

ARTICLE OPEN ACCESS

Allocative Fairness

Gil Hersch¹  | Thomas Rowe²¹Department of Philosophy & Kellogg Center for Philosophy, Politics, and Economics, Virginia Tech, Blacksburg, Virginia, USA | ²Department of Philosophy, Logic and Scientific Method, London School of Economics, London, UK**Correspondence:** Gil Hersch (Hersch@vt.edu)**Received:** 18 July 2024 | **Revised:** 31 December 2024 | **Accepted:** 5 May 2025**Funding:** The authors received no specific funding for this work.**Keywords:** allocation | equality | equity | fairness | indivisible goods | lotteries | markets | procedural fairness | queues

ABSTRACT

Questions of fair allocation arise regularly throughout our lives, ranging from the trivial to the significant, for governments, private companies, associations, families, and friends. This article discusses the nature of allocative fairness, which is focused on the fair distribution of divisible and indivisible goods. The recent literature on allocative fairness takes John Broome's discussion of fairness as the proportional treatment of claims as its starting point. On this view, a claim is a reason why an individual ought to receive a good. This article discusses the nature of allocative fairness, claims, and goods. The most prominent allocative procedures in the literature are discussed, including equal allocation, equitable allocation, markets, lotteries, and queues.

1 | Introduction

Often, someone is in a position to decide how to allocate a scarce good between a group of claimants that need or want the good. Consider two allocative cases at two National Parks in the United States (Hersch and Rowe 2024): First, to protect the Colorado River from incurring severe environmental harm, only 503 (out of around 20,000 applications) non-commercial white-water rafting trips on the stretch of the Colorado River that runs through the Grand Canyon are allowed annually by the National Park Service (NPS). The current approach to allocating rafting permits is through a (weighted) lottery system. This can be viewed as a fair allocative procedure on the basis that a permit to raft the Colorado River through the Grand Canyon is a scarce good. Second, to protect the Yosemite Valley, the NPS requires reservations to enter the park. The current approach to allocating entrance to the Yosemite Valley (for those with a reservation) is on a queue-based first come, first served basis that often results in up to three hours of waiting time. This can be viewed as a fair allocative procedure on the basis that entrance to the valley is a bottleneck good, since not everyone

who wants to visit the valley can visit at the same time, but eventually all will be able to.

From these cases to immigration visas, charter school vouchers, kidney transplants, and COVID-19 vaccines, we care whether the good is allocated fairly and how to go about it. Do we give goods directly to those with the strongest claims, auction them to the highest bidder, use lotteries, allocate on a first-come, first-serve basis, or simply withhold them from everyone so each person gets an equal share? In this article, we explore and discuss the nature of allocative fairness and recent approaches to the aforementioned questions. We begin with a stylized example:

Allocation: A and B both have a claim on a good. C, the allocator, aims to allocate the good fairly.

This case possesses several important features: (a) allocator, (b) claimants, (c) fairness, (d) claims, (e) goods, and (f) allocation procedures. Regarding feature (a), for simplicity, we assume

Gil Hersch and Thomas Rowe contributed equally to this work.

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivs](https://creativecommons.org/licenses/by-nc-nd/4.0/) License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

© 2025 The Author(s). *Philosophy Compass* published by John Wiley & Sons Ltd.

that the allocator is either the state or an agent with rightful control of the good and with no reason to give special preference to some claimants rather than others beyond the strength of their claims. Regarding feature (b), there is usually some pre-screening of the potential recipient group based on some criteria (Elster 1989, 67).¹ For our discussion, we take this as given. Claimants can be individuals or groups, but for ease of exposition, our discussion will use examples of individual rather than group claimants (Wintein and Heilmann 2024a, 632).² In this article we focus on features (c)–(f). Section 2 discusses the nature of (c) fairness and (d) claims, Section 3 discusses the nature of (e) goods, and Section 4 discusses different (f) allocation procedures. Section 5 concludes.

2 | Fairness and Claims

2.1 | Procedural Versus Outcome Fairness

The term “fairness” is used in various ways, some with ethical content and others without. For the former, fairness may appeal to any form of wrong (Hausman 2023, 63). For the latter, a shorter friend might say that it is unfair that she is so much shorter than others (Hausman 2023, 63). In this article, we are concerned with the particular ethical case of *allocative fairness*, which has as its content the fair distribution of divisible and indivisible goods.

There is an established distinction between procedural and outcome fairness. Procedural fairness concerns the fairness of the procedure used to allocate a good. It is commonly viewed as requiring at least that rules are applied impartially and equally to each agent (Angel and McCabe 2013; Heath 2010; Hooker 2005). Outcome fairness concerns fairness in the final allocation of goods. For example, the use of a lottery for an indivisible good might be procedurally fair but nonetheless lead to outcome unfairness because one individual will get the good, whereas the other goes without. Lazenby (2014), for example, argues that there ought to be a lexical priority of outcome fairness over procedural fairness. In this article, we are primarily concerned with questions of procedural fairness. We will not be concerned with adjacent literatures on procedural fairness in debates regarding justice (Rawls 1999, 73–78; Klosko 2004, 208–229; Saunders 2010, 42–43)³ or democracy (Estlund 1997; Peter 2008, 2009). By procedural fairness, we do not mean merely “formal fairness,” which is solely concerned with the impartial application of rules (Hooker 2005, 329–330; Hausman 2023, 62), because without further conditions, merely consistently applying a rule is not sufficient for fairness. For example, a racist rule for distributing resources is not fair.

What is the relationship between fairness and other parts of morality? John Broome takes fairness to be a subset of morality (Piller 2017, 215–6). Hooker (2005, 350) argues that fairness occupies a specific realm of morality that is distinguishable from all-things-considered moral rightness and the impartial application of rules. Carr (2000, 124) argues that fairness ought to be understood as a component of an associative moral theory. Rescher (2002, x) argues that fairness is a value that belongs to justice rather than the economic realm of efficient distribution.

For an extensive discussion on the axiomatic approach to fairness in economics, see Thomson (2019). For a more interdisciplinary overview of the fairness literature, see Wintein and Heilmann (2021).

2.2 | Claims

The notion of “claims” is central to debates on allocative fairness. The dominant conception of claims comes from Broome (1984, 1990). For Broome, a claim is a special type of reason (or, a moral reason (Kirkpatrick and Eastwood 2015, 83)) why someone ought to receive a good. There might be various reasons why someone ought to receive a good, such as desert and need, but “[c]laims are distinguished by being owed to the person herself” (Broome and Kamm 1998, 959). For example, we may owe it to a person to save their life, and this gives them a claim to a medicine. However, if the person threatens to destroy a city if they do not get the medicine, that is a reason to give them the medicine, but it is not a claim that they have (ibid.). Claims are essentially nonaggregative; a claim cannot be satisfied by simply adding it up together with another claim. As such, the claims framework respects the separateness of persons (Lazenby 2014). How to determine the *content* of claims? Piller (2017) argues that this question is independent of a theory of claims. A theory of fairness is meant to tell us how to *treat* claims, and that is precisely what Broome’s account of fairness provides. For a recent detailed overview and defense of Broome’s theory of fairness, see Piller (2017).

Broome’s influential view can be summarized with the following slogan:

■ **Broomean Fairness:** fairness is about the proportional treatment of claims

(Broome 1984, 48; 1990, 95).⁴

To illustrate, in *Allocation* claims are treated proportionally when each receives half of the good if the good is divisible. If the good is indivisible, then claims can be treated proportionally by destroying or withholding the good; both receive the same thing, nothing. Broome argues that this option is often outweighed by a “satisfaction requirement” (1990, 97), which supplements his theory of fairness and states that “[e]veryone’s claim to a good should, *prima facie*, be satisfied” (1990, 95).⁵ A way to meet these twin demands is to hold a lottery where each is given a 50% chance of receiving the good and thereby achieving a “sort of surrogate satisfaction” (Broome 1990, 98) of their claims.

Some have raised concerns about the possibility of precisely measuring the strength of claims. If claims cannot be precisely measured, then we risk unfairness in holding lotteries with inaccurate chances (Kirkpatrick and Eastwood 2015). Tomlin (2012) highlights limitations with Broome’s claims-based framework, including the inability to evaluate the distribution of claims or to evaluate claims to be treated fairly. Hausman (2023, 68) suggests that the *assignment* of claims themselves may be fair or unfair.

Claims feature more generally as a foundational element of some nonconsequentialist ethical theories. Claims are central to contractualism, in particular through the so-called individualist restriction (Scanlon 1998, 241; Nagel 1979, 106–27). They are also central to some relational accounts of obligation (Wallace 2019) and the “claims-across-outcomes” account of fairness (Adler 2011; Nagel 1979). The idea of claims also features heavily in contractualist-influenced theories of distributive ethics, for example, “competing claims egalitarianism” (Voorhoeve and Fleurbaey 2012). However, the sense of “claim” used in these domains is different from the Broomean framework we use as our starting point. Claims also feature in the extensive literature of “rescue cases” and debates over the aggregation of claims across individuals influenced by Taurek’s (1977) influential paper (Kamm 1998; Otsuka 2000, 2006; Voorhoeve 2014; Privitera 2018; Scanlon 1998). Much of the discussion of fairness in rescue cases is influenced by the Broomean framework (Broome and Kamm 1998; Henning 2015; Hirose 2014; Vong 2020).

One of the drawbacks of Broome’s account of fairness as the proportionate treatment of claims is that it omits consideration of *absolute fairness*. Absolute fairness is a matter of giving each what is owed to them, regardless of what claims other agents may have (Hooker 2005, 340; Saunders 2010, 45; Temkin 2011, 54–55; Wintein and Heilmann 2024a, 630–632). This contrasts with comparative notions of fairness, which are about how claims are treated compared to other claims.⁶ Broome (1984, 1990) is the most influential comparative account. A drawback with a purely comparative account of fairness is that giving A and B 100 each in *Allocation* is just as fair as giving each 0 because the claims of both are treated proportionally in each case (Hooker 2005, 240). At the heart of an absolute conception of fairness is the idea that claims can be absolute—whether A’s claim is satisfied does not depend on how B is treated (Wintein and Heilmann 2024a, 631). For comparative accounts of fairness, the extent to which A’s claim is satisfied depends on how A’s claim is treated compared with B’s. This latter idea Wintein and Heilmann (2024a) call a *notional claim*, where a person’s claim is determined comparatively, which is contrasted with the notion of an *absolute claim*, which is a claim to some *amount* of a good regardless of what other agents have a claim to (2024a, 630–632).

Dissatisfaction with Broome’s purely comparative notion of fairness has led some to call for alternatives (Curtis 2014; Lazenby 2014; Wintein and Heilmann 2024a, 2024b). Wintein and Heilmann (2024a, 2024b), for example, provide a hybrid account of fairness that combines comparative and absolute fairness components, with priority given to the satisfaction of absolute claims. In so doing, they extend the Broomean framework and highlight useful distinctions, including that between the *strength* of a claim and a claim’s *amount* (2018: 55–58; 2024a, 4), where a claim’s strength is a comparative notion telling us how much more it matters to satisfy that claim over another and the amount is noncomparative, telling us how much of some good is needed to satisfy a given claim. For example, A and B may both have equally *strong* claims to a differing *amount* of a good. A third axis of differentiation we might consider is claim *urgency*, which introduces a temporal element to claims-talk (Hersch and Rowe 2024).

3 | The Nature of Goods

A better understanding of the complexities arising from the object of concern for allocative fairness—goods—can be helpful, because some disagreements with respect to fairness can arise because we are either unclear or disagree on what constitutes a good in a particular case. This article discusses goods (and bads) as nouns. We understand a good to be a physical object, a service, a position, or any other type of thing that people subjectively value (a bad is a thing people disvalue).⁷ Whether something is a good can be context dependent. A donut can be a good when one is hungry in the morning, but a bad when that person has already had ten.

Goods can be divisible or indivisible. Often, divisible and indivisible goods are distinguished by viewing the former as retaining some value when divided into smaller parts, whereas the latter do not (Rizoli, unpublished manuscript; Sharadin 2016; Hausman 2023, 78). A better distinction is to treat a divisible good as a good that can be divided without loss of *proportionate* value, whereas indivisible goods fail to retain proportionate value when divided. The limitation is determined by the value the good has for the user, not by any physical or metaphysical properties of the good itself (Sharadin 2016, 348). Imagine three people vying for some life-saving medication, of which a person must consume three separate pills in order for the drug to effectively save their life. The medication is physically easily divisible into three, making it easy to allocate to each individual a whole pill. However, a single pill will not save their life. Only a three-pill dosage will do this. Yet a single pill might still retain some value if, as some medication does, it provides some pain relief as the individual dies. Sometimes the individual pills have value, even if their value is not proportionate to the value of the whole dose.

Homogeneous goods are uniform in value, with the different parts indistinguishable from each other, for example, milk in a bottle. Heterogeneous goods can have parts that are distinguishable and subsequently valued differently from one another, for example, different slices of brownies (corner, edge, or middle pieces). Whether the goods are homogeneous or heterogeneous does not affect whether they are divisible or indivisible (Rizoli, unpublished manuscript). Nevertheless, heterogeneous goods introduce a complication because parts of equal size are not necessarily valued equally. A literature has developed on “fair division” in disciplines including economics and political science to explore how to fairly divide heterogeneous divisible goods (Brams and Taylor 1996; Robertson and Webb 1998). Philosophers have recently begun to engage with these literatures (Wintein and Heilmann 2024b).

Lastly, many goods can be divided temporally as well as spatially, leading to the possibility of dividing spatially indivisible goods over time through a rotation (Elster 1989). Consider that we usually view instances of a recurring chore, say emptying the trash, as not independent of each other. Only one person needs to empty the trash at a time, so the instance is indivisible, but the recurring chore, which extends temporally, is not. We can rotate who empties the trash, and who completed the chore last time matters to who has a claim to avoid it this time.

4 | Allocative Procedures

There are a variety of allocative procedures we might consider fair. In this section, we discuss the most prominent procedures in the literature, including equal allocation, equitable allocation, markets, lotteries, and queues.

4.1 | Equal Allocation

Perhaps the most intuitive allocation procedure is equal division, according to which we divide the amount of goods to be allocated equally to all the claimants (regardless of claim strength). This procedure can work for divisible goods, though not without complication (see cake-cutting literature, e.g., Brams and Taylor 1996; Robertson and Webb 1998). However, often the only way to generate equal division for indivisible goods is to withhold the good and prevent any claimant from receiving it (Elster 1989, 69). As discussed in Section 2.2, on a Broomean comparative notion of fairness, withholding the good in this way can be fair even if inefficient. Yet, on absolute conceptions of fairness, withholding the good would be considered unfair because the claimants will not have their claims satisfied. Moreover, an equal allocation fails to take the strength or size of claims into account when they differ, which could lead us to refrain from using equal allocation when claims are unequal.

4.2 | Equitable Allocation

When claims are unequal, an equitable allocation of the good might be considered fair. In discussing equity, there is still an obvious sense of equality; it is simply not focused on *equality* in the size of the allocation. Instead, the equality is in terms of claim strength.⁸ An equitable allocation treats equally strong claims equally so that those with stronger claims are allocated more of the good than those with weaker claims. The procedure is often described as “direct allocation”—some ranking based on strength of claims is created, and the goods are allocated based on lexicographic priority, starting with those with the strongest claims, until the good runs out (Fumagalli 2022; Lazenby 2014; Stone 2007). This approach is only useful for cases in which there are distinguishable claims of different strength. When claims are equal, equitable allocation does not provide guidance for allocating indivisible goods.

We offer at least three considerations that can be viewed as grounds for claims, which are often taken to be morally relevant for how a good ought to be allocated: need, desert, and merit.⁹

Need is a relevant consideration in many allocative contexts and a potential ground for claims (Kilner 1981, 254–6). For example, on Tomlin's (2012, 203) distinction between voluntary and non-voluntary claims, claims based on need are non-voluntary claims. Elster (1989) discusses the indeterminacy of the concept of need. The colloquial concept of need is indeterminate, for example, between whether this means whoever will benefit the most or whoever has the lowest starting welfare. The first deals with marginal need satisfaction, and the second deals

with level of need satisfaction. Need as a consideration also raises a challenge for understanding what constitutes needs and for our ability to make interpersonal welfare comparisons (de Boer 2024; Hammond 1991; Reader and Brock 2004; Wiggins 1987).

Another relevant consideration for equitable allocation and a potential ground for claims has to do with who deserves the good more than others (Temkin 2003, 2017). A useful way to conceptualize desert (particularly as opposed to merit) is that it is targeted at rewarding past contribution or achievement. This backward-looking consideration requires, as need does, further clarification of the difference between absolute and marginal contribution. A focus on desert entails taking into consideration individuals' past actions, with desert acting as allocative consideration that aims to reward good behavior or punish bad behavior (Elster 1989, 76). As a punishment for bad behavior (retributivism), desert does not correlate with welfare maximization because individuals might deserve welfare reduction as a form of allocated punishment (Tonry 2011; White 2011).

If we view desert as backward-looking, we can usefully distinguish merit from desert by viewing merit as future-looking, even if it is evaluated and determined based on past performance (hence the potential confusion). Merit, a third ground for claims, can be understood as dealing with how productive, from a societal welfare perspective, it is to allocate the good to one individual rather than another. An example of such a consideration is when asking whether the fact that one person is a renowned scientist who might cure cancer is grounds for allocating them the life-saving medicine rather than to some other average Joe (see Mulligan (2018) for a discussion on merit).

A significant problem for any attempt to allocate a good equitably has to do with decision cost—it can be extremely costly for an allocator to determine the ordering of recipients based on the strength of claims, which is necessary for an equitable allocation of goods (Elster 1989). The question of decision cost arises for any allocative procedure, for example, determining whom to include in the lottery pool or at what time to start the queue. Nevertheless, the information required to make equitable allocation decisions directly often appears to be most demanding when assessing different morally relevant differences rather than simply ignoring them all (see Fumagalli 2022 for a contrasting view).

4.3 | Markets

A third way of allocating goods involves markets and the price mechanism. The price mechanism solves the problem of allocation by finding a price that clears the market and equalizes supply and demand. When no one has a claim to the good, markets might be considered unproblematic from the perspective of allocative fairness. Markets can be, and often are, a more efficient allocative procedure than claim-based procedures with regard to overall social welfare understood in the economic sense of maximizing utility as a representation of preference ordering (Mas-Colell et al. 1995), with a very low degree of decision cost (Elster 1989).

A problem with markets arises when individuals have claims to the good. Market outcomes reflect neither need, desert, nor merit (Hayek 1960). Instead, they simply reflect a willingness to pay, which need not coincide with the strength of claims at all (Sandel 2012; Satz 2012). Because claims, or the strength of claims, do not matter in the market, markets are not an appropriate procedure for cases in which individuals actually have some claim to the good being allocated. The market mechanism relies on considerations that are orthogonal to those usually considered morally relevant to fairness.

Nevertheless, there is a balance to be struck between fairness and efficiency, and often we can be torn between fairly distributing welfare and maximizing overall welfare. Markets can sometimes allow us to do the latter, at the expense of the former. Thus, even if not a fair allocative procedure, markets might be a just allocative procedure, all things considered.

Lastly, some might consider markets to be fair when used as a tiebreaker among claims of equal strength. The next section discusses lotteries and makes the case that tiebreaking procedures like markets and simply picking one of the recipients on subjective grounds or pure whim (Henning 2015, 170; Anscombe 1967) are an unfair allocative procedure even in the case of potential recipients with equally strong claims.

4.4 | Lotteries

A lottery is a randomization procedure that allocates chances of receiving a good. Lotteries are a canonical procedure for allocating indivisible goods when individuals have equal claims to a good (Diamond 1967; Wasserman 1996; Henning 2015, 169–170). We can ask at least two questions about lotteries. First, when are they a just or appropriate mechanism to use? (Elster 1989, 36–37; Kornhauser and Sager 1988, 492–510; Stone 2007, 277–279). Second, when are they fair? There are often overlaps in the answers to these questions, but our focus is on the second question.

There are two necessary conditions for the applicability of lotteries (Kornhauser and Sager 1988, 503–505; Spiekermann 2022, 114):

1. Practical indivisibility: It is not possible to practically divide the resource.
2. Scarcity: There are more claims to the good than units of the good.

Without these conditions, the use of a lottery is otiose.¹⁰ If a good is not scarce or is divisible, a lottery would be inappropriate. Those with a claim to the good ought to simply receive it.

There are two widely discussed sufficient conditions for a fair lottery:

1. Proportionate chances: The chances allocated in a lottery are proportionate to comparative claim strength.

2. Impartiality: An individual is not favored over others for illegitimate reasons (Stone 2007, 284; Wang 2023, 1797–8).

Regarding the first condition, proportionate chances in a case of equal claims will require equal chances. Many defenders of the fairness of lotteries endorse proportionate chances, but only for cases of equal claims.¹¹ Broome's theory is an example of a theory that attaches value to proportionate chances. The attractiveness of a lottery is that the assignment of proportional chances is a way of treating claims proportionally. It would be unfair to hold an unequally weighted lottery if individuals have equal claims. Endorsement of the first condition generally grants the second condition because the assignment of proportionate chances does not explicitly favor one candidate over another for illegitimate reasons.

Talk of chances raises the question of how to conceptualize probability. Objective probabilities are mind-independent features of the world, such as relative frequencies. Subjective or epistemic probabilities are mind-dependent; for example, an agent's degree of belief or credence. Objective probabilities are implied in Broome's account of fairness when he writes that a potential recipient may complain if winning was “never on the cards” (1990, 98). Some have challenged the view that objective probabilities are necessary or sufficient for fairness (Kornhauser and Sager 1988, 485–488). However, Hausman provides a counterexample to accepting subjective chances as a basis for fairness (2023, 82–3). In Hausman's example, a coin flip is used to decide who between Brian and Betty will receive a good. All believe that one side of the coin has “Brian” printed on it and the other side “Betty”. Unbeknownst to all, “Brian” is printed on both sides (2023, 82). Hausman says that we “need more” than merely an expression of equal concern for each claimant, which is something that would obtain if all believed that there was in fact a chance that Betty *or* Brian could have won.

The second sufficient condition for the fairness of lotteries is impartiality (Stone 2011). Lotteries are often claimed to “sanitize” the allocative procedure in the way they screen out morally irrelevant, arbitrary, or harmful considerations (Stone 2011, 86; 2007, 2010). Sher defines the fairness of lotteries in virtue of the absence of manipulation by the allocator (1980, 212). According to Wang, lotteries screen out the reactive attitudes of resentment that claimants would otherwise have toward the allocator (2023). Wasserman writes about “prophylactic” accounts of the fairness of lotteries, which “prevent bias or partiality in the allocation of the indivisible good” (1996, 31). An advantage of sanitizing arguments is that only epistemic probabilities are required. If the allocator *believes* that each candidate is treated equally (Spiekermann 2022, 115), then the allocator can do without objective equal probabilities. Newey (2022) argues that close personal relationships can provide grounds for fairness, thereby providing a role for partiality in a theory of fairness.

Henning (2015, 190–194) argues that norms of transparency or impartiality cannot ground the unique fairness of lotteries. Kornhauser and Sager (1988, 490) demonstrate that the sanitizing effect of a lottery can be achieved without equiprobability. Deciding to allocate the good to the person with a birthday

closest to an arbitrary date (when the date is unknown to the allocators) will achieve the function of sanitization, but it will not be an instance of equiprobability.

We can now discuss the putative fairness of lotteries in cases of unequal claims. Many have thought that it would be wrong to use a lottery to allocate a good when some have greater claims to that good than others (Hooker 2005, 349; Lazenby 2014; Sher 1980, 213; Stone 2007, 278). On such reasoning, lotteries are justified as a tiebreaker when claims are equal and there are no relevant differences between claimants (Jølstad and Gustavsson 2024; Kornhauser and Sager 1988, 496–501; Sher 1980, 203; Spiekermann 2022, 114).

Broome denies that his account of fairness holds that lotteries are simply good tiebreakers (Broome 1990, 89). A tie can be broken in all sorts of arbitrary ways, which need not be fair (see, e.g., the role of markets at the end of Section 4.3). However, an unequal chance lottery is not necessarily unfair. If the chances are in proportion to the strength of claims, then a lottery may be deemed fair even if it offers unequal chances. This is true, for example, for weighted lotteries (Piller 2017, 230; Rowe and Papineau 2022). A weighted lottery assigns nonequal chances to potential outcomes of the lottery. An example of a weighted lottery is a proportional lottery, where claimants each receive chances in proportion to their comparative claim strength. If one has a claim that is twice as large as another, then a proportional lottery will assign the former twice as much chance of receiving the good than the latter. The justification Elster finds for a weighted lottery is that it offers a compromise between efficiency and equity. A similar justification for weighted lotteries is provided by Jansen and Wall (2021). Weighted lotteries may be more appropriate mechanisms when we are *pluralists*. A pluralist takes into account different values, including fairness, efficiency, desert, etc. (see, e.g., Section 4.2). A selection of relevant values can be used to jointly determine claim strength and thereby the weight of one's chance of receiving a good. Vong (2020) defends a particular form of weighted lottery, which he argues is the only adequate lottery for dealing with so-called “overlap cases,” where groups that can be benefitted share only some of their members.

Finally, a note on the justification of lotteries. Accounts of lotteries can be divided into two categories: *distributive* and *expressive*. On the distributive view, lotteries themselves distribute something of value between claimants, such as the chance of receiving a good, which provides “surrogate satisfaction” (Broome 1990, 119; Saunders 2008, 367). This connects with the first sufficient condition, above. On one interpretation, lotteries satisfy a *procedural* claim—a claim to an objective chance proportional to one's claim's strength (Hausman 2023, 83–84). The idea of surrogate satisfaction has been criticized (Lazenby 2014; Henning 2015, 171–177). Henning, for example, argues that chances are not the type of good that can provide surrogate satisfaction. On the expressive view, lotteries signal to potential recipients that they are being treated impartially and with respect (Burgers 2016, 219–222; Spiekermann 2022, 118–119; Wasserman 1996, 33–4). For example, Wasserman argues that lotteries are an affirmation or expression of respect for potential recipients (Wasserman 1996). On this view, only

subjective and not objective equiprobability is required in order for a lottery (or any other allocation mechanism) to signal impartial and respectful treatment. So, for example, the aforementioned allocation by birthdate will count as an expressively fair allocation procedure if the allocator has no reason to believe that it favors one of the recipients (Wasserman 1996, 33). This connects with the second sufficient condition. One can hold the second condition in isolation because one can be impartial without providing proportionate chances.

The distinction between distributive and expressive justifications might be challenged on the grounds that respectful treatment itself might be a way of distributing something of value, namely, the subjective value to claimants of being respected. Although this may be true, the expressive view highlights “an equal commitment to each claimant receiving the good” (Wasserman 1996, 33), where this need not imply that the claimants actually receive anything, unlike on the distributive view.

4.5 | Queues

A last allocative procedure that is ubiquitous in daily life, even more so than lotteries, is queuing, sometimes also discussed as “first come, first served”. There is a common belief that goods should be allocated based on the order in which claimants join the queue. At its root is a sense that this is entailed by a commitment to impartiality as equal treatment of equals, in that people who join the queue at similar times are treated similarly (Hersch 2023). Perry and Zarsky (2014) present empirical evidence that supports the claim that people view queuing as a fair way of distributing a good and that people object to queue cutting.¹²

Elster suggests that when queues are formed by natural processes and do not impose significant costs in terms of wasted time, they can be viewed as a kind of “natural lottery” (Kilner 1981, 252) because although claims are addressed in the order in which they arise, the order in which they arise is random. Recently, John and Millum (2020) argue that using queues to allocate goods is often a more efficient, more equitable, and fairer allocation mechanism than lotteries. Specifically, John and Millum (2020, 198) argue that queues tend to be fair for two reasons: first, a queue “does not privilege certain people over others on the basis of morally irrelevant factors,” and second, a queue expressively signals the equal moral standing of individuals John and Millum (2020, 199). John and Millum have begun what we believe is an important and potentially fruitful discussion on queues as an allocative procedure and on considering a temporal dimension to allocation more generally. Hersch and Rowe (2024) distinguish between cases of scarcity and bottleneck cases and argue that lotteries are a fair procedure in scarcity cases, whereas queues are a fair procedure in bottleneck cases.

Queues, like lotteries, could be weighted, though it seems more plausible that such weighting would be based on urgency of the claims rather than the strength of claims. We already accept some forms of weighted queues; supermarkets often have express lanes for those with smaller orders (e.g., 10 items or less),

theme parks allow people to pay extra to jump the queue, and airport security has special lines for those who have been pre-vetted (TSA PreCheck or Global Entry in the United States). Such weighted queues can be a way to indirectly consider morally relevant considerations.

The field of queuing theory in operations research and management science studies queues from a mathematical and theoretical perspective (Shortle et al. 2018). The psychological aspects of queuing are studied in services marketing and consumer behavior in business schools (see Furnham et al. 2020 for a literature review). These fields occasionally touch on questions of fairness, but often in a very rudimentary fashion.

First come, first served has been criticized for failing to treat people equally in practice because it favors those who are more informed, well-off, and able to travel more quickly (Persad et al. 2009). It is therefore thought that morally irrelevant qualities are allowed to influence the allocation of the good.

5 | Conclusion

Questions of allocative fairness arise regularly throughout our lives: from conflicts in early childhood over who gets to play with the yellow truck, to adolescent arguments over who gets to ride in the front seat or who gets admitted to a college, to decisions in adulthood over who gets on the bus first, who gets a green card, or who gets access to lifesaving medication. Getting clear on how best to understand what fairness is and what allocative procedure is fair can be enormously helpful in determining how to go about allocating goods in the myriads of real-world contexts.

The article covered the following ground: In Section 2, we discussed how best to understand the concept of fairness in allocation, distinguished between procedural and outcome fairness, and discussed the literature on claims. In Section 3, we highlighted the importance of getting clearer on how to best understand the nature of goods. In Section 4, we discussed a range of allocation procedures, beginning with equal allocation, to equitable allocation based on claim strength, to relying on markets, lotteries, and queues.

The lion's share of philosophical work dealing with allocative fairness has revolved around discussions relating to one particular allocative procedure—lotteries. Yet, as discussed in this article, alternative procedures commonly exist, and perhaps novel ones can be proposed. Combinations of different procedures, for example, a lottery for the order to join a queue or markets with equally distributed tokens, are another way to expand the realm of possible allocative procedures. One example of such a hybrid mechanism involves tickets to the World Cup, which incorporates both a market mechanism (tickets are priced sufficiently high as to limit who wishes to purchase them) and a lottery mechanism to determine who has the option to purchase the tickets at the given price. Another example is Minnesota's lottery allocation of monoclonal antibodies used against COVID-19, which includes an initial screening for eligibility, then a

lottery for allocating an appointment, with queues used to schedule a particular appointment time.¹³ Given what can be at stake, it is important to get clear on the fairness of the procedures we use to allocate scarce resources.

Conflicts of Interest

The authors declare no conflicts of interest.

Endnotes

¹ Facts about who the allocator and claimants are (features (a) and (b)) can plausibly affect other issues in this discussion. This is particularly clear when the allocator stands in some special obligations that arise from a relation to some claimants but not others, for example if the allocator is the parent of one of the claimants.

² Vong (2020) discusses potential issues when we consider cases in which one or more claimants are in multiple outcome groups.

³ A further notion of fairness found in Rawls's account is the veil of ignorance conception of fairness (Rawls 1999, 118–123). For Harsanyi's version, see Harsanyi (1953, 1955) and Weymark (1991).

⁴ Thomson (2019, 9) raises alternatives to viewing proportionality as an inherent requirement of fairness. This is something that is underexplored in the philosophical literature. For a development of the ideal of proportionality in the wider economics literature on fairness, see Wintein and Heilmann (2024b).

⁵ For a discussion of the relationship between Broome's theory of fairness and the satisfaction requirement, see Piller (2017, 237, 228, fn. 32). Piller argues that because Broome offers a relational account of fairness, the satisfaction requirement ought to be kept separate from *Broomean fairness*. Hooker argues that the satisfaction requirement ought to be a part of fairness (2005, 341).

⁶ Although we focus more on Broome's comparative account, Larry Temkin (1993, 2000, 2017) also defends an account of "comparative fairness" and examines the relationship between comparative fairness and equality.

⁷ Some might disagree on whether the value of a good is subjective, and the nature of goods is an issue worth more exploration in general. We thank an anonymous reviewer for asking us to address this.

⁸ Differences in claim size and claim urgency (discussed at the end of Section 2.2) introduce additional complications to equitable allocation.

⁹ Broome also mentions contracts (Broome 1991, 197). As these ground claims in special obligations an allocator has toward potential claimants, we view such claims as slightly different in kind from those we discuss in what follows.

¹⁰ For scarcity and its relation to lotteries, see Hersch and Rowe (2024).

¹¹ For example, Diamond (1967), Elster (1989), Kornhauser and Sager (1988), Sher (1980), and Wasserman (1996). Kamm (1998, 128–34) endorses proportionate chances but with chances proportional to group size (Broome and Kamm 1998, 959–61).

¹² Perry and Zarsky (2014) cite Zhou and Soman (2008) regarding empirical support.

¹³ We thank an anonymous reviewer for suggesting this example.

References

Adler, M. 2011. *Well-Being and Fair Distribution: Beyond Cost-Benefit Analysis*. Oxford University Press.

- Angel, J., and D. McCabe. 2013. "Fairness in Financial Markets: The Case of High Frequency Trading." *Journal of Business Ethics* 112, no. 4: 585–595. <https://doi.org/10.1007/s10551-012-1559-0>.
- Anscombe, G. E. M. 1967. "Who Is Wronged? Philippa Foot on Double Effect: One Point." *Oxford Review* 5.
- Brams, S., and A. Taylor. 1996. *Fair Division: From Cake-Cutting to Dispute Resolution*. Cambridge University Press.
- Broome, J. 1984. "Selecting People Randomly." *Ethics* 95, no. 1: 38–55. <https://doi.org/10.1086/292596>.
- Broome, J. 1990. "Fairness." *Proceedings of the Aristotelian Society* 91: 87–101.
- Broome, J. 1991. *Weighing Goods*. Blackwell Publishers.
- Broome, J., and F. Kamm. 1998. "Kamm on Fairness." *Philosophy and Phenomenological Research* 58, no. 4: 955–961. <https://doi.org/10.2307/2653739>.
- Burgers, J.-W. 2016. "Perspectives on the Fairness of Lotteries." *Res Publica* 22, no. 2: 209–224. <https://doi.org/10.1007/s11158-014-9265-7>.
- Carr, C. L. 2000. *On Fairness*. Routledge.
- Curtis, B. 2014. "To Be Fair." *Analysis* 74, no. 1: 47–57. <https://doi.org/10.1093/analysis/ant093>.
- de Boer, J. 2024. "Interpersonal Comparisons of Well-Being: Increasing Convergence." *Politics, Philosophy & Economics* 23, no. 4: 321–345. <https://doi.org/10.1177/1470594x241232339>.
- Diamond, P. 1967. "Cardinal Welfare, Individualistic Ethics, and Interpersonal Comparisons of Utility: A Comment." *Journal of Political Economy* 75, no. 5: 765–766. <https://doi.org/10.1086/259353>.
- Elster, J. 1989. *Solomonic Judgements*. Cambridge University Press.
- Estlund, D. 1997. "Beyond Fairness and Deliberation: The Epistemic Dimension of Democratic Authority." In *Deliberative Democracy: Essays on Reason and Politics*, edited by J. Bohman and W. Rehg, 173–204. MIT Press.
- Fumagalli, R. 2022. "We Should Not Use Randomization Procedures to Allocate Scarce Life-Saving Resources." *Public Health Ethics* 15, no. 1: 87–103. <https://doi.org/10.1093/phe/phab025>.
- Furnham, A., L. Treglown, and H. George. 2020. "The Psychology of Queuing." *Psychology* 11, no. 3: 480–498. <https://doi.org/10.4236/psych.2020.113033>.
- Hammond, P. 1991. "Interpersonal Comparisons of Utility: Why and How They Are and Should Be Made." In *Interpersonal Comparisons of Well-Being*, edited by J. Elster and J. E. Roemer, Cambridge University Press.
- Harsanyi, J. 1953. "Cardinal Utility in Welfare Economics and in the Theory of Risk-Taking." *Journal of Political Economy* 61, no. 5: 434–435. <https://doi.org/10.1086/257416>.
- Harsanyi, J. 1955. "Cardinal Welfare, Individualistic Ethics, and Interpersonal Comparisons of Utility." *Journal of Political Economy* 63, no. 4: 309–321. <https://doi.org/10.1086/257678>.
- Hausman, D. 2023. *How Health Care Can Be Cost-Effective and Fair*. Oxford University Press.
- Hayek, F. 1960. *The Constitution of Liberty*. University of Chicago Press.
- Heath, E. 2010. "Fairness in Financial Ethics." In *Finance Ethics: Critical Issues in Theory and Practice*, edited by J. R. Boatright, 163–178. Wiley.
- Henning, T. 2015. "From Choice to Chance? Saving People, Fairness, and Lotteries." *Philosophical Review* 124, no. 2: 169–206. <https://doi.org/10.1215/00318108-2842176>.
- Hersch, G. 2023. "Procedural Fairness in Exchange Matching Systems." *Journal of Business Ethics* 188, no. 2: 367–377. <https://doi.org/10.1007/s10551-022-05315-7>.
- Hersch, G., and T. Rowe. 2024. "Lotteries, Queues, and Bottlenecks." In *Oxford Studies in Political Philosophy*, edited by D. Sobel and S. Wall, 10, 186–210. Oxford University Press. <https://doi.org/10.1093/oso/9780198909460.003.0008>.
- Hirose, I. 2014. *Moral Aggregation*. Oxford University Press.
- Hooker, B. 2005. "Fairness." *Ethical Theory & Moral Practice* 8, no. 4: 329–352. <https://doi.org/10.1007/s10677-005-8836-2>.
- Jansen, A. L., and S. Wall. 2021. "Weighted Lotteries and the Allocation of Scarce Medications for Covid-19." *Hastings Center Report* 51, no. 1: 39–46. <https://doi.org/10.1002/hast.1218>.
- John, T., and J. Millum. 2020. "First Come, First Served?" *Ethics* 130, no. 2: 179–207. <https://doi.org/10.1086/705763>.
- Jølstad, B., and E. Gustavsson. 2024. "Against Tiebreaking Arguments in Priority Setting." *Journal of Medical Ethics* 50, no. 5: 320–323. <https://doi.org/10.1136/jme-2023-108972>.
- Kamm, F. 1998. *Morality, Mortality Vol. 1: Death and Whom to Save From It*. Oxford University Press.
- Kilner, J. 1981. "A Moral Allocation of Scarce Lifesaving Medical Resources." *Journal of Religious Ethics* 9: 245–285.
- Kirkpatrick, J., and N. Eastwood. 2015. "Broome's Theory of Fairness and the Problem of Quantifying the Strengths of Claims." *Utilitas* 27, no. 1: 82–91. <https://doi.org/10.1017/s0953820814000259>.
- Klosko, G. 2004. *Democratic Procedures and Liberal Consensus*. Oxford University Press.
- Kornhauser, L. A., and L. G. Sager. 1988. "Rationality and Society." *Social Science Information* 27, no. 4: 483–516. <https://doi.org/10.1177/053901888027004001>.
- Lazenby, H. 2014. "Broome on Fairness and Lotteries." *Utilitas* 26, no. 4: 331–345. <https://doi.org/10.1017/s0953820814000107>.
- Mas-Colell, A., M. Whinston, and J. Green. 1995. *Microeconomic Theory*. Oxford University Press.
- Mulligan, T. 2018. *Justice and the Meritocratic State*. Routledge.
- Nagel, T. 1979. *Mortal Questions*. Cambridge University Press.
- Newey, C. 2022. "Fairness and Close Personal Relationships." *Ratio* 35, no. 4: 310–320. <https://doi.org/10.1111/rati.12357>.
- Otsuka, M. 2000. "Scanlon on the Claims of the Many versus the One." *Analysis* 60, no. 3: 288–293. <https://doi.org/10.1093/analysis/60.3.288>.
- Otsuka, M. 2006. "Saving Lives, Moral Theory, and the Claims of Individuals." *Philosophy & Public Affairs* 34, no. 2: 109–135. <https://doi.org/10.1111/j.1088-4963.2006.00058.x>.
- Perry, R., and T. Z. Zarsky. 2014. "Queues in Law." *Iowa Law Review* 99, no. 4: 1595–1658.
- Persad, G., A. Wertheimer, and E. J. Emanuel. 2009. "Principles for Allocation of Scarce Medical Interventions." *Lancet* 373, no. 9661: 423–431. [https://doi.org/10.1016/s0140-6736\(09\)60137-9](https://doi.org/10.1016/s0140-6736(09)60137-9).
- Peter, F. 2008. "Pure Epistemic Proceduralism." *Episteme* 5, no. 1: 33–55. <https://doi.org/10.3366/e1742360008000221>.
- Peter, F. 2009. *Democratic Legitimacy*. Routledge.
- Piller, C. 2017. "Treating Broome Fairly." *Utilitas* 29, no. 2: 214–237. <https://doi.org/10.1017/s0953820816000303>.
- Privitera, J. 2018. "Aggregate Relevant Claims in Rescue Cases?" *Utilitas* 30, no. 2: 228–236. <https://doi.org/10.1017/s0953820817000279>.
- Rawls, J. 1999. *A Theory of Justice*. Revised Edition Harvard University Press.

- Reader, S., and G. Brock. 2004. "Needs, Moral Demands and Moral Theory." *Utilitas* 16, no. 3: 251–266. <https://doi.org/10.1017/s0953820804001165>.
- Rescher, N. 2002. *Fairness: Theory & Practice of Distributive Justice*. Transaction Publishers.
- Rizoli, L. . "The Difficulty of Fairly Allocating Divisible Goods".
- Robertson, J., and W. Webb. 1998. *Cake-Cutting Algorithms: Be Fair if You Can*. A K Peters.
- Rowe, T., and D. Papineau. 2022. "Everett, Lotteries and Fairness." *Thought* 11, no. 1: 59–63. <https://doi.org/10.5840/tht20229205>.
- Sandel, M. 2012. *What Money Can't Buy: The Moral Limits of Markets*. Farrar, Straus and Giroux.
- Satz, D. 2012. *Why Some Things Should Not Be for Sale: The Moral Limits of Markets*. Oxford University Press.
- Saunders, B. 2008. "The Equality of Lotteries." *Philosophy* 83, no. 3: 359–372. <https://doi.org/10.1017/s0031819108000727>.
- Saunders, B. 2010. "Fairness Between Competing Claims." *Res Publica* 16, no. 1: 41–55. <https://doi.org/10.1007/s11158-010-9118-y>.
- Scanlon, T. M. 1998. *What We Owe to Each Other*. Belknap Press.
- Sharadin, N. 2016. "Fairness and the Strengths of Agents' Claims." *Utilitas* 28, no. 3: 347–360. <https://doi.org/10.1017/s0953820815000527>.
- Sher, G. 1980. "What Makes a Lottery Fair?" *Noûs* 14, no. 2: 203–216. <https://doi.org/10.2307/2214861>.
- Shortle, J., J. Thompson, D. Gross, and C. Harris. 2018. *Fundamentals of Queueing Theory*. 5th ed. Wiley.
- Spiekermann, K. 2022. "Good Reasons for Losers: Lottery Justification and Social Risk." *Economics and Philosophy* 38, no. 1: 108–131. <https://doi.org/10.1017/s0266267121000043>.
- Stone, P. 2007. "Why Lotteries Are Just." *Journal of Political Philosophy* 15, no. 3: 276–295. <https://doi.org/10.1111/j.1467-9760.2006.00274.x>.
- Stone, P. 2010. "Three Arguments for Lotteries." *Rationality and Society* 49, no. 2: 147–163. <https://doi.org/10.1177/0539018409359362>.
- Stone, P. 2011. *Luck of the Draw: The Role of Lotteries in Decision Making*. Oxford University Press.
- Taurek, J. 1977. "Should the Numbers Count?" *Philosophy & Public Affairs* 6: 293–316.
- Temkin, L. 1993. *Inequality*. Oxford University Press.
- Temkin, L. 2000. "Equality, Priority, and the Levelling Down Objection." In *The Ideal of Equality*, edited by M. Clayton and A. Williams, 126–161. Palgrave.
- Temkin, L. 2003. "Egalitarianism Defended." *Ethics* 113, no. 4: 764–782. <https://doi.org/10.1086/373955>.
- Temkin, L. 2011. "Justice, Equality, Fairness, Desert, Rights, Free Will, Responsibility, and Luck." In *Distributive Justice and Responsibility*, edited by C. Knight and Z. Stemplowska, 51–76. Oxford University Press.
- Temkin, L. 2017. "Equality as Comparative Fairness." *Journal of Applied Philosophy* 34, no. 1: 43–60. <https://doi.org/10.1111/japp.12140>.
- Thomson, W. 2019. *How to Divide When There Isn't Enough: From Aristotle, the Talmud, and Maimonides to the Axiomatics of Resource Allocation*, Vol. 2019. Cambridge University Press. <https://doi.org/10.1017/9781108161107>.
- Tomlin, P. 2012. "On Fairness and Claims." *Utilitas* 24, no. 2: 200–213. <https://doi.org/10.1017/s0953820812000143>.
- Tonry, M., ed. 2011. *Why Punish? How Much?* Oxford University Press.
- Vong, G. 2020. "Weighing Up Weighted Lotteries: Scarcity, Overlap Cases, and Fair Inequalities of Chance." *Ethics* 130, no. 3: 320–348. <https://doi.org/10.1086/707212>.
- Voorhoeve, A. 2014. "How Should We Aggregate Competing Claims?" *Ethics* 125, no. 1: 64–87. <https://doi.org/10.1086/677022>.
- Voorhoeve, A., and M. Fleurbaey. 2012. "Egalitarianism and the Separateness of Persons." *Utilitas* 24, no. 3: 381–398. <https://doi.org/10.1017/s0953820812000040>.
- Wallace, R. J. 2019. *The Moral Nexus*. Princeton University Press.
- Wang, X. 2023. "Intentions, Impartiality, and the Fairness of Lotteries." *Philosophia* 51, no. 4: 1795–1810. <https://doi.org/10.1007/s11406-023-00640-1>.
- Wasserman, D. 1996. "Let Them Eat Chances: Probability and Distributive Justice." *Economics and Philosophy* 12, no. 1: 29–49. <https://doi.org/10.1017/s0266267100003709>.
- Weymark, J. 1991. "A Reconsideration of the Harsanyi-Sen Debate on Utilitarianism." In *Interpersonal Comparisons of Well-Being*, edited by J. Elster and J. E. Roemer, 255–320. Cambridge University Press.
- White, M. D., ed. 2011. *Retributivism: Essays on Theory and Policy*. Oxford University Press.
- Wiggins, D. 1987. "Claims of Need." In *Needs, Values, Truth*. Blackwell.
- Wintein, S., and C. Heilmann. 2021. "Fairness and Fair Division." In *The Routledge Handbook of the Philosophy of Economics*, edited by C. Heilmann and J. Reiss, Routledge.
- Wintein, S., and C. Heilmann. 2024a. "How To Be Absolutely Fair Part I: The Fairness Formula." *Economics and Philosophy* 40, no. 3: 1–24. <https://doi.org/10.1017/s0266267123000408>.
- Wintein, S., and C. Heilmann. 2024b. "How To Be Absolutely Fair Part II: Philosophy Meets Economics." *Economics and Philosophy* 40, no. 3: 1–23. <https://doi.org/10.1017/s026626712300041x>.
- Zhou, R., and D. Soman. 2008. "Consumers Waiting in Queues: The Role of First-Order and Second-Order Justice." *Psychology and Marketing* 25, no. 3: 262–279. <https://doi.org/10.1002/mar.20208>.