendation would be to always save the greater number except for in a tiny minority of cases. Given that Sanders does not address the question of weighting in ‘Why the Numbers Should Sometimes Count’, it is reasonable to describe his version of the position as incomplete. Later in this section I consider two ways in which Sanders’ argument can be completed, Hirose’s hybrid and my own version. Hirose’s argument is made in response to Kamm’s version of the hybrid approach, which I address first.

Following Sanders, a second version of the hybrid approach is discussed alongside the claim balancing solution in Kamm (1998: 101-3). Kamm’s argument rests on the notion of an ‘irrelevant utility’, first introduced in her Sore Throat Case example:

Suppose, for example, that we have a choice between saving A’s life and saving B’s, and alongside B is C who has a sore throat. Our drug that can save B’s life can also in addition cure C’s sore throat (Sore Throat Case).136

According to her method of substituting equivalents, the equal and opposite claims of A and B are said to balance here or alternatively, their relative claims ‘cancel out’, ‘neutralise’ or ‘silence’ each other.137 Had the choice been between A and B only, Kamm would follow Taurek and toss a fair coin to decide between them. Instead, the presence of C alongside B in the problem gives us a secondary, unbalanced reason for preferring their rescue to the alternative of saving A. The question now becomes a matter of how this relatively minor additional utility interacts with the problem; should it prove decisive? Kamm thinks not:

Yet I believe it would be wrong to deprive A of his 50 percent chance to be saved simply in order to get the extra utility of curing C’s sore throat associated with saving B. Here we should remain tied to the personal perspectives of both A and B given

137 See Chapter 3 for a full discussion of the claim balancing method.
what is at stake for each of them. In this case it is right to toss a coin; the sore-throat
cure in this case is what I call an irrelevant utility.\textsuperscript{138}

Kamm’s argument rests on an appeal to the relative losses faced by \( A \) and \( C \), similar to the
method of pairwise comparison underpinning the standard Number Problem debate. I do
not wish to spend too much time discussing her ideas regarding irrelevant utilities here, as
they are covered in depth in the next chapter. All that is required to explain Kamm’s version
of the hybrid solution is the idea that some losses are irrelevant with respect to our decision
making in the Number Problem. In the Sore Throat Case, the small potential loss to \( C \) is
irrelevant when compared to the much greater potential loss to \( A \). Kamm’s reasoning in the
Large-Scale Rescue Case is somewhat different, here the potential loss to each person is the
same:

Now suppose 1000 people are on one island and 1001 people are on another. Here, I
believe, it may even be correct to ignore the difference of one life. If so, then in this
context the one life has become an irrelevant utility.\textsuperscript{139}

Consider the two alternatives presented by Kamm when faced with this choice: flip a coin,
giving each group the same 50% chance of rescue, or save the greater number. If a coin is
tossed, the expected result is that 1000.5 lives are spared. If the greater number are saved
without tossing a coin first, the result is that 1001 lives are guaranteed to be saved. Before
moving on, it is helpful to spend a moment explaining the notion of ‘expected result’ in the
context of the Number Problem. Expected result, value or outcome here simply refers to the
number of lives that we would expect to save by following a certain probabilistic decision
making strategy. In certain cases, expected values provide a helpful metric for differentiating
between rival probabilistic solutions to the Number Problem (such as Taurek’s claim
balancing approach and the weighted lottery).\textsuperscript{140} This useful shorthand is used extensively in
Hirose’s argument for the hybrid approach later in this section.

Kamm’s solution to Large-Scale Rescue Case is to flip a coin, effectively treating the problem
as a choice between two equally sized groups. Understood in terms of probabilistic
expectation, the act of always saving the greater number versus flipping a coin produces a net
gain of 0.5 lives on average. At the same time, always saving the greater number deprives

\textsuperscript{138} Kamm (1998: 101)

\textsuperscript{139} Kamm (1998: 103)

\textsuperscript{140} In certain cases only: tossing a fair coin with the values 3 and 4 on each face will generate
the same expected result, 3.5, as rolling a standard die.
1000 individuals of a 50% chance of survival versus the coin flipping alternative. For Kamm, the good of always saving the extra life (when compared to the risk of saving one fewer person by flipping a coin) is an irrelevant utility when compared to the value of giving 1000 people a 50% chance of rescue. When this result is combined with Kamm’s claim balancing solution, deployed in Number Problem scenarios where the relative group sizes are less balanced, the result is a hybrid approach consistent with the definition set out at the beginning of this section. There is a clear contrast between Sanders’ and Kamm’s views here: for Sanders, the numbers always count but they do not always count decisively; for Kamm, the numbers usually count but sometimes other considerations render them irrelevant.

Kamm’s hybrid approach to the Large-Scale Rescue Case is vulnerable to a familiar objection from Scanlon’s ‘Making a Difference’ principle. Recall Scanlon’s argument against Taurek’s coin flipping solution and the requirement that additional claims must a moral difference in favour of saving their group on pain of rejection.\(^{141}\) Given that Kamm advocates flipping a coin both when the groups are the same size, say 1000 and 1000, and large but not quite balanced, as in the Large-Scale Rescue Case, it is not clear how the additional person in the second example makes a moral difference in a way that would satisfy Scanlon. One potential reply is to use the same argument against Scanlon as Otsuka does on Taurek’s behalf. An Otsuka-inspired defender of Kamm could argue that the additional person in the Large-Scale Rescue Case makes a difference in the sense that they are fully present in the problem. Put simply, the additional person is not ignored at any stage of the decision making procedure; they are both counted equally at the outset and saved alongside the other members of their group if the coin toss goes their way.

The defence of Kamm’s hybrid approach against Scanlon’s requirement rests on an analogy between her theory and Taurek’s equal maximum chances solution. If, as I have argued in Chapter 2.4, Otsuka’s defence of Taurek is successful, it is reasonable to presume that it will also work for Kamm’s position provided that her views are similar to Taurek’s. It is as this stage where the analogy between the two theories breaks down. For Taurek, each person counts equally at all stages of the Number Problem in virtue of their equal potential loss. For Kamm, it is possible that the interests of one or more persons can be outweighed by greater gains elsewhere; that their relative losses can be written off as irrelevant. This key difference between the two approaches explains why Otsuka’s reply to Scanlon works for Taurek but not for Kamm. Taurek is consistent, his theory guarantees that each person’s potential loss

\(^{141}\) See Chapter 2.4 for a discussion of both Scanlon’s objection to Taurek and Otsuka’s reply.
will be taken seriously at all times. This permits Otsuka to argue that every person makes a moral difference for Taurek, even if the correct interpretation of Taurek’s position is that this difference is in favour of saving *themselves* rather than their group as Scanlon requires. In contrast, Kamm’s approach allows for individual losses to be ruled out as irrelevant, even when they are as great as the potential loss of that person’s life. As such, it is simply not the case that every person makes an appropriate moral difference in Kamm’s hybrid solution. If a person can find their interests dismissed as irrelevant, they cannot make a difference. In light of this failing at the heart of Kamm’s view, I therefore reject her version of the hybrid approach.

In response to Kamm’s work, a third version of the hybrid theory has been developed by Hirose (2004: 73-5, 2014: 177-201) based on the idea of aggregating unfairness in the Number Problem. Hirose begins by clarifying his position on the Large-Scale Rescue Case:

In the original Rescue Case, my intuition is clear—it is right to save the lives of five individuals. Yet, in the Large-Scale Rescue Case, I do not have a clear intuition. I find it perfectly understandable to say that it is right to flip a fair coin. At the same time, I find it perfectly understandable to say that it is right to save the 1,001 people. Although I am agnostic about the right course of action in the Large-Scale Rescue Case, I am sure about two things. First, I disagree with Kamm that an extra life saved is an irrelevant utility. Second, if we adopt formal aggregation we can offer a coherent argument in favour of Kamm’s intuition in the Large-Scale Rescue Case, without appealing to the principle of irrelevant utilities.\textsuperscript{142}

While sympathetic to Kamm’s conclusion in the Sore Throat Case, Hirose rejects her solution to the Large-Scale Rescue Case in virtue of the asymmetry in her reasoning:

However, in the Large-Scale Rescue Case, the utility we are talking about is exactly the same. We cannot appeal to the same reasoning as in the Sore Throat Case.\textsuperscript{143}

The force of Kamm’s argument in the Sore Throat Case is derived from the relative difference in potential losses faced by $A$, who stands to lose their life, and $C$, whose cold we may or may not cure. The same differential is not in place in the Large-Scale Rescue Case; here the choice

\begin{footnotesize}
\begin{enumerate}
\item[\textsuperscript{142}] Hirose (2014: 182)
\item[\textsuperscript{143}] Hirose (2014: 198)
\end{enumerate}
\end{footnotesize}
concerns the same potential loss for each person. In light of this clear disanalogy, Hirose rejects Kamm’s analogy between the two cases and he is right to do so.144

The second stage of Hirose’s argument concerns the notion of fairness. In Taurek’s six person Rescue Case example the choice is between saving either one person alone or five together. If the decision is made by flipping a coin, the chance of rescue has been evenly distributed between the two groups – is this fair? Similarly, my method of choosing one claim from six using a lottery then applying the Pareto principle to the result also claims to be a fair solution. The difficulty here is that, as discussed in section 5.2, this only provides a secondary satisfaction of claims. Given that it is impossible to satisfy all six claims simultaneously in the sense of actually saving all six individuals, Hirose cites Broome who argues that the only truly fair outcome is one in which no one is saved:

Equal chances provide a surrogate equality in satisfaction, and so a degree of fairness. It is not true equality of satisfaction, and therefore not completely fair, but it is fair to some degree. Saving no one would be the fairest thing to do; tossing a coin the next fairest. But as I said, fairness is not everything. Fairness requires tossing a coin, but just as I think the fairness of saving no one is outweighed by the badness of the result, so I think the fairness of tossing a coin is outweighed by the expected badness of the result.145

This is a subtle but important point. Hirose deploys Broome’s argument to show that every solution to the Number Problem involves some trade-off between fairness of procedure and goodness of outcome. By ignoring the only truly fair outcome of saving no one, every solution balances fairness and badness of result and can therefore be characterised as a hybrid in some way. If Hirose is right, the Number Problem debate should be reframed as a matter of how we should balance the competing hybrid notions of fairness and outcome, not whether a hybrid solution is appropriate in the first place:

Once we judge it better to save someone than no one, we are slipping into the domain where unfairness is reduced to something bad, which can potentially be outweighed by the goodness of other things. This opens the door to the possibility that the badness

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144 This point is addressed in more detail at the opening of Chapter 6, where Hirose’s conclusion is shown to have important implications for my solution to the expanded Number Problem.
of unfairness can be outweighed by the goodness brought about by saving a greater number of people.\footnote{Hirose (2014: 194)}

The next step in Hirose’s argument can be understood as a formalisation of Sanders’ competing intuitions. For Sanders, the Number Problem is a matter of both losses to and losses of persons. Similarly, I have characterised the Number Problem as a matter of fairness of procedure versus goodness of outcome. Hirose uses two concepts, unfairness ($u$) and expected goodness, to analyse these variables. In the six person Rescue Case, Taurek’s equal maximum chances approach either saves one person or five with the same 1/2 probability. Using Hirose’s terminology, Taurek’s method has an associated expected goodness of three lives saved. In contrast, the policy of always saving the greater number results in an increased expected goodness of five lives saved at the expense of unfairly ignoring the claim of the lone individual. As such, always saving the greater number here results in unfairness equal to one unit of $u$. In the Large-Scale Rescue Case, Taurek’s approach saves either 1000 or 1001 with the same 1/2 probability. Using the average of these two values as the measure of expected goodness once more, Taurek’s method generates an expected goodness of 1000.5 lives. When we choose to save the greater number, the expected goodness is 1001 lives saved at the expense of ignoring 1000 individual claims for aid. Presuming that the appropriate aggregation of $u$ is simple addition, these 1000 instances of $u$ sum to a total value of 1000$u$.

Interestingly, Hirose does not offer an explanation for how $u$ values are calculated. This omission is remedied in my version of the hybrid solution discussed later in this section.

With the twin concepts of $u$ and expected goodness of outcome in place, Hirose can now define his version of ‘formal aggregation’. Returning to the Sore Throat Case, he reinterprets the choice in terms of these quantities:

The good of saving B’s life and curing C’s sore throat is, therefore, one life saved and one sore throat cured – $u$. On the other hand, if we choose to toss a coin, the expected good is one life saved and 1/2(sore throat cured). This implies that, on this account of fairness, which I call the moderate account, it is right to save B’s life and cure C’s sore throat if half of the goodness of a sore throat cure is greater than the unfairness done to the one person who has a claim to his life being saved.\footnote{Hirose (2014: 194-5)
It is easy to see the crucial difference between Hirose’s interpretation of the Sore Throat Case and that of Kamm. For Kamm, C’s sore throat is an irrelevant utility when set alongside the potential loss of A’s life. For Hirose, curing C’s sore throat alongside saving B does represent a gain in expected goodness of outcome compared to saving B alone but this is outweighed by the unfairness of ignoring A’s claim for aid. According to Hirose’s interpretation and in contrast to Kamm’s view, all positive utilities are always relevant.

When Hirose’s ‘formal aggregation’ is applied to the Large-Scale Rescue Case, the rescue policy recommended by his hybrid approach depends upon the value of $u$:

We are thus led to compare (1,000 and a half lives saved) and (1,001 lives saved – $u \times 1000$). Is the goodness of half a life saved greater than the badness of the unfairness done to each of 1,000 people? We should toss a coin if $u \times 1000$ is greater than the goodness of half a life saved. Alternatively, we should save 1,001 lives if the goodness of half a life saved is greater than $u \times 1000$. Formal aggregation can, and likely will, judge that the badness of the unfairness done to 1,000 people is greater than the goodness of half a life saved, and hence that it is right to toss a coin.\(^{148}\)

If, as I have suggested, Hirose’s ‘formal aggregation’ version of the hybrid solution is effectively a formalised version of Sanders’ hybrid approach, it is unsurprising that they share the same key flaw. As Hirose acknowledges, his view can support both flipping a coin and always saving the greater number in the Large-Scale Rescue Case depending upon the value of $u$. When the unfairness associated with ignoring a claim is understood to be very great, i.e. the value of $u$ is relatively high, Hirose’s approach will recommend flipping a coin to solve almost every version of the Number Problem. Similarly, a very low value of $u$ will determine the rescue of the greater number in almost every case. Understood in this sense, Hirose’s method of formal aggregation is underpinned by a presumption of comparability between unfairness and expected goodness of outcome. As with Sanders’ hybrid account, Hirose does not explain how these values interact or even how $u$ is defined.

For both Hirose and Sanders, the right decision in the Large-Scale Rescue Case is a matter of adjudication between opposing values. The comparative nature of this approach raises two key questions: first, by what metric are the two values compared? Second, how do they relate to one another in terms of weighting? According to Hirose, the comparison is made in terms of ‘goodness of … a life saved’ versus the ‘badness of … unfairness done to each [ignored

\(^{148}\) Hirose (2014: 199)
person’ (2014: 199) suggesting a consequentialist metric. Sanders offers a similar answer, comparing the relative losses to and of a person. Unfortunately, both Hirose and Sanders fail to engage with the second question – that of weighting – and as such, their arguments are incomplete. The Number Problem is a question of moral decision making, effectively asking what we should do when faced with a difficult choice. According to both Hirose’s and Sanders’ version of the hybrid position, the solution to the Large-Scale Rescue Case is to either flip a coin or save the greater number depending upon some further fact. This normative vagueness is not a necessary feature of the hybrid account. Consider the effect of combining Hirose’s hybrid view with a clear definition of $u$, the badness associated with unfairly ignoring someone’s claim. If $u$ is compared to the goodness of saving a life in terms of a common metric and, crucially, the rate of exchange between the two values is set out in advance, then this new hybrid account gives a decisive recommendation in all Number Problem scenarios.

My hybrid solution solves the problem of normative vagueness associated with Hirose’s and Sanders’ version of the position. According to my account, the two values in conflict are the fairness of procedure and the goodness of outcome. These values are compared in terms of expected number of lives saved, answering the first key question set out above regarding the metric of comparison. In terms of weighting, the rate of exchange between the two quantities is one to one. This is best explained by way of a worked example. Consider the six person version of the Rescue Case discussed earlier in this section. Using Hirose’s terminology, the difference between using Taurek’s equal maximum chances solution and the policy of always saving the greater number in this case can be described as [save an expected 3 lives] for Taurek versus [save 5 lives for certain and cause $u$ unfairness] when saving the greater number. Similarly, the difference between using a weighted lottery to decide and always saving the greater number is [save an expected 4.17 lives] for the lottery versus [save 5 lives for certain and cause $u$ unfairness].

For both my versions of the hybrid position, the value of $u$ is found by examining what each individual in the smaller group stands to lose when the greater number are saved automatically. This calculation is always made relative to a rival solution, multiplying the lost chance of survival by the number of individuals affected. As such, the value of $u$ will vary depending upon whether the comparison is made in relation to Taurek’s equal maximum chances approach or the weighted lottery solution. Relative to Taurek’s coin flipping method, $A$ loses a 1/2 chance of rescue when the greater number are saved. This generates a $u$ value of 0.5, where this is understood as a loss of 0.5 expected lives saved. When
the weighted lottery is used instead, A loses a 1/6 chance of rescue with an associated $u$ value of 0.17. These values can be substituted into Hirose’s brackets to produce a concrete recommendation in each case. For the first example, where the hybrid solution selects between Taurek’s approach and always saving the greater number, the result in terms of expected lives saved is $[3]$ versus $[5 - u]$ respectively. If the value of $u$ is 0.5, then the policy of always saving the greater number produces the best result in terms of expected lives saved: 4.5 when automatically saving the greater number versus 3 for Taurek’s approach. The same result is seen when the weighted lottery is used as the alternative to saving the greater number. Substituting the value of $u$ into Hirose’s brackets once more, the result is: $[4.17]$ expected lives saved using the weighted lottery versus $[5 - u]$ when saving the greater number, which becomes $[4.17]$ versus $[4.83]$. My hybrid approach therefore prefers the policy of always saving the greater number to the weighted lottery solution in this case.

A different set of results is produced by testing my two versions of the hybrid approach against the Large-Scale Rescue Case. Beginning with the Taurekian version, Hirose’s brackets now show $[1000.5$ expected lives saved$]$ when flipping a coin versus $[1001$ lives saved for certain$ - u]$ for always saving the greater number. The value of $u$ in this case is very high, as 1000 individuals have each been deprived of a 1/2 chance of survival. This translates to a $u$ value of 500, calculated by multiplying the lost chance of survival by the number of individuals affected. Substituting into Hirose’s brackets, the result is now $[1001]$ for Taurek versus $[501]$ for saving the greater number. My Taurekian hybrid would therefore recommend Taurek’s coin flip over saving the greater number in this situation. The results are the same for the weighted lottery version of my hybrid solution; here the value of $u$ is 499.75 and Hirose’s brackets read $[1000.5$ for the weighted lottery versus $[1001 - u]$ for saving the greater number. This translates to $[1000.5]$ versus $[500.75]$ respectively, recommending the use of the weighted lottery over saving the greater number once again.

As shown by the six person Rescue Case example and the Large-Scale Rescue Case, both the Taurekian and weighted lottery versions of my hybrid solution are capable of recommending different rescue policies in different circumstances – the hallmark of a hybrid theory. Interestingly, both positions produce a tied result in the three person Rescue Case. Here, Hirose’s brackets read $[1.5]$ versus $[1.5]$ for the Taurekian hybrid and $[1.66]$ vs $[1.66]$ for the weighted lottery version. When presented with a result like this, it stands to reason that each option is equally good; perhaps a coin could be tossed to decide between them.
Despite solving the problem of normative vagueness faced by both Sanders’ and Hirose’s version of the hybrid theory, my modified hybrid view still faces a fundamental structural objection that is common to all hybrid positions. As described at the outset of this section, the hybrid account is best understood as an attempt to reconcile two competing values. In my case, these values are fairness of procedure and goodness of outcome. Similarly, Sanders considers losses to and losses of a person and Hirose views the choice as a matter of unfairness and expected goodness of outcome. In each of these three cases, the first value is individualistic in nature while the second is aggregative. This difference is crucial: following Taurek, no person stands to suffer a greater potential loss than anyone else in the Number Problem. As a result, the question of what to do when faced with a Rescue Case scenario is simply a matter of which individuals will be spared their equal potential loss.

Hybrid accounts function by way of a comparison between two incompatible values. If the problem is interpreted along Taurekian individualistic lines, it is simply not the case that saving five individuals rather than one is five times as good an outcome as the alternative. From the perspective of those in the problem, there are only two outcomes: being saved and not being saved. Whether a person is rescued alone or alongside four others matters not, the benefit that they experience is the same. As such, it cannot be said that saving more individuals rather than fewer represents a better outcome in the Number Problem from an individualistic perspective. The unfairness experienced on an individual basis when that person’s claim for aid is ignored cannot therefore be offset by a supposed improvement in goodness of outcome for others. This is the implicit aggregation at the heart of the hybrid position; the idea the more people experiencing a benefit on an individual level can somehow add up a better state of affairs than an alternative in which the same benefit is enjoyed by a smaller group of different people. Individual values cannot be sensibly compared with aggregative ones; given that all versions of the hybrid position function by way of this flawed mechanism, they should therefore be rejected.

All versions of the hybrid theory are incompatible with Taurek’s individualistic reasoning. After rejecting Sanders’ original hybrid account on the grounds of normative vagueness, Kamm’s irrelevant utilities hybrid as internally inconsistent and an improved version of Hirose’s formalised aggregation on the grounds of implicit aggregation, I therefore reject the hybrid solution to the Number Problem.
5.6 Conclusion

The arguments in this chapter are designed to demonstrate the resilience and flexibility of the two-stage weighted lottery solution in the face of a variety of objections. In response to Hirose’s ‘none-or-all’ and ‘inverse lottery’ criticisms, defenders of the weighted lottery can point to the two-stage nature of the position. Faced with Scanlon’s reshuffling objection, the most appropriate reply is to attack Scanlon’s presumption of prior randomisation. The ‘incredulous stare’ argument, perhaps the most important objection to the weighted lottery, requires a more nuanced response. First, defenders of the two-stage weighted lottery solution should emphasise the fairness of the proportional result in Apocalypse-type Cases – even when a very small group are saved at the expense of a much larger one. Second, the doomsday scenario of the Apocalypse Case can be dismissed as not a Number Problem in virtue of the undesirable nature of the benefit under distribution for those in the smaller group.

The two-stage weighted lottery approach is also capable of meeting the challenge posed by the hybrid solution. Of the four versions of the hybrid account considered here, only my formalised hybrid view can be considered ‘complete’ in the sense that it always gives a concrete recommendation when faced with the question of what to do in the Number Problem. In contrast, Sanders’ original hybrid position and Hirose’s ‘formal aggregation’ hybrid are capable of recommending different decision making procedures when considering the same problem – a wildly inconsistent result. Similarly, Kamm’s use of irrelevant utilities to motivate her hybrid position fails to meet Scanlon’s ‘Making a Difference’ requirement for an acceptable Number Problem solution and describes some equal losses as relevant and others as irrelevant in the Large-Scale Rescue Case – another inconsistent result. Although my version represents an improvement over the three rival hybrid approaches considered here, it is vulnerable to an objection from aggregative reasoning – common to all hybrid solutions. As such, I reject the general form of the hybrid position.

After answering the main objections to the two-stage weighted lottery and rejecting the rival hybrid approach, I conclude that the two-stage weighted lottery solves the ideal Number Problem. In the next chapter, I consider the possibility of expanding the Number Problem to include unequal loss cases. This represents a significant improvement over the ideal Number Problem, which presumes that all individuals face potentially equal losses and so limits the
range of practical situations to which the logic of solutions to the Number Problem might be applied.
Chapter 6: The Expanded Number Problem

6.1 Introduction

The arguments presented in this thesis so far have been made in relation to the ideal Number Problem, defined in Chapter 2.2 as:

The ideal Number Problem: A choice concerning the distribution of an indivisible good between two or more sets of anonymised persons where the decision is a matter of life and death for each individual and it is impossible to satisfy all individual demands simultaneously.

The ideal version of the problem is characterised by two highly restrictive conditions: anonymity and descriptively identical losses.\(^{149}\) Taken together, these conditions permit the useful presumption that each person in the problem stands to suffer the same potential loss. Unfortunately, this presumption is fragile. Consider the effect of removing either condition from the definition: in the absence of anonymity, descriptively identical losses can lead to different personal losses; in the absence of descriptively identical losses, anonymous individuals cannot be presumed to experience different losses equally. These conditions are also highly restrictive in a different sense, limiting the applicability of my two-stage weighted lottery solution to real life cases.

The subject of this chapter is the expanded Number Problem, effectively the ideal Number Problem without the restrictions of anonymity and descriptively identical losses. The expanded Number Problem is therefore defined as:

The expanded Number Problem: A choice concerning the distribution of an indivisible good between two or more sets of individuals where each person stands

\(^{149}\) As a point of clarification, ‘descriptive’ losses differ from ‘personal’ losses in the sense that two individuals can experience the same descriptive loss differently on a personal level. If both person A and person B each stand to lose their right arm, their losses are descriptively identical. The personal loss faced by each person is not necessarily the same in this case; while we may presume, absent any reason to believe otherwise, that A’s potential personal loss is the same as B’s this cannot be stated as a matter of certainty. The purpose of the expanded Number Problem is to account for cases where individuals face different personal losses, regardless of whether they are descriptively identical. This point is addressed in more detail in section 6.5.
to suffer a potential loss if not selected and it is impossible to satisfy all individual
demands simultaneously.

Without the presumption of equal potential losses, it can no longer be assumed that each
person has an equally strong claim to the good under distribution. Any solution to the
expanded Number Problem will therefore need to measure the loss facing each person in
some way, before determining relative claim strengths.

One potential solution to the expanded Number Problem is to simplify the choice so that it
resembles the ideal case once more. The first section of this Chapter, 6.2, considers two such
proposals: Kamm’s notion of irrelevant utilities and Scanlon’s broad categories of moral
seriousness. After rejecting these approaches on the grounds of inconsistency, I introduce the
Quality Adjusted Life Year (QALY) metric in section 6.3. My solution to the expanded
Number Problem uses a modified version of the QALY, the Wellbeing Adjusted Life Year
(WALY), to measure the loss facing each person. In section 6.4, I argue that the strength of
each person’s claim for aid is determined by the relative loss that they stand to face, measured
in WALYs. Using a lottery to decide between these claims before optimising the result by
applying the Pareto principle, my two-stage weighted lottery then solves the expanded
Number Problem. The final section of the chapter, 6.5, considers a range of potential
objections to my position alongside a number of possible applications. This discussion also
refers to a potential modification of the WALY metric in certain cases, allowing for a
distinction between ‘specific’ and ‘general’ applications of my solution.

My argument for the two-stage weighted lottery solution in this chapter can therefore be
summarised in terms of the following three points. First, the potentially different losses faced
by individuals in the expanded problem can be measured by the WALY metric – an
intrapersonally aggregative assessment of wellbeing states over time. Second, each person is
said to have a claim for aid in accordance with the relative magnitude of their potential loss –
an interpersonal comparison of losses. Third, a lottery should be used to decide between the
different individual claims where the chance of selection for each claim is in proportion to its
relative strength. Combined with the Pareto principle, this approach is then capable of
solving the vast range of real life expanded Number Problem cases.
6.2 Irrelevant Utilities

One potential solution to the expanded Number Problem is to simplify the choice so that it resembles the ideal case. The notion of irrelevant utilities is central to this approach, removing minor potential losses from the problem leaving only equal potential losses behind. These simplified expanded cases can then be solved in the same way as the ideal Number Problem, by the two-stage weighted lottery. In this section, I begin by setting out Kamm’s Principle of Irrelevant Utilities before considering a similar proposal from Scanlon regarding ‘broad categories of moral seriousness’ (1998: 238). Returning to an argument first addressed in Chapter 5.5, I then consider Hirose’s objection to Kamm in light of the Large-Scale Rescue Case. Ultimately, I conclude that Kamm and Scanlon are wrong about the existence of irrelevant utilities and that all losses are morally relevant in the Number Problem.

Kamm’s discussion of the Principle of Irrelevant Utilities develops from her analysis of the Sore Throat Case. As discussed at the end of Chapter 5, the original version of the Sore Throat Case concerns the distribution of some medicine which can be used to save the life of either person A or person B. If person B is saved, the small amount of medicine remaining will be used to cure C’s sore throat. Presented in this form, the Sore Throat Case is designed to offer an objection to the utilitarian requirement to always bring about the best state of affairs. If all utilities are relevant, then the combined utility of saving both B’s life and curing C’s throat outweighs that of saving A alone. This is seen by a simple substitution of equivalents: if the death of A is equally bad as the death of B, the act of saving either person will produce the same amount of utility. In addition, the smaller utility associated with curing C’s sore throat tips the balance in favour of aiding B and C together rather than A alone. The objection here is that C’s interests have been given too much weight, that the potential to cure a sore throat should be irrelevant when compared to potentially saving someone’s life. Kamm explains:

I believe that it would be wrong to decide against [A] and for [B] solely for the sake of the sore-throat cure. Notice that on the weaker claim, that it doesn’t matter if we use a random decision procedure, so long as we do not choose for certain bad reasons, it is not held that we ought to give [A] and [B] equal chances. It doesn’t matter whom

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150 Kamm’s discussion also involves the distinction between acting and allowing that is central to Trolley problems, as in her Threat/Flower examples (1998: 146). Detailed consideration of this distinction lies beyond the scope of this thesis.
we choose, as long as we don't choose for a bad reason. And now the claim must be that, if we choose to save \([B]\) because we can then also save some other person from a sore throat, this is a bad reason.\textsuperscript{151}

The stronger claim, according to Kamm, is that we should give \(A\) and \(B\) the same chance of avoiding their equal potential loss by flipping a coin. This effectively ignores \(C\)'s lesser claim for aid, describing a potential sore throat cure as an irrelevant utility. The obvious response to Kamm's argument is to ask when an irrelevant utility becomes a relevant one. Consider a similar choice to the Sore Throat Case but where the potential gain for \(C\) is curing their flu. Would Kamm consider this to be a relevant utility? Probably not. At some point however, as the potential gain for \(C\) increases, \(C\)'s losses will become relevant. How can Kamm account for this change? Her first justification concerns the relative loss facing each person:

1. Only equal or approximately equal individual interests or rights should be matched against each other in deciding who or what may be a contestant for a good.

2. The contest should be decided only by reference to the interests or rights of those who may compete for the good.\textsuperscript{152}

By point (1), \(C\)'s interests in the Sore Throat Case are not ‘equal or approximately equal’ to those of either \(A\) or \(B\). As a result, \(C\) is not considered to be a ‘contestant’ in the competition for the good; the choice therefore collapses into the \(A\) vs. \(B\) Rescue Case. Kamm’s justification does not give a clear answer to the question of what makes a utility relevant or irrelevant here, as it is difficult to specify exactly what makes one loss ‘equal or approximately equal’ to another. This is to be expected. As discussed in Chapter 5.5, a hybrid approach that recommends more than one possible solution to the Number Problem will usually encounter the problem of vagueness. Ultimately, the question of what to do with difficult boundary cases will most likely come down to Sanders’ ‘war of intuitions’ (1988: 13) on a case by case basis. All that Kamm needs to ground her Principle of Irrelevant Utilities however, is the fact that \textit{some} losses are clearly irrelevant when compared to others and this is the purpose of the Sore Throat Case.

A similar argument for the existence of irrelevant utilities is presented in Scanlon (1998: 238-9) and discussed in Hirose (2014: 186). Unlike Kamm’s comparison between individual

\textsuperscript{151} Kamm (1998: 146)

\textsuperscript{152} Kamm (1998: 148)
interests, Scanlon considers ‘the way a distinction is drawn between the moral significance of different harms’ (1998: 238):

It seems implausible that in one case, in which we must choose between saving one person and saving ten from harms of the same degree of seriousness, we are required to save the ten, but that in a case that was otherwise identical except for the fact that the harm faced by the one was slightly worse we would be required to save the one instead. The proper reply here, I believe, is that the distinctions on which the principles I have argued for rely are distinctions between broad categories of moral seriousness. Slight differences in what happens, such as a pain’s lasting a little longer or a person’s losing two fingers rather than three, do not make the difference between a very serious loss and a moderate one, and the differences between these moral categories are not “slight”.153

Scanlon uses ‘moral categories’ here as a coarse form of interpersonal measurement, testing which losses are morally relevant before deploying his claim balancing method to justify saving the greater number. While Scanlon’s conclusion here – that we are ‘required to save the ten’ – is based on unacceptably aggregative reasoning, his idea of broad ‘moral categories’ of losses is helpful when considering Hirose’s objection to Kamm.154 Recall the Large-Scale Rescue Case, where the choice is between saving either 1000 or 1001 individuals. According to Kamm:

Here, I believe, it may even be correct to ignore the difference of one life. If so, then in this context the one life has become an irrelevant utility.155

Scanlon would surely disagree, both on the grounds of claim balancing and his ‘moral categories’. Kamm’s reasoning in the Large-Scale Rescue Case is based on a comparison between two options: using a coin to decide who to save and simply rescuing the greater number. The two choices are best understood in terms of a trade-off between two losses: a small reduction in the expected number of lives saved versus the loss of a 50% chance of survival for those in the smaller group. Kamm prioritises the latter over the former:

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153 Scanlon (1998: 238-9)
154 See Chapter 3 for a detailed discussion of the claim balancing approach and Chapter 5.5 for a full presentation of Hirose’s objection to Kamm.
155 Kamm (1998: 103)
We think that preserving this equal chance of so many is more important than saving one extra person outright.\textsuperscript{156}

By what metric are these losses compared? At the end of Chapter 5.5, my modified version of the hybrid solution posited a directly proportional relationship between the goodness of expected and actual outcomes. As such, the value of a 50\% chance of survival is said to be half that of a 100\% chance of being rescued. While this result probably underestimates the significance of knowing that you will be saved for certain in a Number Problem scenario, it serves to demonstrate how the two losses are in the same ‘broad category of moral seriousness’ in Scanlon’s terms. If the loss of a 50\% chance of being rescued is not ‘slight’ when compared to a small reduction in the expected number of lives saved, the former cannot be described as irrelevant utility in the Large-Scale Rescue Case. Scanlon would therefore disagree with Kamm’s reasoning here.

Hirose’s argument against Kamm’s conclusion in the Large-Scale Rescue Case is both short and simple. Rather than describing the choice as a matter of preserving an equal chance for one group at the expense of saving an extra life in the other, Hirose correctly identifies that the problem concerns the same loss for each person:

\begin{quote}
However, in the Large-Scale Rescue Case, the utility we are talking about is exactly the same. We cannot appeal to the same reasoning as in the Sore Throat Case.\textsuperscript{157}
\end{quote}

To better understand Hirose’s point, it is helpful to refer back to the Sore Throat Case. Kamm uses the Sore Throat Case to contrast the potential gain of saving $A$’s life with the lesser gain associated with curing $C$’s sore throat. This does not tell the full story however, as there is a second comparison in the problem: between saving $A$’s life and saving $B$’s. In the first instance, it is intuitively clear why $C$’s potential gain is irrelevant when compared to that for $A$. In the second, it is also easy to see the equivalence between saving $A$ and saving $B$. The problem for Kamm is that she ignores this second result in the Large-Scale Rescue Case.

If Kamm is right, her Principle of Irrelevant Utilities can be used to solve some versions of the expanded Number Problem in an intuitively plausible manner. Consider a Sore Throat Case example involving only two people that is a modification of Kamm’s original Sore Throat Case. Here the choice is between saving $A$’s life or saving $B$’s, where saving $B$ will also cure $B$’s sore throat. As with Scanlon’s ‘moral categories’, Kamm’s principle tells us to ignore the

\textsuperscript{156} Kamm (1998: 103)
\textsuperscript{157} Hirose (2014: 199)
small additional utility of curing B’s sore throat for the purpose of making our decision; B’s sore throat is therefore an irrelevant utility in this case. Consider also a second modification of Kamm’s example, where the choice is between preventing either many small losses to many different individuals or a great loss to a single person. In the many person Sore Throat Case, the choice is between saving A’s life and curing a great many sore throats. Using Kamm’s principle here gives the same result as before: the potential to cure one person’s sore throat is irrelevant when compared to the potential good of saving someone else’s life. Kamm therefore saves A alone in the many person Sore Throat Case and flips a coin to decide between A and B in the two person Sore Throat Case, an intuitively plausible outcome.

Hirose’s objection to Kamm in the Large-Scale Rescue Case can be understood in terms of a modification of the many person Sore Throat Case. Imagine that the choice is now between curing A’s sore throat and curing a similar illness for many others. According to both Scanlon’s ‘moral categories’ and Kamm’s Principle of Irrelevant Utilities, each person’s potential loss is a relevant utility here. This is the correct result. In the Large-Scale Rescue Case example however, Kamm suggests that the loss facing the additional person in the larger group might be ignored as an irrelevant utility. This is the crux of Hirose’s objection: how can the equal potential loss of one person ever be irrelevant when compared to the same loss facing someone else? Understood from an individualist perspective, this result is bizarre: the additional person in the larger group faces the exact same loss as everyone else in the problem! Kamm’s reasoning here violates Timmermann’s maxim that ‘Equal claims call for arbitration, not for arbitrariness’ (2004: 109). In the Large-Scale Rescue Case, Kamm’s approach differentiates between equal claims on an arbitrary basis. Losses of the same magnitude are always relevant in the Number Problem, regardless of how many individuals are affected by the decision of who to save. In light of Kamm’s conclusion in the Large-Scale Rescue Case, I follow Hirose in rejecting her Principle of Irrelevant Utilities.

It is now possible to set out my position on irrelevant utilities, the idea that some losses are morally irrelevant in certain circumstances. Best understood in light of Hirose’s objection to Kamm, I am committed to the view that all losses are morally relevant in the Number Problem. As such, I reject the notion of irrelevant utilities. This conclusion raises an obvious question: how are losses assessed and compared? Let me be clear: I am not simply committed to the weaker claim that all equal losses are morally relevant here. Rather, it is my view that

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138 Scanlon’s Jones and the World Cup Case is perhaps the best known example of this kind (1998: 235-6).
all losses are relevant in the Number Problem – even when the choice is between curing sore throats and saving lives. My answer to the question of assessment and comparability is that losses should be assessed and compared by reference to their relative scale. This answer requires much more detail, which begins with the consideration of the notion of Quality Adjusted Life Years or QALYs, an intrapersonal measure of relative health states across a person’s life. This is the subject of the next section.

6.3 Quality Adjusted Life Years (QALYs)

It is commonly said that you cannot compare apples with oranges. Effectively, this tells us that a comparison between two things can only be made by making reference to a common property or metric. In terms of the expanded Number Problem, I have already explained that the choice is a matter of adjudication between individual claims. Given that claims are grounded in individual losses and that greater losses give rise to stronger claims, how do we determine the magnitude of the loss facing each person? It is worth noting that the notion of ‘losses’ employed here refers to the relative difference between the best and worst possible outcomes for a person in the Number Problem. This term applies equally to cases involving the allocation of benefits and avoidance of burdens. One potential solution to the question of assessment is to use Quality Adjusted Life Years (QALYs), an intrapersonal measure of relative health states that takes into account how a loss can affect both the quality and quantity of life for an individual. Commonly used in a medical context, I propose that QALYs offer a useful metric for assessing relative losses in the expanded Number Problem. In this section, I begin by defining the QALY before setting out three methods by which it can be measured: rating scale, standard gamble and time-trade off. Explaining the relative merits of each approach, the section finishing with a discussion of the limits of the QALY metric in general. This then enables the move from QALYs to WALYs, Wellbeing Adjusted Life Years, at the start of the next section and the use of WALYs in my solution to the expanded Number Problem.

When assessing the potential benefits of a medical intervention, the two primary concerns are the quality and quantity of life that the patient can expect relative to their current condition. The QALY is designed to combine these two quantities into a single value, facilitating an easier comparison between different options by way of an intuitive metric. In light of the
appealing simplicity of this measure, the QALY is used as the primary benchmarking tool in a number of countries:

The US Panel on Cost-Effectiveness in Health and Medicine and the National Institute of Health and Clinical Excellence (NICE) in Britain have both endorsed the conventional QALY for their “reference case,” i.e., a standardized methodological approach to promote comparability in cost-effectiveness analyses of different healthcare interventions.\(^{159}\)

The fundamental idea behind the QALY is to assess the health states of a person over time, where the value associated with each interval can be aggregated across a longer period. One year of perfect health is assigned a value of 1, while death sits at the opposite end of the scale with a value of 0. Importantly, there are health states worse than death; a year spent in miserable, crippling pain has a negative QALY value. When faced with the question of whether a patient should undergo a medical intervention, the relative QALY scores associated with each option can be compared. In each case, the QALY value depends upon an intrapersonal aggregation of health state values. These values are measured on a linear scale, facilitating an easier comparison between intervals. As such, the improvement in health states for a patient between 0.1 and 0.2 on the QALY scale is equivalent to the change between 0.9 and 1.0 in terms of patient preference. Note that I am concerned only with the QALY as a measure of a specific individual’s health states over time here – I will turn to issues of interpersonal comparability in the next section. How does the QALY metric calculate the value of these health states? Three different methods are commonly used: rating scale, standard gamble and time-trade-off.

According to the rating scale method, patients are asked to locate their preferences for different health states on a sliding scale between the best and worst outcomes. Presuming equal interval values along the scale, different health states are assigned a value in accordance with their position. In a typical example, the scale ranges from perfect health at the top to death at the bottom. If we assign a value of 0 to death and 1 to perfect health, as with the QALY scale above, then it is trivial to see why a health state located halfway along the scale has a value of 0.5. This technique can be applied to both chronic (i.e. permanent) and temporary health problems, with the caveat that cases involving mortality need to be converted to fit on the same scale:

\(^{159}\) Weinstein et al. (2009: 5)
However, [if the possible outcomes concern both morbidity and mortality] the interval preference values for the temporary states must be transformed onto the standard 0-1 health preference scale. This can be done by redefining the worst temporary health state as a chronic state of the same duration, and measuring its preference value by the technique described for chronic states.\textsuperscript{160}

It is important to note that the rating scale method is compatible with both possible interpretations of pain and suffering: continuous and discrete. A popular example of the former is the visual analogue scale, where a slider or pointer is used to indicate patient preference, while a category based view is representative of the latter.

Unlike the rating scale, the standard gamble method of assessing preferences requires conditions of uncertainty in order to function. Patients are presented with two options regarding a risky treatment: first, refuse the gamble and remain in their current health state; second, take a chance on a medical intervention that will either improve or worsen their condition. If the patient refuses the offer, the probability of intervening successfully is increased until the patient is indifferent between the two options. If the patient initially accepts the offer, the same process is applied in reverse. Presuming that the patient is rational, the result in both circumstances will be the same; this result now provides the utility value of the baseline state according to the standard gamble model. Consider the following example:

a patient currently suffering from chronic mild depression is offered a treatment that will either cure their condition or kill them. The patient refuses the treatment when the probability of success is less than 0.8 and accepts the treatment when the probability is greater than 0.8. According to the standard gamble model, the utility value of their baseline (i.e. untreated) health state is therefore 0.8.\textsuperscript{161}

In contrast with the standard gamble, the time-trade-off method asks patients how much of their life they would give up \textit{for certain} in order to improve their health state. Returning to the case with the depressed patient, the question is now how many years of their life with depression the patient would be willing to sacrifice in exchange for a cure. If the patient is indifferent between living for 20 years with their condition and 15 years of perfect health, the value of the baseline health state is determined by dividing the second value by the first (0.75 in this case).

\textsuperscript{160} Torrance (1986: 19)
\textsuperscript{161} The standard gamble method is credited to Von Neumann and Morgenstern (2007).
How do the three approaches compare? In terms of simplicity and ease of comprehension for patients, the rating scale has the advantage followed by the time-trade-off model. The standard gamble does poorly on this measure, relying as it does on the patient’s ability to understand probabilities, but scores highly in terms of how accurately the options are presented. This is in contrast to the time-trade-off approach, which makes the options easier to understand at the expense of abstracting the choice away from what is really at stake. My preference here is for the standard gamble model, primarily because it quantifies the risks of medical intervention in an honest and accurate way. While I am sympathetic to the time-trade-off model and the fact that it produces similar results to the standard gamble approach in a more efficient fashion, I would rather sacrifice some expediency in exchange for slightly greater accuracy in matters of this importance. Ultimately, however, the arguments for the WALY weighted lottery presented later in this chapter are compatible with any of the three methods of measurement.\(^{162}\)

The QALY scale is concerned with the value of health states over time, not changes in health states. This results in a number of potentially counterintuitive and contradictory recommendations depending upon how the problem under consideration is set up. First, if the choice is a matter of bringing about the biggest improvement in QALYs compared to the baseline alternative, priority will be given to those who start from a relatively low health state and can be brought up to a higher one. Second, if the choice is a matter of preserving the maximum number of QALYs, the opposite is true and priority is given to the already best off. Finally, the linear nature of the QALY scale determines that a rise from 0.9 to 1.0 is just as valuable for the already best off as a rise from 0.1 to 0.2 would be for those in a much worse situation. This runs contrary to many of our intuitions about priority for the worst off.\(^{163}\)

The QALY measure is insensitive to the distribution of health states across a lifetime, potentially valuing a short healthy life the same as a long unhealthy one. This exclusive focus on the aggregated value of health states is potentially problematic as important information about the changes in a person’s health over a lifetime is ignored. The fundamental assumption behind the QALY measure is that more QALYs are always better than fewer. This assumption is challenged by examples like the Terminal Patient Case, where a terminal patient can either undergo invasive chemotherapy and live for five years or die within six months. If we presume that the baseline health state for the patient is that of perfect health, a QALY value

\(^{162}\) Torrance (1986: 23)

\(^{163}\) These examples are discussed in more detail in Nord et al. (2009).
of 1.0, they stand to enjoy a total of 0.5 QALYs without treatment over the final six months of their life. If the health state of patient during chemotherapy is much lower, say an average of 0.2 QALYs per year, then the total number of QALYs associated with the treatment option is 1.0. In this case the patient can double their expected number of QALYs by undergoing chemotherapy, yet it is easy to imagine why they would refuse. The numbers in this example can be made more extreme if required, but the point remains that the QALY metric is only concerned with aggregated totals not how they come about.

Defenders of the QALY system have an obvious reply to objections of this kind. Given that some health states are represented by negative QALY scores, the invasive periods of chemotherapy in the Terminal Patient Case must be balanced off by periods of better health in order to produce the 0.2 average QALY score per year. As such, the choice facing the patient would be better described in terms of a trade-off between variable health states in the event of treatment versus the consistent but short-lived baseline option. If the Terminal Patient Case is reinterpreted as choice between the patient undergoing two years of painful chemotherapy (at a QALY score of -1.0 per year) to live well for three additional years (at a QALY score of 1.0 per year, giving a combined total of +1.0 QALYs for this option) or dying without treatment in six months (total QALY score 0.5), the recommendation of the former over the latter by the QALY metric suddenly seems much more plausible. Ultimately, the intuitive appeal of the QALY system rests on how different health states are valued.

As a final point before summarising my position on the QALY measure, it is worth spending a moment discussing the use of years as the baseline metric for Quality Adjusted Life. The rationale for using years, rather than months or days, is purely a matter of convenience. Given that the QALY system is primarily used when discussing medical interventions and that many of the choices involve changes over a lifetime, a comparison between the relative merits of each choice is easiest to make when the options are expressed in years. There is no reason why the QALY cannot become a QALM or QALD, using months or days instead of years, where this is more appropriate. The issue with lowering the baseline unit down as far as days or even hours is that it becomes increasingly difficult to measure these smaller changes when considering life changing decisions. Given that typical lifetime of 80 years is about 2.5 billion seconds, it is easy to see why small changes in seconds are effectively impossible to measure when assessed over a lifetime. This result is significant in terms of my argument for applying the WALY version of the QALY measure to practical cases of the expanded Number Problem later in this chapter.
In summary, the QALY metric offers an intuitively plausible measure of aggregated health states over an individual lifetime. While there are a number of ways in which these health states can be measured, each provides a defensible solution to the problem of assessing losses. At least two further steps need to be taken to bring the idea of the QALY to bear on the generalisation of the weighted lottery procedure to cases beyond the ideal version of the Number Problem. First we need to move from an individual metric of health states to a more general individual metric of wellbeing that grounds all individual claims. Second we need to argue that such individual wellbeing metrics provide a basis for comparing the claims of different individuals. These are the subjects of the next section.

6.4 Solving the Expanded Number Problem

The ideal version of the Number Problem is often described as a question of whether the numbers count, as with the title of Taurek’s famous paper. Unlike the ideal version, the question of what to do in the expanded Number Problem includes an additional complication: the potentially different losses facing each person, both in terms of type and magnitude. In this section, I argue that my two-stage weighted lottery approach is capable of solving the expanded Number Problem. This argument rests on three separate points. First, I begin by introducing the Wellbeing Adjusted Life Year (WALY) as the basis for measuring the loss facing each person. Second, the relative strength of each person’s claim for aid is determined by an interpersonal comparison of the potential losses facing each individual. Third, claims are given a chance of selection in the first stage of my weighted lottery solution in accordance with their relative strengths. Combining the result of the lottery with a second stage Pareto optimisation generates the weighted lottery solution to the expanded Number Problem: an approach that gives those facing the largest potential reduction in individual WALYs a proportionally greater chance of avoiding their loss. Crucially, this solution is consistent with the lessons learned in light of Hirose’s objection to Kamm and Taurek’s argument against interpersonal aggregation of losses – no person is said to have a greater claim to avoid their potential loss simply because others happen to suffer alongside them.

My solution to the expanded Number Problem uses a modified version of the QALY measure to assess the potential loss facing each person. Before setting out my definition of the WALY, I will highlight the limitations of the QALY concept. Recall that a person’s QALY total is
found by aggregating the value of their health states over a given period of time. As such, the QALY is a particularly useful tool for comparing the relative benefits of medical intervention, describing the choice in terms of two intuitively clear outcomes. This highlights the first potential limitation: the QALY measure is often considered to be appropriate for intrapersonal measurements only, although there are a considerable number of examples of applying QALYs in interpersonal contexts.\(^\text{144}\) The second limitation concerns the method by which QALYs are measured. As discussed in the previous section, there are a number of different ways in which the relative value of a person’s health state can be calculated – rating scale, standard gamble, time-trade-off, etc. If my solution is to be deployed in a practical context, this question of methodology will need to be addressed.

With an understanding of the limits of the QALY measure in place, it is now possible to introduce the Wellbeing Adjusted Life Year or WALY. The WALY functions in a similar way to the QALY, assessing the aggregated amount of wellbeing that a person experiences over a given period of time. As with the QALY, the WALY is measured on a linear interval scale where the values usually range between 0 and 1. A person’s total WALY score over a lifetime is therefore given by the sum of these values. Negative WALY values are also possible here; a person is very likely to rate a year living with crippling depression as worse than death, which is represented as 0 on the scale. A person’s WALY score can be based on actual or expected outcomes. In the case of the Number Problem, this measure will always be quoted in terms of a change in expected, rather than actual, WALYs. Given the many similarities between the QALY and WALY measures, it is worth spending a moment justifying my preference for the latter over the former here. The primary difference between the QALY and WALY is that the former measures health states and the latter measures wellbeing. While these concepts are surely related in some sense, the latter is not wholly determined by the former. As such, it is possible to conceive of a scenario in which a person enjoys perfect health but their life is barely worth living. Alternatively, a person living with a serious medical condition might still enjoy a rich and happy life. In both cases, it is the person’s wellbeing – not overall health – that tells us more about how well or badly their life is going. This explains my preference for the WALY over the QALY: the notion of wellbeing simply captures more of what makes a life worthwhile than mere health states alone.

\(^{144}\) A good starting point for this discussion is Williams (1985), Harris (1987) and Smith (1987).
There are further reasons to prefer the WALY to the QALY measure. Recall the Terminal Patient Case, where a terminal patient can either undergo invasive chemotherapy and live for five years or die within six months. Presuming that the treatment option will lead to an overall improvement in QALYs for the patient compared to the alternative, it would be irrational for the patient to prefer to die. Even when the choice seems clear in cases such as these, some people still refuse the treatment – is this simply an example of irrational behaviour? According to the QALY measure, it is irrational for an individual to refuse any treatment option when the result maximises their personal QALY score. The WALY concept offers a much better explanation of why people might choose not to undergo chemotherapy here. Rather than seeing the choice purely in terms of the patient’s health, the WALY measure incorporates a wider range of factors (social, economic, etc.). As such, it is possible that the two measures can disagree as to the best course of action in cases such as these.

Both the QALY and WALY measures function by way of intrapersonal aggregation, but the WALY measures more values and is therefore more demanding. This use of aggregation is potentially problematic. Consider the choice between living for twenty years at a high level of wellbeing or a much longer period at a far lower level. At some stage, as the number of years associated with the second option increases, the WALY measure will prefer the latter to the former. This result seems counterintuitive: the objection here is that many people would choose the short happy life over the alternative, no matter how many more years of life that may include.

Understood correctly, the linear interval scale at the heart of the QALY and WALY approaches is a matter of subjective preference. As such, a person is said to value an improvement in their wellbeing state from 0.1 to 0.2 just as highly as a similar change from 0.9 to 1.0. Importantly, these values tell us nothing about the absolute change in wellbeing for this person aside from the fact that higher states of wellbeing are strictly superior to lower ones. This result is illuminating in the context of the example discussed above. If the WALY measure records a greater score for a longer life at a lower level of wellbeing compared to the alternative here, then this is result only makes sense in the context of a personal preference. There are therefore two variables that affect a person’s WALY score: the intensity and duration of a wellbeing state. As such, a person is said to be indifferent between the following outcomes on the WALY measure: five years at a wellbeing state valued at 0.6 and six years at a lower wellbeing state of 0.5. In both cases, the total amount of WALYs associated with each option is 3.0 – perhaps a coin could be used to decide between them. Given the preference-based interpretation of the WALY presented here, a person who decides to reject the recommendations of the WALY
measure is simply contradicting their own preferences. Therefore if one alternative results in more WALYs than another for a given individual, then rationally they must prefer it.

The potential loss facing each person in the expanded Number Problem can be assessed using the WALY metric, however this method is incomplete without a further argument. Recall Hirose’s objection to Kamm’s Principle of Irrelevant Utilities, discussed in section 6.2. Hirose objects to Kamm’s conclusion in the Large-Scale Rescue Case, arguing that losses of the same utility can never be morally irrelevant when compared to one another (2014: 199). While I agree with Hirose’s conclusion here regarding equal losses, I believe that all losses are morally relevant in the Number Problem – a much bolder claim. In order to explain my point, consider the loss facing each person in Kamm’s Sore Throat Case: both A and B stand to lose their lives if not saved, while C’s sore throat will not be cured. If losses are understood in terms of the WALY metric, then each person faces a potential reduction in WALYs compared to the alternative. Crucially, these losses are measured on the same scale. Unlike with Scanlon’s broad moral categories or Kamm’s irrelevant utilities, the smaller potential loss of C is not incommensurable with the vastly greater potential loss facing A and B according to my view. Although they differ in magnitude, these losses are nevertheless of the same type. As such, all individual losses in the Number Problem can be measured on the WALY scale – no matter how small. Faced with a choice between potential losses that are equal in status, if not in size, the only consistent approach is to treat all potential losses as morally relevant. This result avoids the question of differentiation between relevant and irrelevant losses, a problem for Scanlon’s moral categories and Kamm’s irrelevant utilities. If all losses are morally relevant, there is no ‘tipping-point’ beyond which relevant losses become irrelevant and vice versa.

With the first stage of my argument, the intrapersonally aggregative WALY measure, in place it is now possible to address the question of arbitration. After assessing the potential loss facing each person in terms of a potential reduction in individual WALYs, the second stage of my argument compares these losses on an interpersonal basis. In the Sore Throat Case example, both A and B will die if not selected for rescue. In contrast, C’s potential losses here are limited to missing out on a cure for their sore throat. Each of these losses can be described in terms of a reduction in WALYs: perhaps 50 each for A and B and 1 for C. As with the ideal Number Problem, the strength of an individual’s claim for aid in the expanded Number Problem is derived from the magnitude of the potential loss that they face. This is the second stage of my argument, concerning the assessment of claims. Based on the potential reduction in WALYs stated above, the claims of A and B are therefore said to each be fifty times stronger than that of C.
As presented here, my argument for using WALYs to measure relative individual losses presumes that changes in individual wellbeing states can be compared interpersonally. I have also described the WALY in terms of a preference-based account of wellbeing. While I acknowledge that both of these presumptions and their interconnection are controversial, a full discussion of these issues is beyond the scope of this thesis.\(^{165}\) As a short response however, it is helpful to consider the following modification of an earlier example. Recall the choice for an individual between two wellbeing states of different duration and intensity, one at a level of 0.5 WALYs per year for six years and a second at a higher level of 0.6 WALYs per year for five years. In both cases, the total number of WALYs sums to 3.0. Faced with the same choice between the two outcomes, objectively described, two individuals disagree about the relative WALY scores of each. Person A prefers the first outcome to the second in virtue of the relative WALY scores of 3.1 and 2.9, while person B has the opposite preference and scores the two at 2.9 and 3.1. How can my interpretation of WALYs as interpersonally comparable respond to such results? There are two possible replies to this point: first, each person may recognise the different preferences of the other as a matter of empathy. Second, the stronger reply, is to suggest that such disagreements are unlikely to arise in the first place; that individuals are unlikely to differ to any great degree in how they value wellbeing states.

In the ideal version of the Number Problem, equally strong individual claims are given the same chance of recognition in the first stage of my solution: the lottery. When the choice concerns claims of different strengths, as in the Sore Throat Case, this discrepancy is reflected in the different probabilities associated with the selection of each claim. Using the values suggested earlier, both A and B are said to face a potential loss of 50 WALYs if not saved while C will lose 0.1 WALYs if their sore throat is not cured. Let the claim associated with a potential reduction of 0.1 WALYs be represented by one ball in the lottery. In virtue of their potential 50 WALYs lost, both A and B have 500 balls in the lottery. Similarly, C’s smaller potential loss of 0.1 WALY translates to one ball. When a lottery is used to solve the Sore Throat Case based on the values suggested here, A’s claim stands a 500/1001 chance of winning the lottery – the same as that for B. In contrast, C’s much weaker claim for aid has only a 1/1001 chance of selection. Given that both B and C are spared their losses when either person’s claim is selected by the lottery, they each have a 501/1001 ex ante chance of sharing in the benefit here.

\(^{165}\) A good starting point for this debate is Elster & Roemer (1991). See also: Griffin (1986), Nussbaum & Sen (1993) and Sumner (1996).
This is the third and final stage of my argument, concerning the notion of adjudication between claims.

Once the result of the lottery is known, the rescuer in the expanded Number Problem acts to save the person associated with the winning claim. If the winning claim in the Sore Throat Case relates to either $B$ or $C$, the rescuer has two choices: aid the person with the winning claim alone or help $B$ and $C$ together. According to Pareto, the second option is superior to the first as it is better for someone and simultaneously worse for no one. As such, both $B$ and $C$ are spared their potential loss when either person’s claim is selected by the lottery. This is the result of my two-stage weighted lottery solution to the expanded Number Problem: in the first stage, a lottery is used to decide between the claims of individuals where the probability of selecting each claim is dependent upon the relative loss facing each person measured in WALYs. After selecting one individual claim from many, the results of the lottery are then optimised in accordance with the Pareto principle. Crucially, the two-stage weighted lottery gives each person a chance of avoiding their potential loss no matter how relatively minor it may seem to be. As such, my solution is not aggregative in the act-utilitarian sense as it does not automatically prevent the largest potential loss of WALYs in the expanded Number Problem.

After setting out the terms of my solution in this section, it is now possible to apply it to some of the cases considered earlier in this thesis. This is the subject of the next part of Chapter 6, concerning the general and specific versions of the two-stage weighted lottery approach.

6.5 Applications and Objections

The expanded Number Problem effectively asks two questions simultaneously: should the numbers count, or count decisively, in favour of saving the greater number and how should we adjudicate between unequal losses? There are four possible ways in which answers to these questions can be combined to produce a Number Problem choice, two of which are compatible with the ideal version of the problem. In the first of these, the choice is between groups of the same size where each individual faces the same loss. An example of this kind would be a ‘balanced’ Rescue Case, where the choice is between saving $A$ or $B$. The second compatible choice concerns the same potential loss but for different sized groups of people.
This is seen in the ‘unbalanced’ Rescue Case, where the choice is between saving $A$ alone or $B$ and $C$ together.

The expanded version of the Number Problem concerns a choice between preventing different potential losses for different people. When the decision affects the same number of people in each group but in different ways, this is the third possible formulation of the problem. Consider the two person Sore Throat Case, where the choice is between saving $A$’s life or curing $B$’s sore throat. Here the number of people affected by our decision is the same, but their potential losses are very different. Finally, the most complicated kind of expanded Number Problem case concerns a choice where the outcome affects groups of different sizes in different ways. An example of this kind is the Ten Billion Seconds Case, where the choice is between saving the life of a new-born baby and sparing ten billion people the loss of dying one second earlier. Taken together, these four examples demonstrate the full potential range of Number Problem cases. In the first part of this section, I demonstrate how my two-stage weighted lottery solution solves each possible permutation of the expanded Number Problem. This is followed by a discussion of two objections, relating to the two person Sore Throat Case and the Ten Billion Seconds Case, and my responses. The section concludes with an overview of the positive aspects and limitations of my position.

Of the four kinds of Number Problem cases, the balanced version of the Rescue Case is the most basic. One such example is the choice is between saving the life of $A$ alone or $B$ alone. By the WALY metric, the loss to each person is presumed to be the same. As such, their claims are said to be equally strong. My two-stage weighted lottery solution begins with a draw between two balls – representing $A$’s claim and $B$’s claim. Choosing between them with an equal probability, we act to save the person whose claim is selected by the lottery. The second stage of my solution looks for any potential Pareto improvements, however it is not possible to improve the outcome for $B$ once the decision has been made to rescue $A$ and vice versa. The overall result in the two person Rescue Case is therefore that $A$ and $B$ each have the same $1/2$ ex ante chance of survival.

The second kind of Number Problem case is slightly more complicated. In this case, the choice concerns preventing the same loss but for different numbers of people. The three person Rescue Case with two islands is an example of this kind of Number Problem, where the choice
is between saving $A$ alone or $B$ and $C$ together.\footnote{Note that the three person Rescue Case with three islands would be an example of the first kind of case. Here the choice is between saving $A$ alone, $B$ alone or $C$ alone – the groups are the same size and each person faces the same potential loss.} Once more, my two-stage solution begins by assessing the loss facing each person in terms of a reduction in personal WALYs. If we presume this loss is the same, each individual is said to have an equally strong claim for aid. The first stage of my lottery chooses between the three claims with an equal probability, reflecting their equal status. Once the lottery has selected one individual claim from many, we act to save the person with the winning claim. Next, the second stage of my solution optimises the result in accordance with the Pareto principle. If either $B$ or $C$ are rescued as a result of the lottery, it is possible to save both individuals together. Pareto tells us that this result is superior to the alternative of saving only one person on the larger island alone, thus both $B$ and $C$ are rescued when either person’s claim is selected by the lottery. My two-stage weighted lottery solution therefore gives those in the larger group a proportionally greater ex ante chance of survival in Number Problem cases of this kind.

The third kind of Number Problem is concerned with equal sized groups but unequal potential losses. In the two person Sore Throat Case, the choice is between saving $A$’s life and curing $B$’s sore throat.\footnote{Note that this case is different to the example discussed on page 133.} Measured in terms of a potential reduction in WALYs, the loss facing $A$ is vastly greater than that facing $B$. As such, each person has a different strength claim for aid in virtue of their different potential losses. If the potential losses facing $A$ and $B$ are presumed to be 50 and 0.1 WALYs respectively, the first stage of my weighted lottery solution selects between their claims with a probability of 500/501 for $A$ and 1/501 for $B$. Regardless of which person’s claim is selected here, no second stage Pareto optimisation of the result is possible as there are only two people in the problem. My two-stage weighted lottery therefore gives $A$ and $B$ a proportionally unequal chance of being spared their unequal potential losses in this case.

The final kind of Number Problem is the most complex of the four kinds of cases. The choice here concerns both a different sized groups and different potential losses. One such example is the original Sore Throat Case, discussed above. Here the choice is between saving $A$ alone and saving $B$’s life, where saving $B$ also cures $C$’s sore throat. Using the values stated earlier, the loss to $A$ and $B$ is presumed to be 50 WALYs and that facing $C$ only 0.1. These unequal losses generate unequal strength claims which are, in turn, given a proportionally unequal chance of selection in the first stage of my weighted lottery solution. A lottery with 1001 balls...
can be used to decide between the three unequally strong claims. In virtue of their equal potential loss of 50 WALYs, the claims of \( A \) and \( B \) are represented by 500 balls each. \( C \)'s much weaker claim in light of their potential loss of 0.1 WALY is acknowledged by 1 ball in the lottery. As such, \( A \)'s claim has a 500/1001 chance of being selected by the lottery – the same chance as \( B \)'s claim. In contrast, \( C \)'s much weaker claim has a much lower chance of being selected by the lottery: 1/1001. If \( A \) wins the lottery, the rescuer acts to save \( A \). If either \( B \) or \( C \) wins the lottery, the Pareto principle demands that both individuals on the second island are saved together. \( B \) and \( C \) therefore enjoy a slightly higher \textit{ex ante} chance of being spared their potential individual losses here, 501/1001, compared to the 500/1001 chance for \( A \).

As discussed in Chapter 2.5 and 4.5, the choice in the Number Problem can be further modified by the inclusion of overlapping sets and different probabilities of success. Imagine a four person Rescue Case where the individuals are spread across three islands. \( A \) is alone on the first island, \( B \) and \( C \) are together on the second and \( D \) is alone on the third. Crucially, the first two islands are close together and \( B \) is a good swimmer. If \( B \) sees the rescue boat heading towards the first island, he will swim across and join \( A \). Unlike in the version of the problem discussed earlier in the thesis, \( B \) also knows that he can just about swim to shore if necessary, but not to the third island. This swim will be long and hard for \( B \), but he will be saved for certain if he attempts it. The loss facing each person in the problem is therefore different, as are the numbers involved; this is an expanded Number Problem case. The choice facing the rescuer can now be described as: save \( A \) from drowning and save \( B \) from swimming to shore, save \( B \) from having to swim at all and save \( C \) from drowning, save \( D \) from drowning.

Assessing the loss facing each person in terms of WALYs, death for \( A \), \( C \) and \( D \) is said to represent the same reduction of 50 WALYs while \( B \)'s potentially arduous swim to shore is measured at 1 WALY. Interestingly, the loss facing \( B \) is different depending on the result of the lottery – if \( A \)'s claim is selected, \( B \) will only suffer the mild inconvenience of swimming to the first island, rather than having to swim to shore. My method takes the maximum loss facing each person as the basis for comparing claims, as such \( B \)'s claim is said to be fifty times weaker than that of \( A \), \( C \) and \( D \). The first stage of my lottery solution chooses one claim from many, giving the claims of \( A \), \( C \) and \( D \) the same 500/1510 chance of selection and 10/1510 for \( B \). \( B \) is saved when either \( A \), \( B \) or \( C \)'s claim is chosen by the lottery, giving \( B \) a 1010/1510 chance of rescue. Similarly, \( A \) has a 500/1510 chance of being saved, the same as \( D \), while \( C \) can potentially benefit if \( B \)'s claim is chosen and therefore has a slightly higher 501/1510 \textit{ex ante} chance of survival.
My two-stage weighted lottery approach is also capable of solving different probability of success cases, even when the loss facing each person is different. Consider a choice between three patients, each of whom requires some dose of our life-saving drug but for different reasons. Person A requires all of the drug and will die without it, while B and C only require half of the dose each in order to save them from blindness. Crucially, the act of giving the full dose to A is not guaranteed to save their life – there is only a 1/2 chance that this will happen.

My two-stage solution to this problem begins, once more, by assessing the potential loss facing each person in terms of a reduction in WALYs. A’s death is described as a loss of 50 WALYs, while the loss of B and C’s sight is measured at 10 WALYs each. Each person is said to have a claim for aid in proportion to the magnitude of the potential loss that they face, as such my lottery gives A’s claim a 50/70 chance of selection and a 10/70 chance each for the claims of B and C. If A’s claim is chosen by the lottery, we act to give all the drug to A regardless of the probability of success. Similarly, if either B or C has the winning claim, they will receive half of the dose and the other will also benefit in virtue of a Pareto optimisation of the result. My solution in this case faces an interesting objection: what if the probability of successfully saving A, conditional on attempting to do so, was very small indeed? A would still enjoy a 50/70 chance of their claim being selected by the lottery, but the chance of A surviving would be much smaller. This is only fair: my solution gives more chance to selection to A’s claim in light of the greater potential loss that A faces, relative to B and C. The fact that A is unlikely to survive even if they receive the full dose of the medicine is irrelevant here – the Number Problem is a matter of adjudication between claims for aid, not outcomes.

There are two further objections to my two-stage weighted lottery solution that I wish to address in this section. The first concerns a modified version of the two person Sore Throat Case, introduced earlier. Effectively, this objection questions why the relatively minor loss facing B is given any weight against the much greater potential loss of A. In the modified two person Sore Throat Case, B stands lose out in virtue of not having their sore throat cured while A will die if not aided. Faced with such vastly unequal losses, surely the better solution is to just save A without holding a lottery first? I have two responses to this objection. First, giving B’s claim some chance of winning the lottery is entirely consistent with the demands of fairness. B’s loss is morally significant here simply because it is significant for B. Indeed, all losses are morally relevant in the Number Problem; to ignore B’s significant loss would be to deny this fact.\footnote{I make this point in more detail in Chapter 5.4.}
My second response to the two person Sore Throat Case objection concerns the notion of measurement, particularly in a practical context. The loss facing A in the event of their non-selection by the lottery is measured in Wellbeing Adjusted Life Years, with a crucial emphasis on the term years here. In contrast, the most appropriate unit of measurement when discussing the relative impact of a sore throat on someone’s life is probably based on days or hours. My initial characterisation of the loss facing B as 0.1 WALY in this case is therefore likely to be an overestimate – sore throats do not typically reduce a person’s wellbeing for 36.5 days, certainly not to the extent that they reduce the wellbeing of that person during that time to zero. As such, a more realistic measure of the WALY reduction facing B is likely to return a very small value in terms of WALYs. My second response here relates to the practicality of measuring such minor reductions in a person’s wellbeing. In a practical context, all measurements are affected by background ‘noise’; indeed, a scientific measurement is only complete when presented alongside an estimate of the likely error in that reading. If the error in one potential loss, say that of A, is greater than or equal to another potential loss in the expanded Number Problem, it is arguably sensible to treat the latter as indistinguishable from zero. In the modified two person Sore Throat Case, it is highly likely that the potential error in recording the loss facing A is greater than the total loss facing B. Effectively, the conclusion here is that the effects of a sore throat on a person’s wellbeing are not measurable over a lifetime. If B’s potential loss is treated as zero for practical purposes here, then my two-stage lottery treats the problem as a choice between saving A and saving no one, returning the intuitively plausible result that we should act to save A every time here.169

A second objection to my weighted lottery solution comes in the form of the Ten Billion Seconds Case. Here the choice is between saving the life of a newborn baby and sparing ten billion people the potential loss of dying one second earlier. The objection in this example is that, as the numbers of people experiencing a small loss in the larger group increase, the ex ante chance of saving the lone individual becomes smaller and smaller and at some point this becomes implausible. In the Ten Billion Seconds Case, a person who dies at birth rather than living for 80 years loses approximately 2.5 billion seconds of life. Similarly, the total loss to the ten billion people of dying one second earlier sums to 10 billion seconds. According to my two-stage lottery, the relative loss facing each person is assessed in terms of a reduction in personal WALYs before this result is used to determine the relative strength of each individual claim. In this case, the baby is said to lose 65 WALYs or 2 billion WALYs (Wellbeing

169 This result concurs with Kamm’s use of irrelevant utilities in the Sore Throat Case.
Adjusted Life Seconds) in the event of their death while each of the ten billion loses 1 WALS each.\textsuperscript{170} If one ball in the lottery is equivalent to a claim representing 1 WALS, the baby has 2 billion balls in the lottery while there are 10 billion representing the larger group. The chances of the baby’s claim winning the lottery are therefore 2/12 or 1/6 in this case. It is easy to see how the number can be altered to make this objection more powerful. If the ten billion people each stood to lose ten seconds of life, rather than one, their individual claims would be represented by 100 balls for every 2 of the baby. This would give the baby only a 2/102 or 1/51 \textit{ex ante} chance of being saved.

I have three responses to the objection raised by the Ten Billion Seconds Case. First, the individualist lottery is between claims of individuals, not aggregated individual losses. As such, my two-stage weighted lottery begins by choosing between the claims of individuals – not groups. On this view, the claims of those in the larger group are given some chance of recognition in light of the morally significant loss facing each person. It is therefore both right and fair that my solution includes the claims of those who stand a lesser, but still morally significant loss here. Second, the discrepancy in \textit{ex ante} chances here is a result of a non-aggregative Pareto optimisation. If the lottery selects a claim from the larger group as the winner, we are duty bound to try to spare that individual their potential loss. At this stage, there are only two options available to us given the specification of the problem: aid the remaining people in the larger group alongside the winner or aid the winner alone. Given that the first option is better for someone (or a great many people in this case) and, crucially, worse for no one, it is right that we act to aid every member of the larger group. The reduction in \textit{ex ante} chances of survival for the baby in this case is therefore consistent with the demands of taking all morally relevant losses seriously in the Number Problem.

My third and final response to the Ten Billion Seconds Case objection echoes that of the second response to the modified two person Sore Throat Case. The loss to a person who dies one second earlier than they otherwise might have done is surely unmeasurable in a practical context. As such, this loss in terms of WALYs will be indistinguishable from a situation in which the loss never occurred. As in the modified two person Sore Throat Case, if the loss of one second of life or the curing of a sore throat involves no measurable loss in terms of WALYs then the Ten Billion Seconds Case dissolves into a choice between saving the baby or saving no one. We should therefore save the baby. This raises an interesting further question:

\textsuperscript{170} Presuming that the baby will live for 80 years and enjoy an average WALY score per year of 0.8125, giving a total score of 65 WALYs over their lifetime.
setting aside the practicalities of the matter for a moment and presuming that it was possible to assess potential losses without this uncertainty, would I be committed to the original result of the Ten Billion Seconds Case? The answer is yes, as the loss facing each person would be morally significant and measurable in this case. This line of argument strongly suggests a modification to my two-stage solution in cases where it is either very difficult or incredibly costly to identify the exact loss facing each person.

The difficulty of measuring a potential reduction in WALYs over a lifetime highlights a second potential problem. According to this second worry, the WALY incorporates too broad a range of values in certain cases. Recall the ‘Numerus Fixus’ example discussed in Chapter 1.2. Here a choice must be made between eligible candidates of differing abilities for places on an oversubscribed university course. Following the method set out in this chapter, the loss facing each candidate can be assessed in terms of a potential reduction in lifetime WALYs. If the WALY is used as the metric of comparison, it is highly likely that the impact on each candidate in the event of their non-selection will be very similar. As such, each person’s claim would be represented by a similar number of balls in the first stage of the lottery solution. What if a different metric of comparison is used instead, one that considers a narrower, more appropriate range of values? If the choice is assessed solely in terms of the potential educational benefit to each candidate, the relative losses facing each person in the event of their non-selection will most likely be far more diverse. This will be easier to measure than the broader notion of lifetime WALYs. The suggestion here is that a limited, more relevant metric of comparison will lead to a more accurate assessment of potential losses. The recommendations of my two-stage weighted lottery using this alternative metric would therefore be superior to the WALY-based account.

The idea of using a restricted version of the WALY metric in some cases but not others permits a distinction between ‘specific’ and ‘general’ versions of the expanded Number Problem. In the general version, the standard WALY metric is appropriate for the assessment of relative potential losses. In the specific case, the range of values incorporated within the metric of comparison is adjusted relative to the good under distribution. The advantages of using this distinction are two-fold: first, it permits a more accurate measure of the relevant loss facing each person; second, restricting the range of values under consideration improves the practicality and efficiency of the process. A further potential benefit of this simplification relates the notion of indirect losses. If the choice in the expanded Number Problem is between $A$ and $B$, where we know that $A$ is a parent and $B$ is not, it seems reasonable to presume that $A$’s death will negatively affect more lives than that of $B$. In light of these indirect losses, one
approach would be to measure the additional potential loss facing A’s children in terms of a reduction in lifetime WALYs and include this within our calculations. The question is why should we stop there? Each person’s death will likely affect the lives of many others. If, as I argue, all losses are morally relevant in the Number Problem, surely each and every loss must be accounted for? In keeping with the simplification set out here, perhaps the best solution to this problem is to restrict the domain of our moral reasoning to direct losses only. As such, only the potential losses of A and B are relevant for the purpose of weighting claims.\footnote{171}

In terms of the disadvantages, the specific approach lacks the uniform cohesion of the general method – recommending an assessment of different values in different cases.

6.6 Conclusion

In summary, my two-stage weighted lottery approach is capable of solving the expanded version of the Number Problem. Rejecting the notion of irrelevant utilities, my position is consistent – treating all potential losses as morally relevant. Using a modified version of the QALY metric to measure states of wellbeing over time, these intrapersonally aggregated WALY scores are compared on an interpersonal basis in order to determine the relative strength of individual claims in the problem. Using a weighted lottery to decide between individual claims, the result of this draw is then optimised in accordance with the Pareto principle. Each person’s claim therefore stands a chance of selection in the first stage lottery draw in proportion to the relative magnitude of their potential loss, measured in terms of a reduction in WALYs. The overall result of using the two-stage weighted lottery to solve the expanded Number Problem is that the \textit{ex ante} chance of a group avoiding their potential loss is in proportion to the magnitude of that loss relative to all others in the problem.

Whether understood in terms of a flexible policy, adaptable in specific cases, or the consistent approach of the general version of the position, my two-stage weighted lottery provides an intuitively clear recommendation for solving even the most complicated kind of Number Problem. This expanded argument is therefore applicable to a much wider range of real life cases.

\footnote{171} Whether A, as a parent, stands to suffer a greater loss than B in virtue of missing out on raising their children is a question beyond the scope of this thesis. My solution to the expanded Number Problem is agnostic between the possibilities here.
Chapter 7: Conclusion

At the outset of this thesis I set out two key aims: first, to derive and defend the two-stage weighted lottery solution to the Number Problem; second, to demonstrate why the existing solutions fail and should therefore be rejected. I also distinguished between two kinds of Number Problem cases, the ideal and expanded versions. In the ideal case, anonymised individuals face descriptively identical losses. In the expanded case, these losses are potentially different.

In the context of the ideal Number Problem, which focuses on the adjudication between essentially identical individual claims, the first aim has been achieved by setting out, in detail, how the two-stage weighted lottery approach treats all individual claims equally while employing the Pareto principle to ensure that no one suffers a loss that could be prevented without cost. In the expanded case, where there is the additional problem of assessing and comparing individual losses, my approach involves the WALY metric for measuring individual potential losses and an interpersonal comparison of potential losses to determine the strength of individual claims. The two-stage weighted lottery approach then treats all individual claims in proportion to the potential loss that grounds each claim, so that each individual has a chance of winning the lottery in proportion to the relative strength of their claim. As with the ideal Number Problem, the outcome of this first stage lottery is then optimised with reference to the Pareto principle.

In order to solve the Number Problem, I needed to answer two important questions relating to the assessment of and adjudication between losses. My answers to these questions concern the WALY metric for measuring individual potential losses and an interpersonal comparison of potential losses to determine the strength of individual claims. Giving each of these claims a chance of winning the lottery in accordance with their relative strength, the result is the two-stage weighted lottery procedure when the outcome is optimised with reference to the Pareto principle.

The second aim of the thesis was achieved by examining the rival positions in detail. Both the original and maximin versions of Taurek’s equal maximum chances solution were rejected in light of my different probability of success objection, developed in Chapter 2.5. The Kamm-Scanlon and Scanlon-Kumar claim balancing approaches were rejected in light of Otsuka’s twin objections in Chapter 3.3 and 3.4, while the general form of the position was rejected.
following Timmermann’s interchangeability and sequencing objections in Chapter 3.5. Kamm’s one-stage version of the weighted lottery or PPC was rejected in Chapter 5.2 as implicitly aggregative, while the same objection was raised against the hybrid position in Chapter 5.5.

The version of the two-stage weighted lottery supported here is not original, although the derivation of the position is. There are two ways in which the lottery can be derived from a rival position. Taurek’s equal maximum chances solution makes deeply counter-intuitive recommendations when faced with overlapping sets cases, as shown in Chapter 2.5. My modified maximin version of Taurek’s approach avoids this objection, but fails when faced with different probability of success cases. Crucially, Taurek’s solution selects between distributions – not individuals or individual claims. This is the source of Timmermann’s ‘collectivity’ objection to Taurek, that individual interests are not treated as such by the equal maximum chances position. In order to fully reflect the individual nature of each person’s loss, Taurek should hold an unweighted lottery between individual claims in the ideal Number Problem. When optimised in accordance with the Pareto principle, Taurek’s logic supports the two-stage weighted lottery solution.

The second derivation of the two-stage weighted lottery begins with the claim balancing approach. According to Otsuka’s Scales of Justice objection, considered in Chapter 3.3, it is the combined weight of claims in the larger group that carry the day against those in smaller group – an implicitly aggregative result. There are two problems with the claim balancing approach. First, individual claims are assessed in terms of group claims. Second, the winning claim in the claim balancing process always comes from the largest group. On the first point, claims should only ever be compared on an individual basis. Following Timmermann’s sequencing objection, addressed in Chapter 3.5, the lesson of the second point is that all possible combinations of claims must be considered – not just those that guarantee that the winning claim will come from the largest group. When these two lessons are applied to the claim balancing approach, the result is that each possible ordering of claims should stand the same chance of being used. This gives each person’s claim the same chance of winning, matching the result of the first stage of two-stage weighted lottery. If this result is optimised in accordance with the Pareto principle, the logic of the claim balancing approach supports the two-stage weighted lottery solution.

My derivation of the two-stage weighted lottery solution is particularly compelling when understood as Taurek’s logic applied more fully or a non-arbitrary version of the claim
balancing position. These arguments effectively kill two birds with one stone, both demonstrating why a rival solution fails and supporting my preferred conclusion instead. This combination of novel objections to Taurek, a reinterpretation of Timmermann’s sequencing objection and a repurposing of Kamm’s idea of claims in one-on-one combat is the primary original contribution of the thesis.

After deriving the two-stage weighted lottery, the second part of my first aim for this thesis required that I respond to the wide range of potential objections. In Chapter 5 I considered two objections from Hirose, Scanlon’s ‘reshuffling’ objection and the ‘incredulous stare’. Understood as a special case response to the final objection, I also defended the weighted lottery from the challenge of the hybrid account. My responses in Chapter 5 represent a robust defence of the two-stage weighted lottery, ruling out certain choices as non-Number Problem cases when the consequences are potentially apocalyptic. Taken together, these arguments, some of which are novel, demonstrate the flexibility of the two-stage weighted lottery when faced with difficult choices.

The arguments in the first five chapters of this thesis succeed in showing that the two-stage weighted lottery solves the ideal Number Problem, but not the expanded form of the problem. Chapter 6 therefore plays a key role in the thesis, extending the range of these arguments to cover choices involving potentially different individual losses in the expanded Number Problem. Unlike in the ideal case, the simple presumption of equal individual losses does not apply here. As such, any successful solution to the expanded case must offer a clear explanation of how individual losses are assessed. My answer, the WALY metric, rests on a number of presumptions that I recognise may be controversial. In response to these concerns, notably the worry that the WALY metric is simply too broad a measure to be useful in certain circumstances, I have proposed a specific/general distinction to apply to different cases. This is the main area in which the thesis could be extended, examining both the underlying assumptions behind the WALY in further detail and formalising the relationship between the specific and general versions of my solution.

In summary, the arguments presented in this thesis meet the two key aims set out in the introduction. I have offered two novel derivations of the two-stage weighted lottery solution alongside an elaborate range of responses to the primary objections. Furthermore, I have set out a range of forceful objections to the other potential Number Problem solutions and demonstrated why each should be rejected in light of these arguments. My solution to the expanded Number Problem offers a clear answer to the questions of assessment and
adjudication, explaining carefully how even the most complex choice can be solved by this method. Taken together, these three points represent a substantial contribution to the Number Problem debate. In light of the numerous ways in which the two-stage weighted lottery position can be derived, its robustness in the face of diverse objections and the flexible solution it offers when faced with complex cases, I conclude that the two-stage weighted lottery approach solves the Number Problem.
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