# 1 Introduction

## Prioritarianism in Practice

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## 1.1 Prioritarianism

"Prioritarianism" is a framework for ethical assessment that gives extra weight to the well-being of the worse off. Unlike utilitarianism, which uses a simple summation of well-being, prioritarianism adds up *transformed* well-being numbers: well-being numbers inputted into a concave transformation function.[1] Assume that Andre is worse off than Beatrice. We can increase Andre's well-being by an increment $\Delta w$, or increase Beatrice's well-being by the same increment $\Delta w$. Utilitarianism is indifferent between these two options. Prioritarianism prefers the first: giving $\Delta w$ to the worse-off one (Andre) yields a larger ethical improvement than giving $\Delta w$ to the better-off one (Beatrice).

[1] To be more precise: the prioritarian transformation function is strictly increasing and strictly concave. Throughout the chapter, we use "concave" in reference to this transformation function as shorthand for strictly increasing and strictly concave.
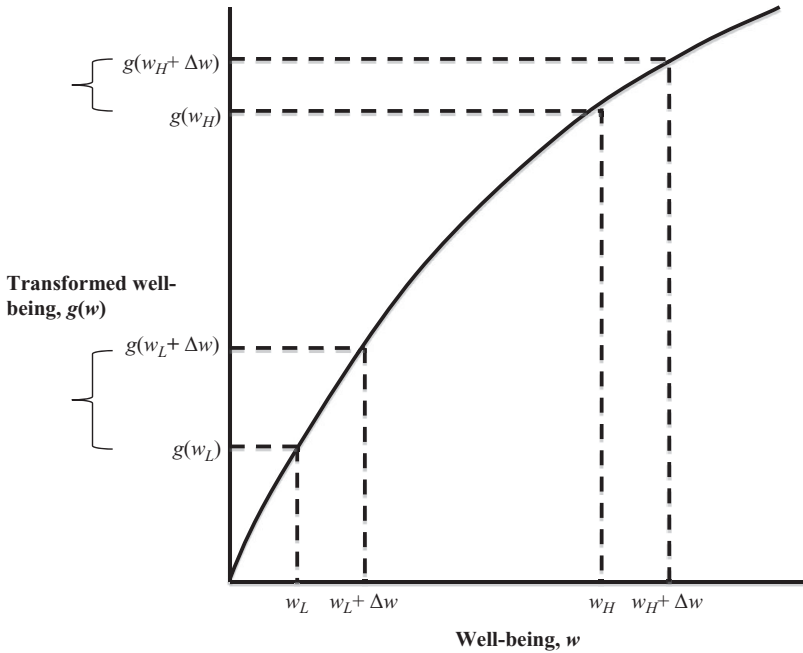
**Figure 1.1** Well-being numbers inputted into a concave transformation function

*Note*: Andre is at lower well-being level $w_L$ and Beatrice at higher well-being $w_H$. The increase in well-being from $w_L$ to $w_L + \Delta w$ produces a bigger increase in transformed well-being than the increase in well-being from $w_H$ to $w_H + \Delta w$.

(*Source*: Figure 1.1 in Matthew D. Adler, *Measuring Social Welfare* (2019), reproduced with permission of Oxford University Press)

See Figure 1.1, illustrating that the prioritarian rule of summing concavely transformed well-being has the effect of giving priority to the worse off.

Utilitarianism has had sweeping influence in academic scholarship (in philosophy, economics, law, public health, and other fields), and in governmental practice, for centuries. (For historical sources on utilitarianism, see Eggleston and Miller [2014]. For contemporary defenses, see, e.g., Brandt [1979], Broome [1991], Goodin [1995], Harsanyi [1977], Singer [2011].) Prioritarianism is a much newer idea. In ethics, prioritarianism is most closely associated with the philosopher Derek

Parfit. Parfit's 1991 Lindley Lecture triggered an intensive philosophical examination of prioritarianism, continuing to the present[2] (Parfit 2000, publishing his 1991 lecture). Although Parfit was not in fact the first philosopher to discuss prioritarianism, it *is* certainly true that wide philosophical investigation and debate about prioritarianism only began with Parfit's work. In short: this is a relatively new idea in ethics, much newer than utilitarianism.

Although the term "prioritarianism" is a piece of philosophical vocabulary that is uncommon in economics, the underlying idea – summing a concave transformation of well-being, and thereby according extra weight to the worse off – has figured in welfare economics since the 1970s. At that time, the concept of the "social welfare function" (SWF) began to play a more central role in several economic literatures: theoretical welfare economics, optimal tax theory, and the measurement of inequality. A variety of types of SWFs have been examined by these literatures, including prioritarian SWFs.[3]

The SWF methodology, in a nutshell, converts each possible outcome of governmental policy choice into a list ("vector") of well-being numbers – measuring the well-being of the individuals in the population of ethical concern. A given outcome is some possible combination of welfare-relevant characteristics (income, health, leisure, happiness, etc.) for each person in the population. Let $x$ be a possible outcome, $y$ a different possible outcome, and so forth. If there are $N$ individuals in the population, then $x$ corresponds to the well-being vector $(w_1(x), w_2(x), \ldots w_N(x))$ – with $w_1(x)$ denoting the well-being number of individual 1 in $x$, $w_2(x)$ the well-being number of individual 2 in $x$, and so forth. Similarly, outcome $y$ corresponds to the well-being vector $(w_1(y), w_2(y), \ldots w_N(y))$. The SWF is a rule for ranking well-being vectors and, thereby, the corresponding outcomes. Many different such rules are possible, including the utilitarian SWF, prioritarian SWFs, and others.

In short, the concept of prioritarianism, if not the term "prioritarianism," has figured in various SWF-related economic literatures for

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[2] The philosophical literature on prioritarianism is discussed and cited below, in Section 1.2.1.

[3] The literature on SWFs is discussed and cited below, in Section 1.2.2, and in Chapter 2.

the last 50 years. Still, in economics as in ethics, this is a much newer idea than utilitarianism. Further, although a variety of economic concepts and tools have had a large impact on governmental practice, prioritarianism has not (yet) had this influence.

This chapter is the introductory chapter in a volume entitled *Prioritarianism in Practice*. The aim of the volume is to study and showcase the use of prioritarianism as a methodology for evaluating governmental policy, across a variety of policy domains: taxation, health policy, risk regulation, education, climate policy, and the COVID-19 pandemic (a global catastrophe, urgently requiring wise governmental policy, that occurred while the volume was being drafted). The volume also examines prioritarianism as an indicator of social condition (as an alternative to GDP, currently the dominant social-condition metric).

*Prioritarianism in Practice* is the first book to study the *application* of prioritarianism as a policy-assessment framework. It grows out of an international research network which we founded. The participants in this network are now chapter authors in this volume.

Why study prioritarianism? After all, there are *many* competitors to utilitarianism, including but hardly limited to prioritarianism.

The answer is that prioritarianism retains most of the attractive characteristics of utilitarianism, but drops one feature that many have found problematic: utilitarianism's indifference to the distribution of well-being.[4]

First, prioritarianism, like utilitarianism, is a species of welfare consequentialism. An ethical view is *consequentialist* if it evaluates choices in light of the possible outcomes of those choices. Outcomes are ranked from best to worst; and it is this goodness ranking of outcomes that drives ethical assessment. An ethical view is, more specifically, *welfare* consequentialist if the goodness ranking of outcomes hinges on individuals' well-being. The SWF methodology, in turn, is just a formal procedure for implementing welfare consequentialism.

For those who endorse welfare consequentialism as the appropriate architecture for ethical assessment and, specifically, the assessment of

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[4]  The normative case for prioritarianism, summarized in the next several paragraphs, is presented in much greater detail in Chapter 2.

governmental policies, the fact that prioritarianism – like utilitarianism – has this structure is a welcome feature of prioritarianism.[5]

Further, both the utilitarian SWF and prioritarian SWFs are "score-based"; in each case, the SWF operates by assigning a numerical score to a given vector and then ranking vectors in the order of these scores.[6] (The utilitarian score is just the sum of well-being; the prioritarian score is the sum of concavely transformed well-being.) By contrast, for example, the "leximin" SWF – roughly corresponding to John Rawls' notion of "maximin" (Rawls 1999) – employs an algorithm for ranking well-being vectors that cannot be summarized by a numerical score.[7]

Score-based SWFs are especially tractable – a virtue for policy assessment – and can readily be generalized to policy choice under uncertainty. If we conceptualize a governmental policy as a probability distribution across outcomes, then the utilitarian SWF can be used to rank policies by assigning each policy its expected score (namely, the expected sum of well-being). The prioritarian SWF can be applied under uncertainty in an analogous way (now, policies are ranked according to the expected sum of concavely transformed well-being).[8]

Prioritarianism shares yet another desirable feature with utilitarianism: it is *separable*. If a group of individuals is unaffected by policy choice – whichever policy might be chosen, the well-being of individuals within the group doesn't change – then utilitarian assessment can

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[5] One important critique of welfare consequentialism is that it fails to take account of individual responsibility. How to refine prioritarianism so as to incorporate individual responsibility is the topic of Chapter 11. A different critique is that welfare consequentialism ignores deontological constraints and other non-consequentialist factors. For those who believe that ethics is a hybrid of consequentialism and non-consequentialist factors, prioritarian policy analysis can still be seen as capturing one *part* of ethical assessment, namely the consequentialist component (Adler 2019, pp. 24–27).

[6] We use the term "SWF" to mean what is, strictly, a social welfare ordering: a rule for ranking well-being vectors. Some (not all) such rules can be represented by a real-valued function $S(\cdot)$, such that: vector $\mathbf{w}$ is at least as good as vector $\mathbf{v}$ if and only if $S(\mathbf{w}) \geq S(\mathbf{v})$. In our terminology, these SWFs are "score-based."

[7] Leximin orders two well-being vectors according to the levels of the worst-off individuals in each; if the worst-off individuals are equally well off in the two vectors, according to the levels of the second-worst-off individuals; and so forth.

[8] This formula (the expected sum of concavely transformed well-being) is one methodology for applying prioritarianism under uncertainty, so-called "ex post prioritarianism" (EPP). Chapter 2, Section 2.7, discusses both EPP and other possible formulas.

simply ignore the individuals.[9] The utilitarian comparison of policies is wholly determined by the well-being of *affected* individuals. The same is true of prioritarianism. Separability, like the feature of being score-based, increases the tractability of both utilitarianism and prioritarianism.

The critical *difference* between the two approaches is that prioritarianism embodies a concern for the distribution of well-being that is absent from utilitarianism. The utilitarian SWF is such that: if total well-being is greater in outcome $y$ than outcome $x$, $y$ is better than $x$ regardless of how well-being is distributed in the two outcomes. In particular, imagine that Cedric is better off than Dahlia in $x$. Cedric's well-being in $y$ increases by $\Delta w^*$, while Dahlia's decreases by $\Delta w$. As long as the increment to Cedric's well-being is larger than the loss to Dahlia (that is, as long as $\Delta w^* > \Delta w$), then utilitarianism ranks $y$ better than $x$ *regardless* of the well-being levels of the two individuals, and regardless of the magnitudes of $\Delta w^*$ and $\Delta w$ (even if Cedric's gain is only slightly more than Dahlia's loss). This is problematic. By contrast, prioritarianism may well prefer $x$; whether it does depends upon the well-being levels of the two individuals, the comparative magnitudes of Cedric's gain and Dahlia's loss, and the concave transformation function.

Further, prioritarianism is quite flexible regarding the degree of ethical priority to the well-being of the worse off. Here, a contrast not only with utilitarianism, but also leximin, is instructive. The utilitarian SWF is a specific such rule (a specific rule for ranking well-being vectors), as is the leximin SWF. The utilitarian SWF gives zero priority to the worse off; the leximin SWF gives absolute priority to the worse off. Prioritarianism is an entire *family* of SWFs; the choice of concave transformation function determines a particular such rule. A more concave function means that, as between two individuals at two given well-being levels, the worse-off one has a greater degree of priority. The prioritarian, by means of her choice of transformation function, can specify whatever degree of priority for the worse off she judges

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[9] To be more precise, the utilitarian SWF and prioritarian SWFs both satisfy an axiom of Separability with respect to the ranking of well-being vectors. Further, they both can be applied under uncertainty in a manner that satisfies an analogous axiom with respect to policies. Only SWFs that satisfy Separability with respect to the vector ranking can be separable with respect to policies. See Chapter 2, Section 2.4.

reasonable – approaching utilitarianism at one extreme and the absolute priority of leximin at the other.

In the remainder of this introductory chapter to *Prioritarianism in Practice*, we do the following. First, we briefly survey existing scholarship on prioritarianism in philosophy, economics, and public health (the main academic literatures in which prioritarianism has, to date, played a role), so as to give the reader a sense of the intellectual backdrop for the volume. Second, we provide an overview of the volume.

## 1.2 Scholarship on Prioritarianism: A Brief Survey

### 1.2.1 Philosophy

As mentioned, it was Derek Parfit's 1991 Lindley Lecture that triggered widespread philosophical attention to prioritarianism[10] (Parfit 2000, publishing his 1991 lecture). There is now a substantial body of work in academic philosophy on the topic.

In the lecture, Parfit introduces prioritarianism – contrasting it with egalitarianism – with reference to a hypothetical case previously described by the philosopher Thomas Nagel in his article, "Equality" (Nagel 1979). Nagel imagines that he has two children, the first who is healthy and the second who has a serious health condition and is worse off than the first; and that he faces a choice between moving to a city or a suburb. In the city, the second child would have access to treatment for her condition, and so she would be somewhat better off than in the suburb. In the suburb, the first child would flourish, so much so that the difference for him between moving to the suburb and moving to the city is larger than the benefit the second child would reap from moving to the city.

Parfit uses well-being numbers to present Nagel's case. The first child would be at well-being level 20 in the city, and would gain 5 units moving to the suburb. The second child, who would be worse off than the first regardless of where the family lives, would be at level 9 in the suburb and 10 in the city. See Table 1.1 (from Parfit [2000, p. 83]).

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[10] There is some philosophical work on the concept of prioritarianism (not using that term) that slightly predates Parfit. See McKerlie (1984); Temkin (1983); Weirich (1983).

**Table 1.1.** *Nagel's two-child case, as presented by Parfit*

|                    | First child | Second child |
| ------------------ | ----------- | ------------ |
| Move to the city   | 20          | 10           |
| Move to the suburb | 25          | 9            |

Utilitarianism recommends moving to the suburb: the sum total of the children's well-being is greater in the suburb (34) than the city (30). Nagel, discussing the case, writes that the decision to move instead to the city would be an "egalitarian" decision (Nagel 1979, p. 124). Parfit suggests that the rationale for moving to the city *might* be egalitarian, but it might instead be prioritarian. The aim of the Lindley Lecture is to differentiate these two distinct species of non-utilitarian reasoning.

Parfit observes that the most plausible version of egalitarianism is *pluralist*. Egalitarians endorse "The Principle of Equality": "It is in itself bad if some people are worse off than others" (Parfit 2000, p. 84). But they also should endorse "The Principle of Utility": "It is in itself better if people are better off" (ibid.). An egalitarian who endorsed only the first principle, not the second, would see no difference between everyone being equally well off at a low level of well-being, and everyone being equally well off at a high level of well-being.

Within the space of pluralist egalitarianism, Parfit differentiates between "strong" and "moderate" egalitarians. Strong pluralist egalitarians believe that the "Principle of Equality" may outweigh the "Principle of Utility" even in cases where the more equal outcome is worse for some and better for none. As between an outcome in which everyone is at well-being level $w$, and a second outcome in which some are at $w$ and others are better off than $w$, the strong pluralist egalitarian *might* choose the first outcome. By contrast, moderate pluralist egalitarians accept that, in such a case, the two principles always balance against each other so as to favor the second outcome. In the language of welfare economics, moderate pluralist egalitarians accept the Pareto axiom: if some are better off in outcome $x$ than $y$, and none are worse off, then $x$ is better than $y$.[11]

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[11] "Pareto" is used in Chapter 2 to mean the combination of two axioms: Strong Pareto (if some are better off in one outcome as compared to a second, and none are worse off, then the first outcome is better), and Pareto Indifference (if each

In the two-child case, the Pareto axiom does not come into play: the first child is better off in the suburb, the second in the city. A moderate pluralist egalitarian who gives little weight to equality will recommend the suburb; if she gives more weight to equality, she will recommend the city.

A distinct rationale for moving to the city, Parfit observes, is prioritarianism. Actually, Parfit doesn't use the term "prioritarianism." Instead he speaks of "the Priority View" or "prioritarians." Philosophical nomenclature thereafter shifted slightly, with "prioritarianism" becoming the standard name for what the Lindley Lecture denotes the "Priority View."

Parfit characterizes prioritarianism ("the Priority View") as follows: "Benefitting people matters more the worse off these people are." He continues:

For Utilitarians, the moral importance of each benefit depends only on how great this benefit would be. For *Prioritarians*, it also depends on how well off the person is to whom this benefit comes. We should not give equal weight to equal benefits, whoever receives them. Benefits to the worse off should be given more weight. (Ibid., p. 101)

Depending on how it assigns moral weights to well-being gains at various levels, prioritarianism may recommend moving to the city in the two-child case. It may conclude that the moral impact of a well-being improvement for the second child from level 9 to level 10 is greater than the moral impact of a well-being improvement for the first child from level 20 to level 25.

The crucial difference between egalitarianism and prioritarianism, according to Parfit, is that egalitarians care about "relativities" while prioritarians do not.

[O]n the Priority View, we do not believe in equality. We do not think it in itself bad, or unjust, that some people are worse off than others. This claim can be misunderstood. We do of course think it bad that some people are

person is just as well off in one outcome as a second, then the two outcomes are equally good). For purposes of Parfit's discussion of egalitarianism and prioritarianism, the relevant part of the Pareto axiom combination is Strong Pareto: moderate pluralist egalitarians and prioritarians accept, while strong pluralist egalitarians reject, the Strong Pareto axiom. In this chapter, therefore, we use "Pareto" as shorthand for "Strong Pareto."

worse off. But what is bad is not that these people are worse off than *others*. It is rather that they are worse off than *they* might have been.

Consider next the central claim of the Priority View: benefits to the worse off matter more.... . In this view, if I am worse off than you, benefits to me are more important. Is this *because* I am worse off than you? In one sense, yes. But this has nothing to do with my relation to you.

It may help to use this analogy. People at higher altitudes find it harder to breathe. Is this because they are higher up than other people? In one sense, yes. But they would find it just as hard to breathe even if there were no other people who were lower down. In the same way, on the Priority View, benefits to the worse off matter more, but that is only because these people are at a lower *absolute* level. It is irrelevant that these people are worse off *than others*.... .

The chief difference is, then, this. Egalitarians are concerned with *relativities*: with how each person's level compares with the level of other people. In the Priority View, we are concerned only with people's absolute levels. (Ibid., p. 104)

Parfit does not use axioms to describe prioritarianism. However, his discussion of the difference between prioritarianism and egalitarianism can readily be translated into axiomatic language. The Separability axiom says: the ranking of any two outcomes is invariant to the well-being levels of individuals who are equally well off in both. More precisely: Let $x$ and $y$ be two outcomes such that some individuals are not equally well off in the two (these individuals are "affected" as between $x$ and $y$); and other individuals *are* equally well off in the two (these individuals are "unaffected" as between $x$ and $y$). Further, let $x^*$ and $y^*$ be two other outcomes which are related to $x$ and $y$ as follows: each individual who is affected as between $x$ and $y$ is at the same well-being level in $x^*$ as she is in $x$, and the same well-being level in $y^*$ as she is in $y$ (thus also affected as between $x^*$ and $y^*$); and each individual who is unaffected as between $x$ and $y$ is unaffected as between $x^*$ and $y^*$ (although perhaps at a different well-being level in the $x^*/y^*$ pair than the $x/y$ pair). In other words, the $x^*/y^*$ pair is the same as the $x/y$ pair with respect to everyone's well-being *except* for the well-being levels of the unaffected. Separability requires that, for any two such outcome pairs, the $x^*/y^*$ ranking must be the same as the $x/y$ ranking.[12]

A prioritarian outcome ranking satisfies Separability, while an egalitarian outcome ranking does not. Separability is a parsimonious

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[12] See Chapter 2, Table 2.4.

axiomatic expression of Parfit's statement that prioritarians, unlike egalitarians, are unconcerned with "relativities."

Parfit's discussion also points to two further axioms that are satisfied by prioritarianism: the Pareto axiom (if some are better off in $x$ than $y$ and none are worse off, than $x$ is better than $y$); and the Pigou-Dalton axiom (a pure transfer of well-being from someone better off, to someone worse off, that shrinks the gap between them and affects no one else, is a moral improvement). He writes that the "Priority View . . . contains the idea that benefits are good" (this statement suggests that prioritarians would endorse the Pareto axiom), and that it "merely adds that benefits matter more the worse off the people are who receive them" (which suggests that prioritarians would endorse the Pigou-Dalton axiom, as does Parfit's observation that utilitarians believe in the diminishing marginal utility of resources, while prioritarians believe in the "diminishing marginal moral importance" of well-being itself ) (ibid., pp. 103–105).

The axiom cluster Pareto, Pigou-Dalton, and Separability serves neatly to demarcate between utilitarianism, moderate egalitarianism, and prioritarianism. Prioritarianism satisfies all three. Utilitarianism satisfies Pareto and Separability but not Pigou-Dalton. While strong egalitarians reject Pareto, moderate egalitarians endorse Pareto. They also may endorse Pigou-Dalton;[13] but they reject Separability. Parfit's chief aim in the Lindley Lecture was to show that there is a place in moral reasoning for a view that denies utilitarianism, yet also is not egalitarian. Indeed, he shows that there is a place in *Paretian* moral reasoning for utilitarianism, egalitarianism, and a distinctive approach, prioritarianism. The axiomatic approach allows us clearly to see this. Within the space of Paretian moral views (those that satisfy the Pareto axiom), there is a subspace containing those that also satisfy both Pigou-Dalton and Separability. Prioritarianism, but neither utilitarianism nor egalitarianism, falls within this subspace.

It has become quite common in the contemporary philosophical literature on prioritarianism to describe it in the terms used at the very beginning of the chapter: as the sum of a concave transformation of well-being. This is, in effect, to describe prioritarianism as an SWF: as a rule for ranking well-being vectors, and thereby for ranking outcomes

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[13] See Adler (2019, pp. 95–106), differentiating within the space of non-utilitarian ethical views between those that do, and those that do not, satisfy Pigou-Dalton.

on the assumption that each outcome corresponds to a vector. The Lindley Lecture itself does not do so. In fact, to get from the axiom cluster Pareto, Pigou-Dalton and Separability, to the prioritarian SWF, we need a number of additional assumptions: that well-being is measurable, that the outcome ranking is complete, and that axioms of Anonymity and Continuity are also satisfied. See Chapter 2.

The corpus of philosophical work on prioritarianism triggered by Parfit's contribution is, now, quite rich and complex, and can hardly be surveyed in detail in this chapter. (For surveys of this literature, see Adler [2012, chapter 5]; Adler and Holtug [2019]; Holtug [2010, 2017]; Otsuka and Voorhoeve [2018].) We have been understanding prioritarianism as a species of welfare consequentialism, and indeed this is also Parfit's understanding of it in the Lindley Lecture. One avenue of research pursued in the philosophical literature since Parfit has been to investigate the possibility of "deontic" prioritarianism, i.e., *non-consequentialist* ethical views that are in some sense prioritarian (Nebel 2017; Williams 2012). However, this volume, like much of the literature on policy assessment, works within welfare consequentialism; and deontic prioritarianism (although certainly worth exploring) will not play a role here.

Among contemporary ethicists working within welfare consequentialism, three major lines of critique of prioritarianism can be described. First, some philosophers reject prioritarianism in favor of utilitarianism (Broome 1991; Greaves 2015; McCarthy 2008). One important argument pressed by philosophers in this group is that utilitarianism has important advantages over prioritarianism – and indeed over all non-utilitarian approaches – under uncertainty. Consider the ranking, not of a set of outcomes, but instead of a set of choices each understood as a probability distribution across outcomes. A variety of plausible axioms govern this set-up, including the ex ante Pareto axiom. While all prioritarians endorse the Pareto axiom (an axiom concerning the outcome ranking), a dilemma arises with respect to the ex ante Pareto axiom. Prioritarians must either reject the ex ante Pareto axiom or a very plausible Dominance axiom.[14] Prioritarianism can be specified for conditions of uncertainty; but however thus specified, it cannot satisfy both ex ante Pareto and Dominance. By contrast,

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[14] Dominance requires that if one policy produces a better outcome than a second policy in every state of nature, then the first policy must be ranked better.

utilitarianism under uncertainty satisfies both of these axioms. See Chapter 2.

A second line of response to prioritarianism is egalitarian. Parfit, recall, writes: "[O]n the Priority View, we do not believe in equality. We do not think it in itself bad, or unjust, that some are worse off than others" (Parfit 2000, p. 104). Egalitarians have pressed the case that we *should* care about the relative well-being of different individuals in the population. For example, Larry Temkin has argued that "comparative fairness" is an important moral consideration: it is unfair that one person is worse off than others, at least absent responsibility for this disparity on the part of the worse-off one (Temkin 1993, 2003a, 2003b). Thus, in comparing any two outcomes, $x$ and $y$, we should take account of the full distribution of well-being in $x$ and the full distribution in $y$ – that is, how each person in $x$ compares to everyone else in $x$, and how each person in $y$ compares to everyone else in $y$, including in these comparisons both those individuals affected as between the two outcomes and unaffected individuals. In short, Temkin defends the moral relevance of "comparative fairness" and, in so doing, rejects Separability.[15]

Third, some philosophers have criticized prioritarianism from a standpoint that is neither utilitarian nor egalitarian. The leading example is Roger Crisp, who has defended a view known as "sufficientism" (Crisp 2003). Sufficientism is a complicated view, which incorporates a well-being threshold. It is prioritarian in evaluating well-being transfers between those below the threshold; gives absolute priority to those below the threshold, as against those above; but is utilitarian in evaluating transfers between those above the threshold. The intuition here, which Crisp presses, is that the choice between improving the well-being of a rich person by $\Delta w$ and improving the well-being of a super-rich person by $\Delta w$ is a matter of moral indifference.

In the face of these critiques, a significant number of philosophers have defended prioritarianism (see Adler and Holtug [2019, note 1], citing proponents). Prioritarians can argue that utilitarianism's wholesale indifference to transfers of well-being from better-off to worse-off persons is deeply problematic. Violations of ex ante Pareto are a price

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[15] Michael Otsuka and Alex Voorhoeve (2009, 2018) are also prominent egalitarian critics of prioritarianism.

worth paying (or so prioritarians can contend) for the sake of satisfying the Pigou-Dalton axiom. As against egalitarians, it can be argued that prioritarianism embodies a concern for equity – in the shape of Pigou-Dalton – while also retaining the pragmatic benefits of Separability. Finally, sufficientists can be challenged to specify the well-being threshold that plays a pivotal role in their theory; and the absence of equity concerns above that threshold can reasonably be disputed as well.

The intensive philosophical debate about prioritarianism initiated by Parfit's writings shows it to be a plausible view worth sustained consideration. Although prioritarianism is not immune from challenge, neither is it *dominated* by utilitarianism, egalitarianism, or sufficientism. Prioritarianism as an ethical theory has, we believe, survived the process of rigorous academic scrutiny. It has shown itself to be a serious contender now worth systematically exploring in a more applied manner, as the basis for policy assessment – what this volume attempts to do.

### 1.2.2 Economics

The distinguished scholar John Broome, both a philosopher and an economist, notes that, as of 1991 (when Parfit delivered the Lindley Lecture and Broome published his book, *Weighing Goods*), "prioritarianism was well established amongst economics, but was only just being discovered by philosophers" (Broome 2015, p. 219).

As already mentioned, the term "prioritarianism" was certainly *not* well established in economics as of the Lindley Lecture, and is little used by economists even now. What was established was the prioritarian SWF. Beginning around 1970, the concept of the SWF began to play a key role in various economic literatures: in particular, theoretical welfare economics, optimal tax theory, and the measurement of inequality. The prioritarian SWF (the sum of concavely transformed well-being) emerged as one possibility among others.

The concept of the SWF dates from a 1938 article by Abram Bergson and was adopted by Paul Samuelson in his influential 1947 work, *Foundations of Economic Analysis*. However, further development of the concept was interrupted by Kenneth Arrow's groundbreaking 1951 study of social choice, *Social Choice and Individual Values*. In 1970, Amartya Sen's *Collective Choice and Social Welfare*

re-energized the SWF concept, and it has since then flourished as a foundational construct in theoretical welfare economics.

The setup of Arrow's analysis is this: each individual in the population has an individual ranking of the possible outcomes, and the social ranking wholly depends upon this profile of individual rankings. No other information is allowed. "In particular, the very formulation of the problem rules out the use of *interpersonal comparisons* of well-being or utility. Classical social decision rules such as utilitarianism, or any other rule which allows for trade-offs between the utilities experienced by different individuals, simply cannot be expressed" in the Arrow setup (Bossert and Weymark 2004, p. 1100).

In *Collective Choice and Social Welfare*, Sen enriches the Arrow setup by supposing that the social ranking of outcomes depends upon individuals' well-being numbers rather than individuals' preference orderings. Specifically, he supposes that there is a functional relation from a given well-being measure $w(\cdot)$ to an outcome ranking (Sen 1970 pp. 118–130). Under some basic, quite plausible assumptions, this functional relation takes the form of an SWF (as we are using that term). A given well-being measure $w(\cdot)$ maps each outcome $x$ onto the well-being vector $(w_1(x), \ldots, w_N(x))$, with $w_i(x)$ the well-being number of individual $i$ in $x$ according to well-being measure $w(\cdot)$. There is a rule for ranking these vectors – the SWF – and the outcomes are ranked correspondingly.[16]

*Collective Choice and Social Welfare* has inspired a rich and continuing theoretical literature regarding SWFs. (For surveys of this literature, see Blackorby, Bossert and Donaldson [2002; 2005, chapters 2–4]; Boadway and Bruce [1984, chapter 5]; Bossert and Weymark [2004]; d'Aspremont and Gevers [2002]; Mongin and d'Aspremont [1998]; Weymark [2016].) A core aim of this literature is to provide axiomatic characterizations of SWFs. An axiom is a constraint on the ranking of well-being vectors.

The literature, by virtue of its axiomatic focus, is not limited to utilitarianism. We start with a wholly generic conception of the SWF – *any* rule for ranking well-being vectors – and ask how various

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[16] We are using the term SWF to mean a rule for ranking well-being vectors. See above, note 6. The so-called "welfarism theorem" establishes the conditions under which the functional relation Sen describes takes the form of an SWF. See Chapter 2, note 57.

axiom combinations serve to narrow down the possibilities. Some axiom combinations *will* lead us to the utilitarian SWF, but others will preclude utilitarianism, or allow both the utilitarian SWF and other rules. Prioritarian SWFs, or particular species of prioritarian SWFs (not using that term!), show up repeatedly in this axiomatic literature. Chapter 2 in this volume, building from the axiomatic literature, uses the four axioms Pareto, Anonymity, Separability, and Continuity to characterize a "generalized utilitarian" class of SWFs including both the utilitarian SWF and prioritarian SWFs. Prioritarian SWFs are the unique subclass of generalized utilitarian SWFs that satisfy not only the four axioms just mentioned but also the Pigou-Dalton axiom.

Economists working in this literature often assume that the well-being measure $w(.)$ is based upon individuals' utility functions – a utility function being a mathematical construct that tracks individual preferences. $w_i(x) = u_i(x)$, with $u_i(x)$ the number assigned to $x$ by individual $i$'s utility function $u_i(\cdot)$, and which is such that: if $i$ prefers $x$ to $y$, $u_i(x) > u_i(y)$ and if $i$ is indifferent between $x$ and $y$, $u_i(x) = u_i(y)$. However, the SWF construct is more generic. The theory of well-being underlying $w(\cdot)$ might be a preference-based theory of well-being, but it need not be. In contemporary scholarship regarding well-being, it is a contested question how an individual's well-being relates to her preferences. Although some authors in this volume do adopt a preference view of well-being, that premise is not universal here. See Chapter 3.

Let us now turn to the second body of economic scholarship in which the SWF concept plays a key role: namely, optimal tax theory. In 1971, James Mirrlees published his article, "An Exploration in the Theory of Optimum Income Taxation," which led to the contemporary literature on optimal tax theory and eventually earned Mirrlees the Nobel Prize. The Mirrleesian setup supposes that individuals trade their labor for income; the income a given individual earns from an hour of labor depends upon her productivity, reflected in her wage rate. Individuals' productivities are unobservable by government, but their incomes are observable. An individual's utility depends upon her income (which she consumes) and her leisure (the amount of time left over after laboring). Government sets tax rates on income so as to maximize the value of its SWF – taking account of the fact that each individual will respond to a given tax schedule by choosing between

the various income/leisure combinations available to her (given her wage rate) so as to maximize her own utility.

This setup, and variations on it, has been the foundation for a half-century of optimal tax scholarship since 1971. The place of prioritarian SWFs in optimal tax theory is discussed in Chapter 4 of this volume. Although most analyses in this literature do use a utilitarian SWF, prioritarian SWFs also figure in this literature – and indeed do so from the very beginning, in Mirrlees' 1971 article. As the authors of Chapter 4 (Tuomala and Weinzierl) explain, the general expression for the SWF adopted by Mirrlees (1971) is an additive SWF that admits of both utilitarian and prioritarian specifications. In his numerical analyses, Mirrlees specifically works with an SWF that is the sum of $g(u_i)$, with $g(u_i) = -\frac{1}{\beta}e^{-\beta u_i}$, $u_i$ the utility of individual $i$, for $\beta > 0$ (a prioritarian SWF); and $g(u_i) = u_i$ for $\beta = 0$ (the utilitarian SWF).[17]

Finally, prioritarian SWFs have an important place in the economic literature on inequality measurement. One strand in this literature (as reviewed, e.g., in Lambert 2001) seeks to derive an inequality metric from an SWF. A seminal contribution of this sort, and one that brings prioritarian SWFs into play, is Anthony Atkinson's 1970 article, "On the measurement of inequality."

Atkinson supposes that the SWF is defined on the distribution of individual incomes. Let $y_i$ be the income of individual $i$. Atkinson supposes that the SWF is score-based, additive and symmetric in individual incomes. If $\mathbf{y} = (y_1, y_2, \ldots, y_N)$ is a distribution of incomes to $N$ individuals, then the SWF assigns score $S(\mathbf{y})$ to this distribution, with $S(\mathbf{y})$ the sum of some function $f(\cdot)$ of individual income: $S(\mathbf{y}) = \sum_{i=1}^{N} f(y_i)$.[18] Atkinson then defines an inequality metric corresponding to this SWF, using the notion of an "equally distributed equivalent." For a given distribution of income $\mathbf{y}$, let $y_{\text{EDE}}$ be the level of income which – if had by all $N$ individuals – would yield the same level of social welfare as $\mathbf{y}$. Then the degree of inequality corresponding

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[17] Mirrlees expresses the SWF as an integral, but to simplify we instead express it as a summation. We have swapped his "$G(\cdot)$" for "$g(\cdot)$," which is the symbol generally used in this volume for the prioritarian transformation function.

[18] Atkinson, like Mirrlees, expresses the SWF as an integral, but again we simplify by expressing it as a summation. We also substitute the more generic symbol "$f(\cdot)$" for Atkinson's "$U(\cdot)$." Atkinson assumes that $f(\cdot)$ is strictly increasing and weakly concave.

to $\mathbf{y}$, Atkinson proposes, can be quantified as $1 - y_{EDE}/\mu(\mathbf{y})$, with $\mu(\mathbf{y})$ the mean income in $\mathbf{y}$.

Adding the assumption that the inequality metric should be invariant to proportional rescalings of income (multiplication by a positive constant), Atkinson narrows down the functional form of the SWF. It must take the form $S(\mathbf{y}) = \sum_{i=1}^{N} \frac{y_i^{1-\gamma}}{1-\gamma}$, $\gamma \geq 0$.[19] The corresponding inequality metric is what is now known as the Atkinson inequality metric.

The restrictive assumption of an income-based SWF is not essential to Atkinson's inquiry. This assumption is restrictive because an individual's well-being depends upon more than her income. As in theoretical welfare economics and the optimal tax literature, the inputs to the SWF should be seen as well-being numbers, rather than incomes – which become one input into well-being. Atkinson's analysis immediately translates to this more general setup. With $\mathbf{w}$ a well-being vector, the SWFs described by Atkinson take the form $S(\mathbf{w}) = \sum_{i=1}^{N} \frac{w_i^{1-\gamma}}{1-\gamma}$, $\gamma \geq 0$. Such SWFs are referred to in this volume as Atkinson SWFs; they are also known in the literature as iso-elastic or constant-elasticity-of-substitution SWFs. Atkinson SWFs with $\gamma > 0$ are a class of prioritarian SWFs; $\gamma$ is the degree of priority for the worse off. An Atkinson SWF with $\gamma = 0$ is just the utilitarian SWF.

Serge-Christophe Kolm wrote about the relation between inequality metrics and SWFs shortly before Atkinson (Kolm 1969).[20] Kolm's chapter, like Atkinson's article, is now seen as a foundational work in inequality measurement. Prioritarian SWFs figure in this chapter, as they do in the Atkinson analysis. In particular, Kolm discusses SWFs of the form $S(\mathbf{w}) = -\sum_{i=1}^{N} e^{-\beta w_i}$,[21] which become prioritarian with $\beta > 0$ and are now often termed Kolm-Pollak SWFs.[22]

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[19] In the special case of $\gamma = 1$, $S(\mathbf{y}) = \sum_{i=1}^{N} \log(y_i)$.

[20] Atkinson was not aware of this work until after his article had been accepted for publication. See Atkinson (1970, p. 262).

[21] This is the same SWF mentioned above with reference to Mirrlees, except that Mirrlees multiplies the SWF by a factor $(1/\beta)$ – which makes no difference to the ranking of well-being vectors.

[22] "Pollak" is in reference to Pollak (1971), who also discusses this functional form.

The reader may well find it puzzling to learn that prioritarian SWFs play a role in the literature on inequality measurement. After all, philosophers differentiate between prioritarianism and egalitarianism. That distinction is the central thrust of Parfit's Lindley Lecture, as we have seen. So how can a prioritarian SWF

Although our brief survey has focused on theoretical welfare economics, optimal tax theory, and inequality measurement – since these are literatures in which the SWF concept has been central for decades – it should also be noted that this concept is currently yet more widespread in economics. (For example, it has become a key part of the economic literature on climate change.) The reader interested to locate scholarship in economics that employs a prioritarian SWF, outside the three literatures just described, should consult the policy chapters in this volume – which cite extant research on prioritarianism.

### 1.2.3 Health Policy

In the health sector, methods for measuring health and health outcomes are fairly well developed and health interventions and policies are often assessed though economic evaluations before they are introduced and covered by health insurance or public funds. The dominant method for economic evaluation is cost-effectiveness analysis, sometimes called cost per QALY[23] analysis (Drummond et al. 1987).

A special concern for the worse off in terms of health – sometimes defined in terms of lifetime health and sometimes in terms of remaining future health – has been identified as important in addition to the standard objective of health maximization (Fleurbaey and Schokkaert 2009; Johri and Norheim 2012; Ottersen 2013; Dolan et al. 2005; Sassi et al. 2001).

Prioritarianism applied to health is typically understood in a restricted sense, as a way to rank social states according to a subset

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correspond to an inequality metric? For example, Atkinson SWFs are a type of prioritarian SWF (as mentioned), and yet link up with the Atkinson inequality metric. How does this happen?

The answer requires close attention to the different meanings of "egalitarian." Prioritarianism is distinct from egalitarianism, as per Parfit, in that prioritarianism does not attend to "relativities." Using the SWF formalism, Parfit's distinction is best captured as a distinction between SWFs that satisfy (prioritarian) or fail to satisfy (egalitarian) Separability. An inequality metric is a formal economic tool that quantifies the degree of inequality in a distribution of some item (income, well-being). Various SWFs have corresponding inequality metrics; failing Separability is not a necessary condition for having one; and so it turns out that prioritarian SWFs, notwithstanding the fact that they satisfy Separability, do have corresponding inequality metrics. See Chapter 2, Section 2.10.

[23] QALY is an acronym for "quality adjusted life year."

of well-being: distributions of expected lifetime health (longevity and morbidity) by disease group or socioeconomic status (Norheim et al. 2021). Such evaluations take information about the baseline level of health and increments in health from this baseline into account (for some early studies and theoretical contributions, see Anand et al. 2001; Asaria et al. 2016; Asaria et al. 2015; Hernæs et al. 2017; Johansson and Norheim 2011; Norheim 2013; Norheim et al. 2020). Taking health as the measure of well-being, distributions can then be summarized by prioritarian SWFs, and the impact on the distribution of well-being from alternative health policies can be evaluated.

One reason for restricting information to health only, in this literature, is practical or institutional. The policy questions relevant for priority setting, e.g., the relative rank of new expensive drugs, are typically formulated in terms of health-, not well-being-impact. The health sector (with its limited budget) is responsible for improving health, not well-being. Prioritarian SWFs have been presented as alternatives to cost-effectiveness analysis in health, and are therefore only concerned about total health and its distribution.

Cookson and colleagues have proposed a broader category of economic evaluations – distributional cost-effectiveness analysis (DCEA) – that may include health prioritarian approaches, but also includes other ways of evaluating distributions of health and non-health outcomes (Cookson et al. 2021). They describe two ways of using CEA to address distributional concerns: (1) equity impact analysis, which quantifies the distribution of costs and effects by equity-relevant variables such as socioeconomic status, location, ethnicity, sex, and severity of illness; and (2) equity trade-off analysis, which quantifies trade-offs between improving total health and assigning higher weights to health gains for the least advantaged (poorest with least health). Hitherto DCEA has tended to use either direct equity weights or rank-dependent equity weights (Bleichrodt et al. 2004), but analysis based on Kolm-Pollak or Atkinson prioritarian SWFs is also recommended (Norheim et al. 2021).

Another strand of this literature presents the social welfare function approach as an alternative to benefit-cost analysis using the value per statistical life (VSL). This approach is broader and sees both health (often mortality reduction), and income or consumption as components of well-being (Adler et al. 2014; Adler et al. 2021). These studies find that the way in which VSL ranks risk-reduction measures is

insensitive to the Pigou-Dalton transfer principle and differs from both utilitarian and prioritarian frameworks.

Theoretical and empirical applications have been developed, independently, by using equivalent income as a measure of well-being (Fleurbaey et al. 2013; Samson et al. 2018). Compared to traditional cost-effectiveness analysis in health technology assessment, they show that it is feasible to go beyond a narrow evaluation of health outcomes in a richer welfare framework that includes both health and income, that takes account of the distinction between an ex ante and an ex post evaluation approach, and that captures distributional effects in a broader institutional setting, including how health services are financed.

In the policy context, some recommendations and guidelines have been inspired by prioritarianism applied to health. There may be insufficient resources or time available to design and undertake a full distributional cost-effectiveness analysis of a new health technology involving detailed modeling of all distributional consequences. It may, however, still be possible to provide a useful indication of the likely health equity impacts of decisions.

One approach is to conduct a partial DCEA that just compares how badly-off program recipients are in terms of baseline health compared with the wider population served by the decision-making organization (the "baseline health comparison" approach). If program recipients are worse off than non-recipients, then this provides a simple indication that the program may tend to improve health for the worse off. This approach has been used to inform priority setting decisions in low-income countries, and in health technology reimbursement decisions in Norway and the Netherlands, by assessing baseline health of program recipients and making a judgment about severity of illness compared with non-recipients (Ottersen et al. 2016; van de Wetering et al. 2013). This approach has important limitations, however, and makes no attempt to provide a distributional breakdown of all effects and costs.

The World Health Organization and the World Bank have championed cost-effectiveness as a key criterion for global and national priority setting (WHO 2020; World Bank 1993). In 2014, the World Health Organization's Consultative Group on Equity and Universal Health Coverage (UHC) published the report *Making Fair Choices on the Path to UHC* (WHO 2014). This work was part of the response to more than 70 low- and middle-income countries that had requested policy support and technical advice for UHC reform from

the WHO. The consultative group included ethicists, philosophers, economists, health-policy experts, and clinical doctors, spanning 13 nationalities. This helped the group address fundamental ethical issues and difficult trade-offs when defining an essential health benefit package.

The report identified a growing consensus that the aims of the health system should be to promote health maximization, fair distribution, and protection against poverty and financial risk. From these guiding principles, the consultative group recommended three criteria for priority setting: cost-effectiveness, priority to the worse off, and financial risk protection. This was, fundamentally, a novel approach in the WHO context where cost-effectiveness had been the key criterion for priority setting. Priority to the worse off was given a prominent place in these new recommendations. The justification was prioritarian: priority to the worse off is important because benefitting them matters more than those who are better off. WHO also recommended to adopt a population perspective and focus not merely on those *currently* worse off but also on the people who are expected to be worse off over their lifetime. The worse off were defined as: (a) those with the most severe, large individual disease burden, and (b) the poorest or otherwise disadvantaged. Since the most cost-effective services do not always benefit the worse off, services targeting the worse off should be assigned extra value.

Although no formal policy evaluation framework was developed, the principle of prioritarianism was recognized, and this may be encouraging for the further development of methods in this area.

## 1.3 This Volume

This volume is a systematic study of prioritarianism as a methodology for policy analysis and for measuring social condition. The theory of prioritarianism has been the topic of intensive investigation for decades, now, in philosophy and welfare economics, as surveyed in Section 1.2. Much less studied has been the *application* of prioritarianism to problems of governmental policy. This is what the current volume, *Prioritarianism in Practice* aspires to do – and in a reasonably comprehensive fashion.

Although prioritarianism in the philosophical literature is sometimes discussed as a type of ethical view with certain features, and not as an

SWF – recall that this is Parfit's approach in the Lindley Lecture – the present volume is oriented around prioritarian *SWFs*: around the family of SWFs that take the form of summing concavely transformed well-being. It is the SWF framework that rigorously operationalizes prioritarianism as a tool for policy assessment. For reasons rehearsed in Chapter 2, contributors generally focus more specifically on two quite tractable subclasses of prioritarian SWFs: Atkinson SWFs and Kolm-Pollak SWFs.

At the heart of the volume are six chapters analyzing prioritarianism in various policy domains – taxation (Chapter 4), health policy (Chapter 6), risk regulation (Chapter 7), climate policy (Chapter 8), education (Chapter 9), and the COVID-19 pandemic (Chapter 12) – and one examining prioritarianism as an indicator of social condition (Chapter 5). These chapters both review existing work on applications of prioritarianism within the policy domain (such as exists), and report on new research. Many of the analyses described in these chapters are new.

The chapters generally apply prioritarianism in tandem with utilitarianism. This is done both because of utilitarianism's dominance in ethical thought, and because the normative case for prioritarianism proceeds by way of comparison to utilitarianism. It shares many of utilitarianism's attractive features, but adds the further feature of an extra concern for the well-being of the worse off. It is therefore important to see how this difference translates into a difference in policy advice.

Some chapters also compare the prioritarian methodology to dominant non-SWF tools within the domain, specifically benefit-cost analysis (BCA) or cost-effectiveness analysis (CEA).

These application chapters are firmly buttressed by three theory chapters: Chapters 2, 3, and 11. Chapter 2 systematically presents the theory of prioritarian SWFs. Chapter 3 discusses the construction of the well-being measure $w(\cdot)$ that is the linchpin for prioritarian as well as other SWFs. Chapter 11 integrates prioritarianism into the theory literature on equality of opportunity. Finally, Chapter 10 is a rich empirical chapter reviewing empirical research on ethical preferences.

What follows are brief chapter summaries.

Chapter 2, "Theory of Prioritarianism," reviews the SWF framework and provides a detailed discussion of the specific features of

prioritarian SWFs as distinct from others. The chapter describes the major types of SWFs. It discusses the axiomatic characterization of SWFs, via axioms that have been mentioned in this Introduction: Pareto, Anonymity, Separability, Continuity and Pigou-Dalton. Prioritarian SWFs, and only these, satisfy all five axioms. The chapter reviews the major methodologies for applying prioritarianism under conditions of uncertainty: "ex post" prioritarianism (EPP), "ex ante" prioritarianism (EAP), and expected equally-distributed-equivalent prioritarianism (EEDEP). It analyzes the two major subfamilies of prioritarian SWFs, namely Atkinson SWFs and Kolm-Pollak SWFs. Chapter 2 also discusses interpersonal well-being comparisons: all SWFs require some such comparisons, and prioritarian SWFs require well-being difference as well as level comparisons. Alongside its formal analysis of prioritarianism, the chapter offers a normative defense of prioritarianism.

Chapter 3, "Well-Being Measurement," provides theoretical foundations for the construction of a well-being measure $w(\cdot)$ that contains both intra- and interpersonal well-being information, concerning both well-being levels and well-being differences. The dominant theory of well-being in economics is preference-based: a given individual is better off in $x$ than $y$ if and only if that individual prefers $x$ to $y$ (in light of her actual preferences or, perhaps, her well-informed and otherwise "laundered" preferences). To account for the dependence of well-being on preferences, Chapter 3 conceptualizes the well-being measure as operating on individual "histories" – with a "history" being a combination of a possible bundle of individual attributes and a preference. $w(\cdot) = w(a, R)$, with $(a, R)$ a history containing attribute bundle $a$ and preference $R$. This is a very general and flexible setup. Preference-based well-being measures satisfy the Deference Principle: $w(a, R) \geq w(a^*, R)$ if and only if preference $R$ is such as to weakly prefer $a$ to $a^*$. Chapter 3 reviews the two major approaches in the literature to constructing a preference-based well-being measure: the "equivalence approach" (the widely used equivalent-income well-being measure is one specific version of the equivalence approach), and measuring well-being with von Neumann/Morgenstern (vNM) utilities. However, the setup here also allows for non-preference-based well-being measures – such as a $w(\cdot)$ grounded in an objective good/ "capability"-based account of well-being – since well-being numbers can be assigned to histories without satisfying the Deference Principle.

Chapter 4, "Prioritarianism and Optimal Taxation," discusses the use of a prioritarian SWF to set tax policy – in particular, to design income taxes. The chapter works within the literature on optimal taxation that grows out of the work of James Mirrlees (1971), noted above. The difficult design problem at the heart of the income tax system is how to advance government's revenue-raising and distributional goals while taking account of the disincentive effects of higher tax rates. The Mirrleesian setup seeks to tackle this design problem. In the setup, the policy objective is to maximize an additive SWF (in the terminology of this volume, a generalized-utilitarian SWF), which can be either utilitarian or prioritarian, subject to a revenue constraint. An individual's utility depends upon her consumption and her leisure. The policymaker chooses a schedule of income tax rates so as to maximize the SWF; each individual, in turn, maximizes her utility by trading labor for income, in light of her productivity (wage rate) and the income tax schedule. This framework yields an analytic expression for optimal marginal income tax rates. Chapter 4 discusses how the functional form of the SWF (utilitarian or prioritarian) figures into the analytic expression. The chapter then reports an extensive series of simulations, with optimal income tax schedules that depend upon: the distribution of individual productivities; the shape of individual preferences; whether the SWF is utilitarian or, alternatively, prioritarian (Atkinson or Kolm-Pollak) with various degrees of priority for the worse off; and government's exogenous revenue requirements. These simulations tend to find that the shift from utilitarianism to prioritarianism (even at the lower end of the range of priorities considered) yields significant differences in optimal marginal tax rates. Finally, the chapter reports on "inverse optimum" research, which examines the implicit social objective reflected in actual tax laws.

Chapter 5, "Prioritarianism and Measuring Social Progress," discusses how prioritarianism can be used as a way to move "beyond GDP" as the indicator of a society's condition. The limitations of GDP (gross domestic product) have been much discussed; it equals the total market value of final goods and services produced in a country in a given time period, ignoring both non-market goods and the distribution of income. SWFs provide a much richer framework for assessing societal condition. The well-being measure $w(\cdot)$ can take as its argument any type of individual attribute (not merely marketed goods and services); a utilitarian SWF is sensitive to the distribution of income;

a prioritarian SWF is sensitive to the distribution of well-being itself. Chapter 5 focuses, specifically, on the use of utilitarian and prioritarian SWFs as a measure of social *progress* (change in social condition over time). The chapter sets out an analytic framework that meshes with a utilitarian, Atkinson, or Kolm-Pollak SWF; and that expresses social progress in terms of the absolute or percentage change in well-being at different percentiles of the well-being distribution (a growth-incidence curve). The chapter then surveys existing scholarship in economics using SWFs to measure social progress. This literature review illustrates the flexibility of the methodology with respect to the nature of well-being; it covers a variety of well-being measures, including income alone, objective goods, happiness, and preference-based measures. Finally, Chapter 5 uses a detailed longitudinal dataset for one country (Russia for the period 1995–2005) as an empirical illustration. This exercise not only illustrates the use of utilitarian and prioritarian SWFs as metrics of social change during a tumultuous period in Russia's history, but also showcases the two leading preference-based well-being measures analyzed in Chapter 2, namely the equivalence approach and vNM utilities.

Chapter 6, "Prioritarianism and Health Policy," focuses on the assessment of health policy via a prioritarian or utilitarian SWF in tandem with a measure of individual lifetime well-being that takes account not merely of an individual's longevity and her health across the lifespan, but also non-health components of well-being (in particular, income). Although there is an existing SWF-based literature on health policy, scholarship here generally ignores well-being attributes other than longevity and health. Because income is a major determinant of well-being, and because the costs of health policies are ultimately borne by individuals in the form of reduced income, a fuller SWF-based analysis should consider lifespan, health, *and* income as inputs into the well-being measure $w(\cdot)$. Chapter 6 shows, in detail, how this can be done. It analyzes two different ways to construct a lifetime well-being measure, both versions of the equivalence approach discussed in Chapter 2: the equivalent-life metric and the equivalent-income metric. (For a given life-history described as a temporal profile of income and health states across some lifespan, the equivalent life is the lifespan which would be equally good if combined with a reference profile of income and health; and the equivalent income is the income which would be equally good if combined with a reference lifespan

and health profile.) Finally, Chapter 6 combines these measures with a utilitarian SWF and an Atkinson prioritarian SWF – the latter applied under uncertainty using both the EAP and EPP formulations – in a simulation model of the choice of health policy. The choice between out-of-pocket payment and public funding of cancer treatment in a low-income country is assessed using this SWF-based approach as compared with the standard health-policy-analytic methodologies, namely BCA and CEA.

Chapter 7, "Prioritarianism and Fatality Risk Regulation," discusses SWF-based evaluation of policies that reduce fatality risks (which is the main aim or at least a significant benefit of numerous types of governmental policies, including anti-pollution laws, workplace safety codes, food safety regulation, the regulation of the transportation sector, natural-disaster planning, and others). BCA – which evaluates policies by converting well-being effects into monetary equivalents and summing up these equivalents – is a widely used methodology for assessing risk-reduction policies. The so-called value per statistical life (VSL) is the linchpin concept here. $VSL_i$ is, in effect, a conversion factor that takes a small risk reduction for individual $i$ and translates that reduction into a monetary equivalent. The counterpart concept for the SWF is the "social value of risk reduction" ($SVRR_i$), namely the increase in social welfare per unit of risk reduction to individual $i$. The authors of Chapter 7 (Hammitt and Treich), along with other authors in this volume (Adler and Ferranna), have published a number of works developing the SVRR concept and comparing it to VSL. Chapter 7 reviews this scholarship and also reports on new contributions by the chapter authors. The work generally uses a utilitarian SWF and a prioritarian SWF applied in accordance with EPP or EAP. A headline finding is that BCA using VSL gives a significantly different picture of the comparative social value of risk reduction (as between individuals of different ages or incomes) than both the utilitarian and the prioritarian SVRRs. Substantial differences between utilitarianism and prioritarianism also emerge. Utilitarianism is considerably less biased toward the rich than BCA, but still prefers to allocate a unit of risk reduction to a higher-income than a lower-income individual; prioritarianism with a sufficient degree of concavity in the transformation function will neutralize or reverse this preference. Prioritarianism gives extra weight to risk reduction for the young, beyond the utilitarian preference.

Chapter 8, "Prioritarianism and Climate Change," compares utilitarian and prioritarian assessments of climate policy. The SWF framework is well established in the economics literature on climate change. However, prioritarianism has to date played little role. Instead, the dominant SWF is a *discounted* utilitarian SWF: the sum of the utility of present and future generations, with utility a function of individual consumption, and with consumption utility adjusted by a time-discount factor that is a decreasing function of time (so as to downweight the utility of a later-in-time generation relative to that of an earlier generation). A central concept for climate policy is the so-called social cost of carbon (SCC), which expresses the harms of carbon emissions to the well-being of future generations in terms of an equivalent consumption loss for the present. The discounted-utilitarian SWF just described is used to calculate the SCC. Chapter 8 compares this discounted-utilitarian SCC to the SCC as calculated by a non-discounted-prioritarian SWF: one that sums the consumption utility of present and future generations, plugged into a prioritarian transformation function $g(\cdot)$, and without a time-discount factor. In a deterministic setting, assuming economic growth, later generations have greater consumption than earlier ones; they are better off than the present, and increasing the priority for the worse off (the concavity of the transformation function) will tend to lower the prioritarian SCC – just as increasing the utilitarian time-discount factor will tend to lower the discounted-utilitarian SCC. Matters become more complicated when uncertainty[24] is introduced; there is now some chance of a climate catastrophe, in virtue of which the future will be worse off than the present. Chapter 8 considers how prioritarianism applied with EAP, EPP, and EEDEP compare to expected discounted utilitarianism in calculating the SCC under uncertainty.

Chapter 9, "Prioritarianism and Education," examines what prioritarianism recommends with respect to the allocation of educational resources. The chapter first reviews existing academic literatures that evaluate or seek to design educational policies. A desire to equalize educational attainments or opportunities is evident in these literatures, but they diverge in how they conceptualize equality – in terms of

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[24] We use the term "uncertainty" generically to mean the absence of certainty, including the case of well-defined probabilities; chapter 8 refers to this as the case of "risk."

realized attainments or, rather, opportunities; and in terms of students' long-run economic attainments as a function of education, ability, and social background or, rather, in terms of educational attainment.[25] Chapter 9 argues that the appropriate "currency" for a prioritarian SWF, at least at the level of primary education, and at least with respect to resource-allocation choices made within each school, should be students' educational attainment. An opportunity rather than attainment metric presupposes some degree of individual responsibility for low attainment, but young students lack such responsibility; and a classroom teacher should not be asked to shift his effort away from a low-performing student simply because that student comes from a more privileged background (and thus has greater expected economic attainment). The heart of the chapter is a detailed formal model, whereby a school team uses a utilitarian, prioritarian, or Rawlsian (leximin) SWF to decide how to allocate resources among students of differing abilities and social backgrounds, and over two stages of primary education. The model's assumptions – regarding the interaction of class resources, ability, and background to produce educational attainment – are grounded in empirical findings from the literature on educational policy. Chapter 9 finds significant differences between the utilitarian, prioritarian, and Rawlsian allocations. The chapter then discusses possible extensions of the model: to address policy choices by an educational minister (allocating resources among schools) rather than a school team (allocating resources among students within a school); to address non-primary rather than primary education; to cover policy tools other than resource allocation; and in other ways.

Chapter 10 is entitled "Empirical Research on Ethical Preferences: How Popular is Prioritarianism?" This chapter plays a unique role in the *Prioritarianism in Practice* volume. While most chapters consider the policy implications of prioritarianism in various domains, and others elaborate theoretical underpinnings, Chapter 10 reviews the survey and experimental literature, with the aim of determining what this literature shows regarding popular support for prioritarianism. The focus of the chapter is surveys and lab experiments that seek to

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[25]  Chapter 9 uses the term "outcome," but because "outcome" is used here to mean a social outcome rather than the outcome for a particular individual, we substitute the term "attainment."

ascertain individuals' ethical preferences (their impartial preferences, as opposed to self-regarding preferences, or preferences that combine altruism or envy with self-interest). Ethical preferences can be elicited by prompting survey respondents or experimental participants to take the perspective of the social planner, or to imagine themselves making choices for a society under a veil of ignorance (without knowledge of what specific position they occupy in that society). The chapter pays closest attention to surveys or experiments that test support for the axioms of prioritarianism, or that seek to calibrate the degree of priority for the worse off in a prioritarian SWF. To be sure, prioritarianism is a normative theory, and its normative force does not hinge on popular acceptance. Still, as the chapter argues, empirical research on ethical preferences will be relevant to the would-be prioritarian policymaker for two reasons: as evidence of political feasibility, and as input into the policymaker's own reflective equilibrium. The chapter does not find broad empirical support for the Pigou-Dalton axiom, which is the axiom that differentiates utilitarianism from prioritarianism.[26] This finding needn't undercut a policymaker's own commitment to prioritarianism, or lead her to conclude that a particular prioritarian policy intervention is infeasible – but it is certainly an important empirical result.

Chapter 11 engages the topic of "Prioritarianism and Equality of Opportunity." Within the structure of welfare consequentialism, equity considerations are expressed in terms of the distribution of well-being. Whether outcome $x$ is more or less equitable than $y$ depends upon how well-being is allocated among the population in the two outcomes. This reveals an important normative limitation of welfare consequentialism, and of the SWF framework as an implementation thereof: namely that they fail to differentiate between (1) inequality in well-being that arises in virtue of characteristics beyond individuals' control, and (2) inequality for which the individuals concerned are partly responsible. This critique of welfare consequentialism has been pressed by the philosophical literature on "luck egalitarianism" (Lippert-Rasmussen 2016) and, within economics, by a substantial body of formal and empirical work under the rubric of "Equality of Opportunity" (EOp) (Ferreira and Peragine 2016). The EOp setup characterizes individuals in terms of "circumstances" and "effort" as

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[26] See Chapter 2.

well as well-being (or a measurable proxy for well-being, such as income). The animating ideas of EOp theory are, first, a "Principle of Compensation" (differences in circumstances beyond the control of the individuals warrant compensation, as they generate unfair inequalities in well-being) and, second, a "Principle of Reward" (efforts should be rewarded, and the resulting inequalities in well-being should be preserved). The key axioms of prioritarianism (in particular Anonymity and Pigou-Dalton) are inconsistent with these principles. The analytic work undertaken by Chapter 11, therefore, is to systematically examine how Pigou-Dalton and Anonymity might be modified so as to cohere with various specific versions of the compensation and reward principles; and to characterize the opportunity-adjusted prioritarian SWFs and dominance criteria that arise from this merger of prioritarianism and the EOp setup. The analytic tools developed in Chapter 11 are then illustrated in an empirical exercise using South African data.

Although incorporating considerations of individual responsibility may not be appropriate for every policy domain (see the arguments on this topic in Chapter 9, regarding primary education), there is a plausible normative case for doing so in many domains. Indeed, one of the findings of the empirical literature on ethical preferences, reviewed in Chapter 10, is that survey respondents generally wish to compensate for income differentials that result from brute luck, but not those that result from differential effort. The theoretical work on opportunity-adjusted prioritarianism in Chapter 11, therefore, can be seen as a stepping stone to future applied work.

The final chapter in *Prioritarianism in Practice* – Chapter 12, "Prioritarianism and the COVID-19 pandemic"—was added to the project once it became clear that the COVID-19 pandemic would be one of the major policy challenges of our time. The chapter shows how prioritarianism can be employed as a tool to guide the types of policy choices that were thrust onto governments by the pandemic. Two such choices were especially salient. First, governments had to weigh the fatality-risk-reduction benefit of social distancing measures, against the economic costs. Second, as vaccines became available, allocation rules – specifying which groups would come first in receiving vaccination – needed to be developed. Both types of policy choices are closely studied by Chapter 12. The chapter was drafted during 2020, while the pandemic was still raging, and thus is intended not to provide a definitive after-the-fact review of the virus' features or of policy interventions,

but rather to illustrate the applicability of prioritarianism in guiding responses to this catastrophe.

The core of Chapter 12 is a simulation model, calibrated to data available as of the drafting date, in which the population is divided into two age groups, young (under 65) and old (65+), each with five income quintiles. Being infected by COVID-19 increases the risk of both the young and the old of dying prematurely, but dramatically more so for older individuals. Lifetime well-being for a given lifespan is calculated as a function of longevity and income each year alive, using the vNM approach. (Methodologically, therefore, Chapter 12 nicely complements Chapter 6, which as mentioned builds its measure of lifetime well-being using the equivalence approach). Chapter 12 compares the recommendations of a utilitarian SWF, prioritarianism (EAP and EPP) and BCA with respect to social distancing policy and vaccine allocation. Social distancing is studied by determining the maximum one-year reduction in GDP that each methodology is willing to bear in return for eliminating the virus. Because richer individuals are willing to pay more for risk reduction, BCA prefers a more stringent lockdown than the SWF methodologies; moreover, those methodologies are sensitive to the distribution of lockdown costs (especially so prioritarianism), while BCA is not. With respect to vaccine allocation, the social value of vaccinating a particular age-income group depends on vaccine efficacy, the group's infection fatality rate, and the social value of reducing the group's fatality risk.

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