Fairness, Benefiting by Lottery and the Chancy Satisfaction of Moral Claims

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This article offers a new theory about how using lotteries to distribute scarce benefits satisfies beneficiaries' claims. In the first section of the article I criticize John Broome's view and on the basis of these criticisms set out four desiderata for a philosophically adequate account of claim satisfaction by lottery. In section II I propose and defend a new view called the dual structure view, so called because it posits that claimants have two types of claims in the relevant scarce benefit distribution cases under discussion. This view meets all the desiderata set out in section I. Section III draws out the practical implications of my view for a variety of temporally extended cases, including the distribution of corneas to patients who have suffered corneal degeneration.

Many moral philosophers and policymakers contend that when we have to distribute scarce, indivisible benefits amongst potential beneficiaries, each with an equally strong moral claim on the benefit, fairness sometimes requires us to run a lottery to decide whom to benefit.[1] Doing so purportedly satisfies their claims.[2] While I have defended a substantive view elsewhere, in this article I do not defend a particular view about which cases we should run lotteries on, nor what kind of lottery fairness requires.[3] Instead I focus on the theoretical question of how such lotteries satisfy beneficiaries' claims, in particular by reference to temporally extended cases. These underappreciated cases have significance for both philosophical theories' plausibility and their practical implementation.

There has been little discussion of the temporal structure of how lotteries satisfy beneficiaries' claims. One exception to this is in John Broome's work, which I discuss and criticize in section I. These criticisms illustrate what is required for a philosophically adequate

[1] For example, see Gerald Lang, 'Fairness in Life and Death Cases', *Erkenntnis* 62 (2005), pp. 321-51; Martin Peterson, 'The Mixed Solution to the Number Problem', *Journal of Moral Philosophy* 6 (2009), pp. 166-77; Robert Huseby, 'Spinning the Wheel Or Tossing a Coin?', *Utilitas* 23 (2011), pp. 127-39; Peter Stone, 'On Fair Lotteries', *Social Theory and Practice* 34 (2008), pp. 573-90; Ben Saunders, 'A Defence of Weighted Lotteries in Life Saving Cases', *Ethical Theory and Moral Practice* 12 (2009), pp. 279-90.

[2] John Broome, 'Fairness', *Ethics Out of Economics* (Cambridge, 1999), pp. 111-22.

[3] Gerard Vong, 'Weighing up Weighted Lotteries' (unpublished manuscript).

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account of claim satisfaction by lottery. Section II of this article offers new alternatives to Broome's view that attempt to meet the theoretical requirements specified in section I. In this section, I advocate a new view called the dual structure view, so called because it posits that claimants have two relevant claims in distributional cases of the above kind. The last part of section II defends the dual structure view against an objection. Section III draws out the practical implications of my view for a variety of temporally extended cases, including the distribution of corneas to patients who have suffered corneal degeneration.

I. FAIR LOTTERIES AND BROOME'S SYNCHRONIC VIEW

I.i. The role of chances of benefiting

Before outlining and objecting to Broome's view, I should illustrate the role of *ex ante* chances of benefiting for fairness, for claim satisfaction and for permissibility. Consider the following case:

The Chancy Doctor: A doctor can conduct successful life-saving surgery on two of her patients in two separate, easy operations. Both patients are equally badly off, and the doctor has no other obligations. Instead of just conducting the surgery on both patients, she decides to roll two genuinely random six-sided dice. If and only if the first die rolls a one, she will choose to conduct surgery on the first patient. If and only if the second die rolls between one and five, she will choose to conduct surgery on the second patient. This is the only difference in the doctor's treatment of the two patients. The first die rolls one and the second four, so she actually conducts successful surgeries on both patients. She does not tell the patients about her lottery, she never runs such a lottery again nor does anyone ever find out about it.

Even though the Chancy Doctor gives the same life-saving benefit she owes to both patients, her action is patently unfair and wrong because of the differences in the *ex ante* chances of benefiting she gives to the two patients. It would be even less fair if she gave one patient a 100 per cent chance to be treated but gave no chance to the other. It is clear that people's chances of benefiting are relevant to what is fair and what is wrong. While I will not assume any contentious theory about which chances of benefiting are fair in all cases, for the purposes of this article I assume that some distributions of chances are fair.

The Chancy Doctor does not appropriately satisfy the potential beneficiaries' claims. A potential beneficiary X has a claim that Y provide a benefit B to X if and only if Y has a duty to X to provide a benefit B to X. Claims generate patient-relative reasons, where a patient is a person or thing that undergoes an action of another. This meaning of 'patient' contrasts with the meaning of 'agent'. Because the doctor can easily save both of their lives, fairness intuitively requires

her to give both patients an equal 100 per cent chance of benefiting. To do so is the appropriate way to satisfy the patients' claims.

I.ii. Broome's synchronic view of claim satisfaction by lottery

How do chances to benefit satisfy potential beneficiaries' claims on scarce, indivisible benefits? According to John Broome, fair lotteries provide surrogate satisfaction of claims by giving all claimants an appropriate chance of benefiting as a surrogate for actually receiving the benefit. His view is synchronic. Those who are not selected to benefit by the lottery receive surrogate satisfaction of their claim and thus no longer have any claim on the benefit.[4] Those who are selected by the lottery (i.e. those who win) have their complete claim intact and thus we ought to give the benefit to the potential beneficiaries who still have claims on the benefit.

Broome motivates this view by arguing that it explains the absurdity of ignoring the first lottery and running a second lottery amongst precisely the same potential beneficiaries. On Broome's synchronic view, after the first lottery the number of available benefits is equal to the number of claimants and so all claimants can be benefited. If there were no changes to potential beneficiaries' claims after the first lottery (and no other morally relevant changes), Broome contends that there would be equally good reason to run a second lottery as to run the first. Furthermore, if there were no morally relevant changes between lotteries then any number of iterative lotteries could be just as justified as the first lottery. Call the implausibility of these iterative lotteries, *iterative absurdity*.

According to Broome, it is absurd to tamper with a previously run lottery that has already provided surrogate satisfaction of some potential beneficiaries' claims by running a subsequent lottery between the exact same potential beneficiaries. This is because, Broome argues, doing so gives potential beneficiaries with no claims on receiving the benefit a chance of receiving the benefit. While I agree that running subsequent lotteries in such cases is absurd, I argue that *iterative absurdity* can be avoided without adopting Broome's synchronic view and furthermore that Broome's view has implausible implications.

I.iii. Objections to Broome's synchronic view

While initially plausible, Broome's synchronic view commits him to take morally irrelevant features as morally relevant and undermines his own view about the fairness of giving claimants an equal chance of benefiting. On Broome's view, lottery winners retain their complete

[4] John Broome, 'Uncertainty and Fairness', *The Economic Journal* 94 (1984), pp. 624-32.

claim on the benefit, whereas lottery losers have no claim on the benefit. This leads to particularly implausible implications in temporally extended cases such as the following.

Stormy Seas: On a ship, two sailors (A & B) fall overboard during stormy weather and will drown if not saved. Each sailor has an equally strong claim to be saved by the ship's captain. Unfortunately those overboard can only be saved through the use of life buoys. There is only one such buoy and it can save just one person. Call each set of people (sometimes a singleton) that can be benefited together an outcome group. In this case, A is an outcome group and B is another outcome group. There are no morally relevant differences between either outcome group. Having read and agreed with the moral prescriptions of Broome and other philosophers, the captain opts to run a genuinely random lottery that gives each claimant an equal one-half (50 per cent) chance of winning the lottery and selects one winner (B).[5] Given his long experience with games of chance, he runs the lottery quickly without endangering the lives of those he is about to save. However, after he has run the lottery but before he throws out the buoy, another wave hits the boat and two more sailors (C & D) fall overboard. What should the captain do now?

On Broome's synchronic view, because A has lost the lottery, A has no claim on receiving the benefit. However, B, C & D all have equally strong claims on the benefit, but not all of them can be benefited, so according to Broome's synchronic theory, their claims give the captain reason to run a second lottery between them which gives them all equal one-third chances of winning. According to Broome, when we have to distribute a scarce, indivisible benefit amongst potential beneficiaries who all have an equally strong claim on the benefit, their claims give us reason to run a lottery that gives each claimant an equal chance of winning a lottery.

While doing so gives B, C & D equal chances of winning the second lottery, it does not give all potential beneficiaries (A to D) equal chances of benefiting (i.e. being saved). Those who fall overboard later (in this case, C & D) have a greater chance of being saved as they participate in fewer lotteries and thus have less chance of losing their claim. In

[5] Most writers who advocate lotteries in some cases advocate running a lottery in this case, including Hirose, Rakowski, Saunders and Timmermann. See Iwao Hirose, 'Weighted Lotteries in Life and Death Cases', *Ratio* 20 (2007), pp. 45-56; Eric Rakowski, 'Taking and Saving Lives', *Columbia Law Review* 93 (1993), pp. 1063-1156; Saunders, 'A Defence of Weighted Lotteries'; Jens Timmermann, 'The Individualist Lottery: How People Count, but Not Their Numbers', *Analysis* 64 (2004), pp. 106-12. This is deontically stronger than merely claiming running a lottery is fair as on a number of plausible philosophers' views fairness is neither a necessary nor a sufficient condition for moral rightness.

this case, C & D have to win just one lottery, which gives them a one third chance each in order to be saved. However those who fell in the beginning (A & B) have to win two lotteries, one with a one half chance of winning, one with a one third chance of winning, in order to be saved. A & B each have a significantly lower chance of being saved (one sixth) than those who fell overboard later. This is implausible as it gives the time the people fell overboard excessive moral importance.

This is more implausible the more subsequent groups fall overboard. Call potential beneficiaries who have their claims on the benefit created after a lottery has been run *subsequent claimants*. If a third group of *subsequent claimants* fall overboard after the second lottery has been run, then there is more discrepancy between potential beneficiaries' chances of benefiting. On Broome's synchronic view, the later one or more potential beneficiaries develop their claims on the benefit (and thereby develop their claims after one or more lotteries have been run), the greater chance they have to benefit. This implausibly gives an intuitively morally irrelevant feature of this case great moral importance. As it is a structural feature of the case, not the particular details, that is necessary for the objection, the objection can be generalized. Furthermore, there are structurally similar actual world cases. For example, if lotteries run in accordance with Broome's synchronic view were used to determine who should receive donor kidneys, those who suffered from renal failure more recently would have a greater chance of receiving a kidney.

As it is the time that people develop their claims relative to the time the lotteries are conducted that affects their chances of benefiting, Broome's synchronic view also has implausible implications in other temporally extended cases. Imagine *Stormy Seas* except that because the captain was slightly slower in running his lottery, C, but not D, falls overboard before he runs the lottery. This changes the case so that D has a one half chance of being saved but A, B and C only each have a one sixth chance of being saved. Again, Broome's view implies that a feature of the case that is morally irrelevant (the slight difference in speed in which one conducts a lottery) has been elevated to something of life-and-death importance.

Another type of temporally extended case also presents problems for Broome's account of claim satisfaction. Imagine *Stormy Seas*, except that instead of C & D falling in after the first lottery has been run, the captain finds a second equally functional life-saving buoy. Call this case *Extra Buoy*. It is absurd in *Extra Buoy* to claim that while B has a claim to be saved as he won the first lottery, A has no such claim.

Broome has suggested in conversation that this apparent absurdity can be explained away by considering specifically what A & B have a claim on. If, prior to the lottery, they have a claim not just on the

general benefit of having their life saved, but on the specific benefit of having their life saved by the first buoy, then this explains why the lottery loser, A, has no claim on the first buoy. Call this the specific benefits view.

The specific benefits view is implausible. Reconsider *Extra Buoy*. According to the specific benefits view, B could justifiably complain if they are given the second buoy instead of the first as it would not satisfy their specific claim. On this view, there are reasons to give the first buoy to B and the second buoy to A as opposed to the other way around. Intuitively, it does not matter who gets which buoy, as long as both of their lives are saved. Broome's view once again raises something that is intuitively morally irrelevant to something of significant moral importance.

Another problem for Broome's synchronic view emerges if we try to extend it in plausible ways to cases where the lotteries run are not perfectly fair. Consider a case where we can just save one of two lives, as in the start of the *Stormy Seas* case. Now stipulate that in order to decide whom to benefit, a slightly unfair lottery is run – one that gives A a 49 per cent chance of benefiting and B a 51 per cent chance of benefiting. It is unfair because claimants that are not morally different in any way are treated unequally.

Broome does not consider this case, so I have to consider how his theory could be extended in a consistent way to account for it. As the lottery is not completely fair, as it would be if they were each given a 50 per cent chance of benefiting, it is implausible that the lottery would result in either claimant having their claim completely satisfied or having no claim on the good after the lottery. Instead, the most plausible theory extension would be to treat the claimants as if they have had their claims partially satisfied. That is, the claimants each have less of a claim on the good after the lottery than before, but they still have some weakened claim on the good. The partially fair lottery is, after all, more fair than running a lottery that just gives A 100 per cent chance of benefiting and B no chance of benefiting. How much are those claims partially satisfied?

Here, a Broomean theory faces a dilemma. On one horn is the view that claimants would have their claims *equally* partially satisfied, as they are given chances of benefiting equally distant (1 per cent) from the fair chance of benefiting (50 per cent). That would result in each claimant having a claim on the good that is less strong than they had previously but equally as strong as each other's claim. There are two problems with this horn. First, if both beneficiaries still have claims that are equally strong, then the objectionable *iterative absurdity* arises. In fact, this variant of *iterative absurdity* is even more

implausible than the original presentation of *iterative absurdity*. This is because as each time an imperfectly fair lottery is run, their claims are weakened, until they have nearly no claims at all. Second, that they each have their claim equally partially satisfied is implausible. Consider the following analogy. If you owe two people each one dollar and give one 51 cents and the other 49 cents, you have not equally satisfied their claims. Given this, it seems, in this imperfectly fair case, that their claims are *unequally* partially satisfied, which is the other horn of the dilemma.

On this second horn, in line with Broome's view that lottery losers in fair lotteries completely lose their claim, the loser of the somewhat unfair lottery has a less strong claim on the benefit than before. In order to avoid *iterative absurdity*, this claim has to be weakened enough so that it is no longer fair to run a lottery between previous lottery losers and winners. However, this view gives rise to the same implausible implications we saw before in temporally extended cases like *Stormy Seas*. It claims that previous lottery losers have insufficiently strong claims to be included in subsequent lotteries, so *subsequent claimants* will have greater chances of benefiting than claimants that developed their claims prior to a lottery being run. As Broome's theory already has problems with *subsequent claimants* and is motivated by its avoidance of *iterative absurdity*, it would be best for a Broomean to embrace that horn of the dilemma.

These cases show that someone acting in accordance with Broome's synchronic view does not directly provides claimants with equal chances to receive the benefit, but instead provides claimants with equal chances to *lose* their claims in each lottery. Those who win the lottery are not absolutely any better off than they were before the lottery as they have the same claim both before and after the lottery. Broome's lotteries only indirectly determine potential beneficiaries' chances of benefiting because those who receive the benefit are those who still have their claims after the last lottery that results in the number of claimants equalling the number of available benefits. This not only causes Broome implausibly to elevate the importance of these morally irrelevant features, it undermines one of his other views.

Broome contends that fairness in cases such as these requires all claimants receive an equal chance of benefiting. Broome's synchronic view in temporally extended cases such as *Stormy Seas* gives each claimant an equal chance of winning each lottery but different chances of actually benefiting. On Broome's account, it is equal chances of benefiting, not equal chances of winning each lottery, which are the fair surrogate for actually receiving the benefit. This part of Broome's view explains the unfairness of the second synchronic lottery in *Stormy*

Seas well – it gives A & B each a one sixth chance of survival compared to C & D's one third chance of survival when fairness requires each claimant to have an equal one quarter chance of survival. As a result, Broome's synchronic view of claim satisfaction by lottery undermines his view of fairness in temporally extended cases such as *Stormy Seas*. This is because it results in distributive lotteries that are unfair by Broome's own theory and the reason for running lotteries in the first place was to ensure a fair claimant selection procedure. I consider and reject a possible response to this undermining objection in the next section.

While Broome's synchronic theory is able to explain *iterative absurdity*, it does not give a plausible account of temporally extended cases where either *subsequent claimants* appear (e.g. *Stormy Seas*) or additional benefits become available (e.g. *Extra Buoy*), or cases where only partially fair lotteries are run. We need a view that plausibly accounts for these four features. I evaluate alternatives to Broome's view in section II.

II. ALTERNATIVE VIEWS OF CLAIM SATISFACTION

II.i. Diachronic alternatives

Two diachronic views of claim satisfaction by lottery are more plausible than Broome's in two ways. On one such view, those who lose the lottery have their claim qualitatively weakened but not negated. Call this view diachronic weakening. On the other view, those who win the lottery have their claim qualitatively strengthened. Call this view diachronic strengthening. Both of these views can explain *iterative absurdity*. This is because it would be absurd to run a lottery between those with sufficiently stronger claims and those with weaker claims.[6] Both views would also explain why both A & B have claims to be saved in *Extra Buoy* (though they claim, somewhat oddly, that A has a less strong reason than B to be saved). Furthermore, these two views have an intuitively plausible feature, namely that they maintain that lotteries

[6] Precisely how much stronger a claim has to be in order to make running a lottery between them absurd and impermissible is a matter for contentious debate. In fact, as Parfit has suggested is true of some reasons, there may be no truth about some claims' relative strength. On this, see Derek Parfit, *On What Matters* (Oxford, 2011), vol. 1, pp. 130-41. However, to illustrate the absurdity of running a lottery with a clear-cut case, consider the following. We only have one dose of a medicine that can be used to treat one of two patients. The medicine can be used to prevent the premature death of one person or stop the mild headache of the other person. On the assumption that claim strength in this case depends solely on the size of the benefit they will receive, the person who will die if untreated has a much stronger claim than the person suffering a headache. It is absurd to think one should run a lottery to decide whom to benefit in this case. One ought just to benefit the person who will die if untreated.

that give claimants a less than 100 per cent chance of benefiting do not fully satisfy their claims on the benefit. After all, intuitively, full satisfaction of a claim on a benefit is only achieved by actually receiving the benefit. This is why it would be fairest to give all claimants the benefit they have claims on, which is possible in cases like *Extra Buoy* and the *Chancy Doctor* but is impossible in cases of scarcity like *Stormy Seas*. In these two ways, both diachronic views are more plausible than Broome's.

The differences between these three views can be illustrated by the following table. The numbers indicate the strength of that individual's claim on the benefit. The starting strength of the qualitatively equal claims is arbitrary (fifty). However, zero indicates that the beneficiary has no claim on the benefit. Furthermore, stipulate that when one claim's strength is ten or more units greater than another claim's strength, it is not fair to run a lottery between those claimants to decide whom to benefit as one claim is significantly stronger than the other. This avoids *iterative absurdity*. These numbers are provided only for illustration. It is not essential for my argument that the strength of claims can be precisely measured quantitatively.

	Before First *Stormy Seas* Lottery		After First *Stormy Seas* Lottery				*Extra Buoy* After First Lottery	
	A	B	A	B	C	D	A	B
Broome's Synchronic View	50	50	0	50	50	50	0	50
Diachronic Strengthening	50	50	50	60	50	50	50	60
Diachronic Weakening	50	50	40	50	50	50	40	50

While more plausible than Broome's synchronic view, these diachronic views should also be rejected. This is because both views also lead to the implausible conclusions of Broome's account in temporally extended cases like *Stormy Seas*. Diachronic weakening would claim that those who had lost previous lotteries would not have sufficiently strong claims to be included in subsequent lotteries such as *Stormy Seas*. After all, this is how diachronic weakening avoids *iterative absurdity*. In this way, diachronic weakening is similar to Broome's synchronic view that in temporally extended cases like *Stormy Seas*

fairness requires us to run lotteries between previous winners and *subsequent claimants* while excluding previous lottery losers.

Diachronic strengthening has an even more implausible implication, namely that those who win the first lottery have significantly stronger claims than lottery losers *and* those who fall overboard after the first lottery. On such a view, both lottery losers and *subsequent claimants* have qualitatively equal claims that are insufficient to justify running subsequent lotteries that give them any chance of surviving. For this reason diachronic strengthening is less plausible than diachronic weakening.

There is one problem with all of the aforementioned accounts that gives us some guidance to a better theory. In order to avoid *iterative absurdity*, the theories maintain that potential beneficiaries' claims on the benefit change depending on whether or not they win the first lottery. However, the differing strengths in claims on the benefit that were adopted to avoid *iterative absurdity* lead to implausible implications for lotteries involving *subsequent claimants*. This problem can be solved when one recognizes that potential beneficiaries have two types of claims that are relevant to benefit distribution cases like these.

II.ii. The dual structure view

By stipulation, in this article's cases all potential beneficiaries have qualitatively equally strong claims on the benefit. These are the claims that I have focused on so far. For brevity, call these their *benefit claims*. *Benefit claims* are satisfied, *ex post*, when the benefits are actually distributed. In addition to these *benefit claims*, I posit that potential beneficiaries also each have a claim not to be treated inappropriately. This is a matter of procedural *ex ante* fairness. Call these their *procedural claims*. It is these *procedural claims* that are satisfied by a lottery that gives claimants appropriate, fair chances of benefiting. I call my view that posits both *benefit claims* and *procedural claims* in these cases the dual structure view.

The dual structure of the claims parallels the dual structure exhibited in the *Chancy Doctor* case. Even though both patients were successfully given the life-saving treatment they had a claim on and thus had their *benefit* claims fully satisfied, the doctor's act was wrong and the patients were treated unfairly. This is because while their benefit claims were satisfied, their procedural claims were not.

Importantly, my dual structure view also gives an explanation of *iterative absurdity*, vindicating the intuition that there is no reason to run a second (or a third, or a fourth . . .) lottery with the exact same claimants. On my dual structure view, the procedural claim has already been met by the first fair lottery and running a second lottery would invalidate a previously fair procedure for no reason.

Another advantage of my view over Broome's is that on my view *benefit claims* cannot be lost due to the results of a procedurally fair lottery. This explains why people who lose the lottery still have *benefit claims* and therefore offers the best account of temporally extended cases where the number of benefits available for distribution increases, like *Extra Buoy*. In *Extra Buoy*, both A and B have equally strong *benefit claims* after the lottery. The dual structure view does not maintain, like the synchronic and diachronic views discussed above, that A has less of a claim to be saved. In such a case, according to my view, the earlier lottery can be ignored as it is no longer a fair procedure. Instead of giving A or B each a one half chance of benefiting, in *Extra Buoy*, both claimants should receive a 100 per cent chance of benefiting, as in the *Chancy Doctor* case.

My dual structure view also explains why it is fair to run a new lottery that gives all potential beneficiaries an appropriate chance of benefiting in temporally extended cases such as *Stormy Seas*. This is because when *subsequent claimants* appear previously conducted lottery procedures are no longer fair. They are no longer fair as on all views of the fairness of lotteries in benefit distribution cases (weighted and unweighted), the fair chances of benefiting depend on the number of outcome groups. On unweighted lotteries, all claimants are always given an equal chance of benefiting. On weighted lotteries, claimants are sometimes given an unequal chance of benefiting, often weighting chances based on outcome group size. However, in this case where all outcome groups are of equal size and there are no other morally relevant differences between outcome groups, they both prescribe giving all claimants equal chances of benefiting. By adding *subsequent claimants* in cases like *Stormy Seas*, the fair chances of benefiting change and therefore previously conducted lotteries are no longer fair. On both weighted and unweighted lotteries, the fair chance of benefiting is 25 per cent. As a result, the original lottery that only included A & B is not fair when claimants C & D are added. This explains why procedural fairness requires us to run a new lottery procedure between all potential beneficiaries in *Stormy Seas* and ignore the now unfair results of previous lotteries. This is similar to the dual structure view's prescription that the first lottery in *Extra Buoy* should be ignored once the second buoy becomes available.

In a similar way, the dual structure view can explain lotteries that are not completely fair. When imperfectly fair lotteries are run, like the 49/51 per cent lottery discussed in section I.iii, potential beneficiaries' *procedural claims* are not fully satisfied. They are merely partly satisfied. It would more fully satisfy those procedural claims (and be fairer) to ignore the results of a previously run imperfectly fair lottery and run a new, perfectly fair lottery.

The dual structure view provides a good explanation of all of the four desiderata set out in section I. It explains *iterative absurdity*, temporally extended cases where either *subsequent claimants* (e.g. *Stormy Seas*) or additional benefits appear (e.g. *Extra Buoy*), as well as cases where only partially fair lotteries are run. Furthermore, the dual structure it posits parallels the structure evident not just in the above-mentioned cases of benefit scarcity (i.e. when not all potential beneficiaries can be benefited) but also cases like the *Chancy Doctor* where all claimants can be benefited.

II.iii. Defending the dual structure view

Broome has objected that lottery winners of earlier, previously fair lotteries have a justified complaint that their earlier winnings are ignored. This complaint is particularly salient if earlier losers won a subsequent lottery. Broome has suggested in conversation that this may be avoided by running subsequent lotteries that take into account earlier results. They do so by only running subsequent lotteries between previous winners and *subsequent claimants*, while adjusting the probabilities of subsequent lotteries to ensure all claimants have an appropriate chance of benefiting.

To see how this would work, consider *Stormy Seas* again. Instead of running a subsequent lottery that gives either B, C & D or A, B, C & D an equal chance of winning, one may run a lottery that gives B a 50 per cent chance of winning, and C or D each a 25 per cent chance of winning. This would ensure that A, a previous loser, cannot be saved by the results of a subsequent lottery, while ensuring all claimants A, B, C and D have an equal 25 per cent chance of being saved. For A or B to be saved, they each have to win two lotteries each of which they have a 50 per cent chance of winning, so they each have a 25 per cent chance of benefiting. For C or D to be saved, they each have to win only one lottery, of which they have a 25 per cent chance of winning. Note that on Broome's synchronic view, this account will result in giving claimants with claims of equal strength (*subsequent claimants* and former lottery winners) different chances of winning lotteries.

However, I object to Broome's claim that lottery winners have a justified complaint that their earlier winnings are ignored. To see that they have no such justified complaint, consider a variation on the *Extra Buoy*.[7] Call it the *Defective Extra Buoy*. The difference is that the first buoy is faulty so while it can be used to save someone's life, being saved using it is an anxiety-inducing affair. This is because the defective buoy is not a stable flotation device and results in the person

[7] Thanks to Johann Frick for this suggestion.

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being unpleasantly dunked under the water multiple times before being saved. Now imagine that after the first lottery is run, a normal, non-defective buoy becomes available. In this case, it seems absurd that the first lottery winner would have a complaint if their earlier win on the lottery for the defective buoy was ignored and they were saved by the non-defective buoy.

Defective Extra Buoy also illustrates a further objection to the specific benefits view. It is absurd to think that the first claimant who wins (and thus has his claim intact) has a claim on the defective buoy and should be given that particular defective buoy, and the other potential beneficiary who lost the lottery should be given the non-defective buoy. On such a view, the first lottery winner would have a justified complaint if they were given the non-defective buoy instead of the defective buoy which they purportedly have a claim to be given. This is highly implausible. However if the first lottery winner has no justified complaint in *Defective Extra Buoy* that their earlier winnings are ignored, why should they have a parallel complaint in the case where the potential benefits are equal, as in *Stormy Seas*? I see no principled, non-*ad hoc* distinction that can be plausibly drawn between these two types of cases and therefore reject the claim that lottery winners of earlier lotteries would have a justified complaint that their earlier winnings are ignored.

III. PRACTICAL IMPLICATIONS OF THE DUAL STRUCTURE

The dual structure view has practical implications for a variety of temporally extended scarce benefit distribution cases I discuss in this section. In all of these cases, I assume that there are no reasons not to distribute benefits to the claimants and there are no other ways in which we can utilize those benefits. As before, to ensure weighted and unweighted lotteries make the same prescriptions, I assume that there are no morally relevant differences between outcome groups and therefore that all outcome groups are equally sized and all claims are of equal strength. I will first discuss simple temporal cases when the number either of potential beneficiaries or of available benefits increase or decrease and no other morally relevant features change. Then I will discuss more complex cases – when both the numbers of potential beneficiaries and available benefits change; and furthermore when the quality of available benefits change.

The simplest change that can occur in these distributional cases is when the number of available benefits increases so that all claimants can be benefited with the benefit to which they have a claim. Such changes ensure there is no scarcity of the benefits to which claimants

have a claim. In such cases, all other things being equal, we ought to give all claimants a 100 per cent chance of benefiting. Doing so satisfies both their *procedural claims* and *benefit claims*. This matches our moral judgements regarding what ought to be done in the *Chancy Doctor* and *Extra Buoy* cases. Similarly, when the numbers both of potential beneficiaries and of available benefits change so that all claimants can be benefited with the benefit they have a claim to, all other things being equal, then we ought to give all claimants a 100 per cent chance of benefiting.

When only the number of available benefits increases but one still cannot benefit all claimants, then the fair distribution depends on whether the initially available benefits have already been distributed or not. If the initially available benefits have already been distributed fairly, then one can treat the *remaining claimants* as a new case of scarce benefit distribution. *Remaining claimants* are lottery losers that previously received a fair chance of benefiting but did not actually receive the benefit they have a claim on. Fairness requires one to run an appropriate lottery between *remaining claimants* when new benefits become available. When all outcome groups are of equal size, all possible distributions of the lottery will benefit the same number of claimants and satisfy an equal number of *benefit claims*. Given scarcity, running a fair lottery to decide whom to benefit would best satisfy their dual claims. If initially available benefits have not yet been distributed, then the fair procedure is to run a new lottery between all claimants that distributes appropriate chances of benefiting. This is because on all of the lottery approaches in the literature (both weighted and unweighted), the initial lottery is no longer fair, as the fair lottery depends on who can be benefited and the number of benefits available. This is similar to what fairness requires when the number of claimants increases (i.e. cases with *subsequent claimants*) but the benefits are yet to be distributed.

The addition of *subsequent claimants* when the benefits are yet to be distributed changes what chances of benefiting are fair and so fairness requires that a new lottery be run in order to best satisfy potential beneficiaries' *procedural claims*. When there are *subsequent claimants* but all available benefits have already been distributed, there is not much one can do as one cannot give claimants any benefits. This is especially bad for the *subsequent claimants* as they never receive any positive chance of benefiting. At least the *remaining claimants* previously received a fair positive chance of benefiting. Given these facts, fairness requires us, all other things being equal, to wait until as many as possible claimants have developed their claims running a lottery. Doing so satisfies as many people's *procedural claims* as

possible, while maintaining the number of satisfied *benefit claims*. The inverse is true when the number of claimants decreases, as happens when the benefits being distributed are urgent life-saving treatments that are not provided before some claimants die. In cases where the number of claimants decreases over time and there are no other morally relevant changes, then one should run the lottery quickly in order to satisfy as many people's *procedural claims* as possible.

When the quality of benefits that beneficiaries have a claim on increases over time (i.e. the benefits being distributed become better), all other things being equal, we ought to wait before distributing the benefits. For example, if we know that a superior medical treatment will be available next week and there is no reason to postpone treatment, then we ought to wait until we can administer the better treatment. If claimants have a claim on the better benefit or the best possible benefit, that better satisfies their *benefit claims*. Conversely, all other things being equal, if claimants' medical prognoses worsen if not treated immediately, as is the case with many medical conditions, we ought to run fair lotteries and administer treatments as soon as possible.

Cases where only the number of claimants and available benefits change while all outcome groups are of equal size are relatively simple and thus implications drawn from the dual structure view are relatively straightforward and intuitively supported. When the number of claimants or quality of benefits increases over time, we ought to postpone running the lottery and distributing the benefits. When the number of claimants or the quality of benefits decreases over time, we ought to run the lottery and distribute the benefits as soon as possible. It is more complex when benefit claims and procedural claims conflict, as they do in the real world case of corneal transplantations I discuss next.

Consider the transplant of corneas to those who suffer from eye degeneration. In the real world, both the number of claimants and corneas available for transplant increase over time, but there are many more people who could benefit from such a transplant than can be treated. Without treatment, the degeneration of their eyes continues and their prognoses get worse. It is an important but not urgent treatment. How should we act in this case?

The procedurally fairest thing to do is to give as many claimants as possible an appropriate chance of benefiting. Doing so satisfies as many of the *procedural claims* as possible. In order to do so, one would wait to run the benefit distributing lottery until the maximum number of claimants was available at one time. This involves not treating people immediately, but waiting for additional people to develop optical degeneration before administering the lottery. However, it would not

be fair to postpone the benefit distributing lottery indefinitely, because donor corneas are only transplantation viable for a limited period of time. That the corneas expire is relevant for *procedural claims* as no one is treated fairly when they do not receive the appropriate positive chance of benefiting they could have and the benefits go to waste.[8] Instead, *procedural claims* provide agents with reason to postpone the benefit distributing lottery until just before a cornea is no longer transplantation viable. However, it is clear that is *not* the *right* thing to do, especially since the quality of the benefits worsens over time. Another advantage of the dual structure view is its ability to explain this through the competing demands of *benefit claims* and *procedural claims*.

The *benefit claims* are best satisfied by giving as many potential beneficiaries the best benefit that they have a claim on.[9] In the above-mentioned corneal transplantation case, when there are many more claimants than benefits and the quality of benefits decrease over time, potential beneficiaries' *benefit claims* give us reason to distribute the benefits as soon as they become available. Just as maximizing the satisfaction of *procedural claims* is not clearly right, it is not clearly right that we ought to maximize the satisfaction of *benefit claims* in cases like corneal transplantation. The *dual structure view* explains this – we have two sets of claims and maximally satisfying only one set of claims is only possible in the above case at the expense of the other.

What we ought to do involves a trade-off between *procedural claims* and the *benefit claims*. Such a trade-off, if it is to give any weight

[8] Here, I assume fairness has a non-comparative, absolute element. On such a view, fairness does not merely require comparatively equal satisfaction of equally strong claims, so that giving all claimants a 0 per cent chance of benefiting is equally fair as giving all claimants a 100 per cent chance of benefiting. Instead, fairness requires giving potential beneficiaries what they have a claim on and, in cases of scarcity, best approximating the fairest situation where all claimants get a 100 per cent chance of benefiting, where this is understood non-comparatively. For the purposes of this article, I remain neutral on which is the best approximation (i.e. the most fair) of the fairest situation. For more on the comparative/absolute distinction, see Joel Feinberg, 'Noncomparative Justice', *Philosophical* Review 83 (1974) pp. 297-338; Larry Temkin, 'Justice, Equality, Fairness, Desert, Rights, Free Will, Responsibility, and Luck', *Responsibility and Distributive Justice*, ed. C. Knight and Z. Stemplowska (Oxford, 2011), pp. 51-76.

[9] One can imagine cases in which the benefits that people have claims on are accompanied by extra benefits to which they do not have claims. For example, imagine that the available buoys are manufactured by different manufacturers. One manufacturer runs a special, unexpected promotional campaign that rewards people saved through the use of their life buoys in a limited time period with a special luxury holiday. On the assumption that such a promotional holiday is a benefit rather than a burden, it is a benefit beneficiaries have no claim on and therefore is not relevant to satisfying their *benefit claims*. In such cases, whether or not such a benefit gets better or worse is irrelevant to the satisfaction of their *benefit claims*, though it may be relevant for what we ought to do all things considered.

to both sets of claims (as is intuitively plausible in the corneal transplantation distribution case), will involve waiting some amount of time so that more claimants can be given a fair positive chance of benefiting despite some worsening prognoses. Precision regarding how much time depends on both axiological and empirical factors. The axiological factors include the value of the benefits distributed, the importance of fairness and the strength of beneficiaries' claims. The empirical factors include the speed and the amount the benefits of corneal transplantation reduce over time; when and how many claimants develop new *benefit claims* on corneal transplants; and when and how many new benefits (donor corneas) become available and expire. Settling all of these issues is beyond the scope of this article, but given the large value of receiving a corneal transplant I expect that the right trade-off involves some waiting, resulting in limited worsening of prognoses but no expiry of donor corneas.

What is not beyond this article is a new theory about how lotteries satisfy potential beneficiaries' claims on benefits. The dual structure view I have advocated posits the existence of two sets of claims in certain distribution cases – *benefit claims* and *procedural claims*. In cases where the benefits are scarce and indivisible, appropriately run lotteries give potential beneficiaries a fair chance of benefiting, thereby satisfying their *procedural claims* while leaving their *benefit claims* unsatisfied until they actually receive the benefit. My dual structure view parallels the structure evident in the *Chancy Doctor* case, while fulfilling all of the theoretical desiderata set out in section I. It does so by giving theoretically satisfying explanations of *iterative absurdity* as well as temporally extended and imperfectly fair cases. The dual structure view is not only of theoretical interest, but also has practical significance. In particular, it has implications for temporally extended cases where the number or quality of available benefits or potential beneficiaries changes over time, as occurs in a number of medical cases, such as the distribution of corneal transplants. As a result, my theory not only solves a problem of philosophical interest but also has important implications for the implementation of lottery distribution mechanisms in real world cases.[10]

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