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Respecting equality in economic option appraisal: valuing the time of your life

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Abstract

Even where willingness-to-pay as a measure of welfare impact is adjusted for diminishing marginal utility, welfare economics is shown to favour policies that add to the life expectancy or that enhance the quality of life of persons who are already better-off. I propose an alternative, *Equal Respect* methodology, under an axiomatic claim that at the point of decision the prospective life years of all individuals are of equal intrinsic social value. This justifies equal valuation of risk mitigation across all persons; similarly, *all* appraised impacts should be scaled to accord equal respect to difficult but no-less-valuable lives.

Keywords: equality; welfare economics; valuation; appraisal; cost-benefit analysis

1. Introduction and summary

In social cost-benefit analysis, interventions are assessed for their capacity to make individuals better off individually and in aggregate; to that end, a metric of incremental gain is deployed. The cogency of such analysis depends in part upon the ethical adequacy of this metric. This paper seeks to expose and to debate a dilemma in setting such a metric; the dilemma concerns how the equality of human worth is understood. One horn is to accept the weak conception of equality that I show to be implicit in the metric of interpersonal comparison currently deployed in normative welfare economics (as theorized by Sen (1973) and by Broome (2004)), one built upon a single interpersonal universal scale of wellbeing. On this conception, the equal worth we attribute to each person is contingent upon their enjoying a standard level of wealth (and of other determinants of wellbeing), i.e. it is theoretical; and in cost-benefit appraisal practice we recognize, perhaps with compassion, that poor lives are

less valuable. The alternative radically equalitarian¹ horn is to anchor inter-personal comparison of welfare impact upon the principle of equality itself, and thus to attribute equal value to options mitigating life-risk or conferring proportionate welfare gains to the disadvantaged.

A bit of groundwork is required before this dilemma can be exposed. The next section isolates, with an example, the notion of individual welfare, and the related dimension of social valuation, wherein the dilemma arises. This is that dimension of social value that is measurable by aggregating individual welfare impacts in interpersonally comparable units, setting aside other dimensions of social value such as procedural fairness and any perfectionist or egalitarian aspirations for the community as a whole.

Aggregation of individual welfare impacts of different persons requires that they can be aggregated coherently. In section 3, the Universal Scale of Wellbeing approach to interpersonal comparisons, articulated by Broome (2004), following Sen (1973), is described. *Inter*-personal comparability can, on this theory, be achieved by constructing a Universal Scale of Wellbeing from overlapping sets of *intra*-personal betterness judgements. This is a plausible interpretation of current best practice of cost-benefit analysis, which is anchored in estimation of individuals' willingness to pay wealth (*wtpw*) for a desired outcome adjusted using a standard utility function, one designed to incorporate the diminishing marginal utility of consumption.²

The Universal Scale approach represents the first horn of the dilemma; the first contribution of this paper is to make plain why it is problematic. I do this by challenging, in section 4, the adequacy of the Universal Scale approach to the doctrine of the equality of human worth. It is arguable (and it is argued by Broome) that the value of life – what makes it worth living – is measured by welfare; in that case, the Universal Scale approach implicitly undervalues the lives of the disadvantaged. An increase in the welfare of a disadvantaged person by a given fraction is valued less highly than the same fractional gain for a rich person. Similarly, use of the Universal Scale involves attributing a higher value to impacts on the life expectancy of a person who due to wealth or to other factors is enjoying a higher position on the Universal Scale. Whether these consequences are ethically acceptable depends upon the theoretical grounding of the doctrine of human worth. Plausibly, the doctrine is anchored in an attribution of equal value to others' lives in prospect (notwithstanding that that value can fail to be realized), in which case the doctrine is inconsistent with the methodology for inter-personal comparisons underpinning the Universal Scale approach. In making this argument, I invoke Robbins' well-known argument to the conclusion that ethical assumptions are inevitably implicated in making any such comparisons. The Universal Scale approach can only be salvaged by adopting an alternative ethical underpinning for the principle of the equality of

¹I use *equalitarian* to refer to our commitment to the equality of human worth as an ethical axiom, following Robbins (quoted in fn 30), in contradistinction to *egalitarian*, which normally implies a commitment to bring about equality of opportunity or of outcome.

²What Adler and Posner (1999: 224) call the *endowment dependence* of the impact of consumption on welfare.

human worth, but it is difficult from an alternative base to justify many of our practices – for example the equalitarian approach generally adopted in appraising risk mitigation.

The alternative to the Universal Scale approach is what I label (perhaps tendentiously) an Equal Respect approach to measuring incremental gains; this is developed in section 5. It insists that the same value be attributed to like impacts on each person's life expectancy (their 'life-time'), irrespective of how enviable or pitiable that life might seem to others, with all other impacts judged relative to the affected individual's willingness to sacrifice life-time (*wtsl-t*) for the outcomes in question (i.e. roughly speaking, asking what life risks they would be willing to assume). This is consistent with near-universal practice in risk appraisal: a standardized intrinsic social value is attributed to safety gains to different groups, irrespective of the fact that the lives of some individuals or groups are marred by deprivation. The second contribution of this paper is to show that the discounted statistical life year (dSLY), as a metric of mortality-risk reduction, can be repurposed for use as an instrument of interpersonal comparison of welfare impact across the whole of welfare economics. (If an Equal Respect approach is adopted, *wtpw* measures can still be used, but they must be calibrated to reflect individuals' marginal rates of substitution between money and risk.) This in turn provides a welfarist justification for practice in risk appraisal, itself. The Equal Respect approach can therefore establish the whole of normative economics on a firm, common equalitarian foundation.

Section 6 considers why this second horn, the Equal Respect approach, is also problematic. It considers challenges respectively from personal risk-taking, and from policies to raise community welfare; in both cases our evaluative practice attaches uneven value to prospective life-years, whether across time or across persons. I conclude that in recognition of the validity of some of these evaluative practices we are forced to recognize limits on the ambit of the Equal Respect approach.

Specifically, first, when considering options to change our own lives, we often attribute more value to our prospective life-years under one option than another; we may express this by taking life-risks to achieve the better option. In response to this challenge, the application of the Equal Respect approach to inter-personal comparability of welfare impact must be restricted to the time and the circumstances in which an intervention-decision is to be taken, where what is compared is the impact upon the prospective value of life of each of those affected under different options from the decision point. This restriction follows from the derivation of the metric of inter-personal comparability from the justificatory ground of the doctrine equality, the axiomatic equality of value of each year of each person's life looking forward from the time of comparison. Comparison of the value of life-enhancements *assessed at different times* exceeds the terms of the licence for comparability. Though the restriction is uncomfortable, comparability thus restricted is all that is needed for appraisal of policy options' aggregate impact upon personal welfare.

The second objection is that policies to ameliorate miserable lives are sometimes grounded on an assumption that without that support their lives are less valuable:

what is the motivation for egalitarian concern, or indeed for compassion and succour, if even miserably disadvantaged lives are reckoned of equal value?

This objection has less merit. Within the narrow ambit of inter-personal comparison of welfare impacts, there is indeed no space for condescension and compassion is misplaced; but this failure to condescend is an appropriate expression of equality of respect. We still have reason to help the disadvantaged: in the value that *they* attribute to their prospective gains; the Equal Respect account will in fact appraise affordable gains for the disadvantaged more fully than the Universal Scale account.

Nevertheless, we do recognize other dimensions of societal value beyond the ambit of the Equal Respect approach when the misery of *irremediably* miserable lives is taken into account in policies affecting the welfare of their successors; dimensions of value, for example, pertaining to aims to create a community with less squalor, sloth, poverty, disease and ignorance. In such appraisal, it is not the value of enhancements to the individuals affected that is considered, but the impact on the community as a whole.

Thus the Equal Respect approach offers a position that holds tenaciously to the principle of equality, but finds that it cannot on its own give a comprehensive account of evaluative practice.

Section 7 concludes that the Equal Respect approach should not be seen as an ethically contentious over-ride to an objective assessment of welfare (for example one based on the Universal Scale). Rather, it is premised on a rejection of the epistemic validity of the interpersonal comparisons of personal welfare underpinning the Universal Scale. In their place, it offers a mechanism for assessing aggregate welfare impacts of different options on different individuals that is grounded in a basis for inter-personal comparison that fully respects the equality of human worth. Other societal objectives require their own metrics of comparison, but in assessing personal welfare impacts, our commitment to equality of human worth delivers a clear basis for interpersonal comparisons of welfare impact, one that should radically reset our appraisal of policy options affecting individuals whose life prospects are unavoidably disparate.

2. Personal welfare gain and its social value

Before turning (in sections 3 and 5 respectively) to particular mechanisms for rendering measures of impacts upon welfare interpersonally comparable, we need to isolate the pertinent notion of individual welfare and the dimension of social valuation to which it is relevant. This is that dimension of social valuation that is concerned with *aggregate personal impacts*, notwithstanding the existence of important other dimensions of value that should inform social decision-making within the broad scope of social cost-benefit analysis, such as the impacts of different options on the attainment of procedural, egalitarian and perfectionist goals for society, goals that relate to the history, level and distribution of welfare across the community.

To make the issue concrete, consider an example of a policy proposal to be appraised using social cost-benefit analysis: the proposal to introduce a tax-funded

medical service rationed by queueing at the clinician's office, in a territory where such services are currently paid for out of pocket.³

Consider two individuals, rich but time-pressed Richard and relatively poor Polly, with regard to those occasions in which their symptoms are such that they are currently paying £30 but alternatively would be willing to spend 2 hours in the queue to get medical attention (assuming that rationing by queue will lead to that length of wait). Perhaps they each have a chronic condition that requires a short weekly check-up by a nurse, to mitigate a high risk of crisis. Their health outcomes will be unaffected by the shift in policy; it is just a question of swapping time for money. So, each is 2 hours worse off and £30 better off, every week.

We need a unit of impact that allows us, first, to combine the time impact with the money impact so to assess the overall welfare impact for each of them; and, second, to make those individual welfare impacts inter-personally comparable. This second step allows us to aggregate the social value of those individual impacts in units of common social value, so to determine whether the overall net impact of the proposed intervention is positive, and to what extent. This would then enable us to set this personal welfare impact alongside other impacts of this intervention (on these and on other individuals), assessed in comparable units, and to compare the overall impact of this intervention with other possible uses of the public funds involved.

One measure of the contribution of the achievement of a desired state of affairs to an individual's welfare is the individual's willingness to pay from her wealth (*wtpw*) to achieve that state of affairs,⁴ expressed in actual or hypothetical choices.

(This metric, which relies upon individuals' own judgement regarding the relative importance of different impacts upon their own welfare, has a powerful philosophical attraction to those who would urge governments to eschew making policy determinations based upon a prescribed conception of the good for the individual. This is my understanding of what Rawls urged when asking us to recognize the 'burdens of judgment' (Rawls 1993: lecture II, sec. 2). For this paper I will take as given that government should, in general, show such reticence. The alternative metric of welfare impact proposed in section 5 also supports this deference to individuals' own judgement of impacts upon their own welfare.)

Although *wtpw* is an attractive guide to personal welfare, the preferences expressed need not be taken to be definitional of welfare. A variety of preferences are excluded both in the theory and in the practice of normative

³Cf. Becker (1965), who similarly considers introduction of a zero-price-ceiling medical service so that 'it nominally becomes a free good', whilst its production 'is subsidised sufficiently to maintain [exactly] the same output'. With no fee, demand will have to be rationed: 'the quantity of ... medical attention obtained might depend on the time spent in a queue ... in a physician's office ... The scrambling by households for the limited supply would increase the time required to get a unit of [medical attention] ... [P]rice control [of a good or service] combined with a subsidy would ... substitute indirect time cost for direct goods costs.'

⁴There are circumstances, for example when the preference is the avoidance of an infringement of entitlement, when the more appropriate measure is the sum that the individual would be willing to accept in compensation. For simplicity, the argument is here stated exclusively in terms of willingness-to-pay.

option appraisal: those founded upon ignorance, those that are irrational in that they are not conducive to individuals' own considered goals, those that are immoral, those that are the product of deformed aspirations (e.g. those of the contented slave), and preferences that are not pertinent to welfare.⁵ The notion of personal welfare in view is therefore one constructed on the basis only of those preferences whose satisfaction should *ceteris paribus* enhance individuals' own welfare.

With this caution in mind, we can return to our policy proposal and estimate the impacts respectively on Richard and Polly by asking how much they should be willing to pay to avoid the change (if it is unfavourable to them), or to secure the change (if it is favourable). Polly and Richard should each be willing to pay wealth (*wtpw*) (up to) £30 to get the benefit of not paying that sum. From this must be deducted their respective valuations of the 2 hours' time that must now be spent queueing rather than in some other way. Suppose Richard values 2 hours at £305; he sustains a net loss of £275. Polly's net *gain* is reckoned at £30 less £15 (her valuation of the time loss) = £15. (The Appendix fills out the details of Richard's and Polly's circumstances to derive their valuations of time in terms of money.)

Having thus estimated combined money and time personal-welfare-impact on each individual, we turn to the second question: how to aggregate the respective contributions to social welfare of these separate personal impacts in a coherent way. This requires us to fill the two empty cells at the foot of Table 1 in a way that allows their meaningful aggregation.

A discreditable practice is simply to add the impacts valued by each of them in money terms. On this approach, in our example, Richard's loss dwarfs Polly's gain. But it has long been acknowledged in the theoretical literature that such an analysis is normatively compelling only if Richard's marginal dollar is as socially valuable as Polly's marginal dollar. The general need for an adjustment is stated succinctly by Dreze (1998), paraphrasing Johansson (1998), as the requirement that 'net benefits are aggregated on the basis of the relevant marginal social utilities'.⁶ The idea is that assessments of interventions should take into account how society views marginal gains to individuals, rather than assuming that the social value of increasing

⁵The distinction between preferences that are pertinent to welfare and those that are not is discussed in Adler and Posner (1999). They conclude 'In the context of determining overall welfare, what matters are just the 'self-regarding,' that is welfare-relevant impacts of the project upon each person' (1999: 221, fn 154; see also 202 and fn 98). Preferences regarding public policies that are (partly) due to the individuals' ethical stance rather than due to the impact of their adoption upon the welfare of the individual, are (to that extent) not welfare pertinent. Similarly, any purely altruistic preferences regarding specific others must be distinguished from preferences pertaining to individuals' own welfare. Note, however, that outcomes for others *can* contribute to what Dworkin (1993: 201 and *passim*) calls the *critical* – as opposed to the *experiential* – value of someone's life, especially those outcomes of others that the individual herself brings about; and individual welfare, in the broad sense of how well a person's life goes, certainly includes both types of value (what individuals accomplish, as well as what gives them pleasure).

⁶Dreze and Johansson are discussing the question of which numeraire to use – given that using money favours the rich. Dreze concludes (1998: 486) that with correct social-weighting 'the problem of numeraire dependence does not arise'. The proposals in this paper accept Dreze's conclusion: any numeraire can be chosen so long as the correct social weight is used. This paper is rather raising the question of how weights can be chosen that respect equality of human worth.

Table 1. Option appraisal of a policy to introduce state-funding and rationing-by-queue into the market for medical consultation. Appraisal of impact on Richard and Polly, both needing a weekly consultation, and willing to pay £30 or to wait 2 hours as required

Per week	Richard's Time	Richard's Money	Polly's Time	Polly's Money
Do Nothing Option (<i>status quo</i>)	0	−£30	0	−£30
Queueing Option	−2 hours	0	−2 hours	0
Net Impact of Queueing Option	−2 hours	+£30	−2 hours	+£30
Impact using unadjusted <i>wtpw</i> as numeraire	+£30 minus Richard's valuation of 2 hours in money (£305) = −£275		+£30 minus Polly's valuation of 2 hours in money (£15) = +£15	
Impact in interpersonally comparable units, to enable aggregation.	?		?	

everyone's wealth by a dollar is equivalent. Accordingly, we may use money as the metric of impact only if we adjust the amounts by the respective marginal social values of a dollar of consumption to each individual.⁷ There is no good reason to think that the social value of a dollar in Polly's hands equals the social value of a dollar in Richard's.⁸

The estimation of such adjustment is, however, not straightforward if the adjustment is to take account of all dimensions of value relevant to social decision-making. Indeed, Dreze suggests that this difficulty may explain the 'lamentable' failure of policy analysts (specifically in the World Bank) to apply any such adjustment – they may be 'reluctant to contemplate the value judgments involved in choosing distributional weights' (Dreze 1998: 487).

Dreze and Stern (1987: sect.3.2.2, 958–961) suggested that this question should be answered by eliciting from decision-makers the marginal social value of increments in income to different individuals. However, this may not be practical. And in any case the question is only pushed back upon the decision-makers: how are they properly to determine the social value weights to be applied to welfare increments falling respectively upon different individuals?

One approach is to apply a quasi-utilitarian assessment of welfare. This displays the aggregate net impact upon individuals' welfare, and therefore allows us to assess the efficiency of policy choice in enhancing personal welfare prior to assessing its

⁷Other approaches to social decision-making, that avoid making judgements employing interpersonal comparisons of welfare impact, aggregate individuals' unweighted *wtpw* in the expectation of thereby achieving an aggregate welfare improvement in the long-run, or as an intermediate step prior to redistribution. I do not address these approaches in this paper; they are not without problems.

⁸Simple aggregation is sometimes justified using the Kaldor–Hicks criterion, whereby it would truly reflect aggregate personal welfare impact if we could costlessly reallocate gains; in this case Richard could compensate Polly for not introducing the proposed change. However, 'the existence of a 'potential improvement' is not very relevant if the necessary compensations remain purely hypothetical' (Fleurbaey and Schokkaert 2013: 180).

contribution towards broader societal aspirations.⁹ We must also restrict focus to the intrinsic social value of personal impacts, to exclude impacts upon others (to avoid double counting).¹⁰

Hence, although this paper employs a welfarist understanding of the good for individuals, whereby individuals' own understanding of the good for them is taken as generally (though defeasibly) authoritative,¹¹ and assumes that that good can be measured on a ratio scale, this is not to endorse welfarism, which is sometimes understood to imply that the only determinant of social welfare is the aggregation of individual welfare.¹² Decision-making should be informed by other analyses than the assessment of aggregate impact on individual welfare. The variety and importance of the other dimensions of value are discussed further in section 6.¹³ Nevertheless, having a clear and ethically sound methodology for the measurement of aggregate individual welfare impact provides a foundation for consideration of other dimensions of value.¹⁴ Note too that even in restricting our focus, for the quasi-utilitarian analysis, to impacts on personal welfare, we are nonetheless interested in the *social value* of those personal welfare impacts, as social cost-benefit analysis should be designed to support decisions that enhance aggregate value from a societal perspective.

How best to calibrate the *wtpw* metric of personal welfare impact so that unit increments are of standard intrinsic social value and fit for inter-personal comparison? The next sections describe two different approaches to enable meaningful aggregation of the social value of impacts upon different persons'

⁹This involves making the adjustments that would be made were the social welfare function utilitarian. See Johansson (1998: 491). Even if, for example, a concave Social Welfare Function (one that gives diminishing weight to incremental gains for the more fortunate) is ultimately desirable, assessment of individual welfare impact is conceptually prior.

¹⁰A benefit to a productive individual, for example enabling a speedier return to work following unemployment, may well create more benefits to others – that is what it is to be productive. But that benefit is extrinsic to the contribution to the welfare of the individual. In social cost-benefit analysis, such extrinsic value should also be reckoned, but it figures in the appraisal as part of the benefit intrinsic to others.

¹¹In the theoretical literature, this approach to social decision making is characterized as 'welfarist' in that 'it takes subjective utility as the correct metric for distributional judgments' (Fleurbaey *et al.* 2013: 14). In the language of this paper, 'subjective utility' is understood as 'personal welfare'.

¹²Sugden (1998) characterizes 'welfarism' as a theory of the social good according to which 'the social good is determined by, and *only by*, the wellbeing of individuals' [emphasis added].

¹³The considerations discussed in section 6 are generally also consequentialist (though they are orthogonal to maximization of personal welfare). However, it is worth remarking that the notorious difficulties with consequentialism in general and utilitarianism in particular can be addressed by embedding them within a more general ethical theory that balances consequences against non-consequentialist considerations, or that binds agents with deontological side constraints. The framework of this paper is quite consistent with application of such constraints.

¹⁴Broome (2004), in *Weighing Lives*, takes a similar step in distinguishing between 'personal' and 'general' value. He argues that when we distinguish 'an amount of wellbeing and how much that amount counts in general good', for example when we consider applying less value to an enhancement of wellbeing because it would only occur in the distant future, we demonstrate a grasp of the concept of the value of individuals' wellbeing independently of the contribution of that wellbeing to the good. (See 2004: 92 *et seq.*, 'Correcting an error'.)

welfare.¹⁵ The first I shall refer to as the Universal Scale of Wellbeing approach, following Broome (2004). It involves the creation of a cardinal scale of wellbeing with a significant zero and increments of equal social value. This is a natural interpretation of the practice of those welfare economists who adjust *wtpw* for the diminishing marginal utility of income, and then aggregate across individuals. I will discuss this approach first (section 3), together with its challenges (section 4), before considering a second ‘Equal Respect’ approach (section 5), and its challenges (section 6).

3. The universal scale of wellbeing approach

Broome (2004) proposes that an interpersonally valid metric of wellbeing can be created in two steps. First, he suggests that a single cardinal scale of wellbeing can be constructed for each individual by using overlapping sets of *intra*-personal comparisons of the level of wellbeing associated with different possible lives. Broome anchors this scale in a betterness relationship between possible life-courses, noting that ‘betterness for a person is not an empirical concept. Its meaning comes from its role within ethics, particularly in helping to determine how we ought to act’ (2004: 79). In other words, the betterness relation is not defined by empirically observable preferences (notwithstanding that we can use preferences to estimate an individual’s own view of her betterness relation). Rather it invokes directly a notion of wellbeing that has normative force, such that by definition (but *ceteris paribus*) one ought to act to bring about the better of two life courses, which is the one that embodies a higher level of personal wellbeing. Overlapping sets of such intrapersonal comparisons then yield a separate scale of wellbeing for each individual, and assign, by means of expected utility theory, a cardinal value to every life course for which the betterness relation is defined.

Broome’s second step is more challenging conceptually.¹⁶ A single Universal Scale of Wellbeing upon which the intrinsic value of every individual’s actual and possible lives lie is derived from the betterness scale of each individual by asserting ‘that the goodness of a life is independent of who lives it’. If all individuals are linked such that at least two life histories that are possible for an

¹⁵I am assuming the coherence of interpersonal comparisons in principle, following Adler and Posner (1999: 205), who ‘take it to be a condition of the validity of a welfare theory that it warrants some interpersonal comparisons of welfare’. Fleurbaey *et al.* (2013) argue that alternative approaches are possible that do not require ratio-scale measurement of welfare increments. However, the distributional judgements that they can derive do not seem adequate to the richness of our ethical intuitions; in particular, without at least an interval scale measure of welfare impact (which gives a ratio scale measure of increments, with a significant zero), it is not possible to judge a tiny gain to a less advantaged person as less beneficial than a massive gain to an advantaged person. (Fleurbaey and Schokkaert (2013: 187) explicitly accept ‘the maximin criterion’ – notwithstanding its implausibility.) Given such problems, this paper assumes that welfare can and should be measured on a ratio scale.

¹⁶Not that the first step is without challenge; see for example Rosati (1995) for an exploration of the difficulty of making even *intra*-personal comparisons, given that sometimes ‘the choice we make will affect what sort of person we become’. However, Broome might respond that the existence of difficult comparisons should not deter us attempting to get it roughly right where comparisons are more confidently made.

individual are shared with other individuals (in the way that Broome details, 2004: 96), and each of those possible life histories has a cardinal value on the individual's own scale, then a single universal scale can be constructed.

The conceptual leap in Broome's formulation is to 'recognize that some lives can be lived by more than one person'. To use an overlap in life options to ground an overlap in valuation, however, would require that the betterness judgement be independent of the goodness of fit between the life-course and the circumstances that differ between persons. But this is implausible. For example, an extrovert would be more likely to thrive as a publican than an introvert. Broome presumably has in mind that the introvert would have a betterness relationship not with the publican's life of an introvert, but with the publican's life of an extrovert. But in that case, Broome's assumption that there is a judgement of betterness to be made across such a character change might be questioned.

However, one may simply claim as ethical truth, available to us in whatever way we are able to ascertain ethical truths, that Life A is better – personally or (if 'personally' seems to require an implausible claim of personal identity across the possible lives) intrinsically (in the sense set out above) – than Life B. Broome makes this case also, separately from the argument based on personal betterness judgements, claiming that, after all, we can 'understand the idea of one life's being better or worse than another' (2004: 97),¹⁷ notwithstanding that we are referring to personal rather than general betterness.

In these arguments, Broome echoes Sen (1973: 14): 'If I say 'I would prefer to be person A rather than person B in this situation', I am indulging in an interpersonal comparison. While we do not really have the opportunity . . . of in fact becoming A or B, we can think quite systematically about such a choice, and indeed we seem to make such comparisons quite frequently.' Sen builds on this foundation to create methodologies for assessing inequality, using cardinal comparisons of wellbeing.

If we can make sense of such comparisons,¹⁸ then interpersonal comparisons are available to allow the creation of a single cardinal Universal Scale of Wellbeing, based upon shared ethical intuition.¹⁹

The Equal Respect approach set out in section 5 can be understood as being built upon an ethical intuition conflicting with that evolved by Sen and Broome, one that denies the epistemic validity of the derived comparisons of value on the ground that they conflict (as we will see in section 4) with the favoured interpretation of the

¹⁷This approach is also implicit in the construction of Harsanyi's extended preference-set, which ranks states objectively according to their match with individuals' respective preference sets. See Harsanyi (1977).

¹⁸Hausman *et al.* (2017), commenting on the judgements of extended sympathy involved in comparing A's gain given A's preferences and circumstances with B's given hers, worries that it is unclear 'what exactly is the connection between, on the one hand, whether Ira is better off with x than Jill is with y and on the other, [the appraiser's] preferences between the extended alternatives', i.e. what epistemic access has an appraiser to the betterness relation? They do not cite Broome in this context, but it could be that they would accept that Broome, in his second approach, is avoiding this challenge by invoking direct judgements of betterness, based upon ethical intuition and reasoning, rather than judgements mediated by sympathy.

¹⁹Note that it was explicitly Robbins' intention, in pointing out the lack of an empirical basis for interpersonal comparisons of utility, not to deny that such comparisons are possible, but to oblige us to recognize that such comparisons have a basis in ethics not in social science. See Robbins (1938), discussed further in section 4.

principle of the equality of human worth; preferring rather to use that principle itself as the only base upon which interpersonal comparisons can be made. We return to this below.

Meanwhile, we can interpret the practice of normative economics consistently with Broome's framework. Estimation of individuals' *wtpw* for different outcomes gives epistemic access to the personal betterness relation by revealing the trades individuals would make between different outcomes. From these, a single standard utility function is derived, implicitly invoking a Universal Scale of Wellbeing, one that captures the diminishing marginal utility of consumption.²⁰ Option appraisal then proceeds by multiplying individuals' estimated *wtpw* for different outcomes by the derived estimated impact of their marginal dollar upon that individual's welfare.

How would this approach work out for our example? Recall we have already (at the end of section 2) assessed how much wealth Richard and Polly should respectively be prepared to give up in order to avoid 2 hours in the queue (and we know that both get the same monetary benefit from avoiding the fee). We need now to articulate how marginal shifts in wealth will affect each individual's position on the Universal Scale. We can do this with reference to empirical work, for simplicity assuming that our two protagonists' circumstances differ relevantly only in the extent of their wealth and income, so that their responses can be adjusted using a wealth/utility schedule.

UK government guidance on policy appraisal takes just this approach when it advises analysts that 'financial benefits for lower income households are given a higher social value than the equivalent benefits for higher income households', with weights designed to allow aggregation across different individuals with sensitivity to the diminishing marginal utility of income (Her Majesty's Treasury 2019: para. A3.12).²¹ Note that the guidance applies an argument about individuals' own welfare to interpersonal comparisons, implicitly assuming a Universal Scale.²²

Notwithstanding that marginal increments diminish in impact, so long as the marginal increments to welfare from enhanced income are positive, an individual attaches greater value to life-time when they can enjoy a higher level of income, as during such periods they achieve a higher level of wellbeing, doing

²⁰Helpfully, the technicalities of deriving a personal cardinal wellbeing scale with a significant zero from elicitation of *wtpw* preferences parallel those by which Broome derives such a scale from the ordinal betterness relationship. See Broome (2004: Ch. 5; the significant zero is added in section 17.2).

²¹In principle, we require a more sophisticated utility function, one that takes as its arguments other determinants of welfare alongside wealth, so to respect the diversity of individuals' circumstances. Pragmatically, only rough and ready refinements may be possible. UK Treasury guidance does suggest adjustment is made according to a schedule of 'household equivalised income' that does recognize differences in need, and hence in the utility impact of income, between households of different size and structure; see Her Majesty's Treasury (2019: para. A3.15 *et seq.*).

²²The guidance continues: 'The basis for distributional weights is the economic principle of the diminishing marginal utility of income. It states that the value of an additional pound of income is higher for a low-income recipient and lower for a high-income recipient' (Her Majesty's Treasury 2019: para. A3.13). Diminishing marginal utility of income is displayed in individuals' own insurance behaviour: people are willing to give up income when they are well off for a diminished return when they are needy.

or experiencing more of what gives life value. Conversely, the value of a life-year falls as income declines.²³

Applying this result interpersonally, as the Universal Scale approach licenses, the implications for our exemplar policy shift are clear. Given his higher place on the welfare scale, Richard will value the lost 2 hours, net of the £30 saving, substantially more highly than Polly. And this is true not only in dollars, but even in welfare units that have allowed for the diminishing marginal utility of consumption and are therefore endorsed as interpersonally comparable: Richard's time is more valuable than Polly's. Hence it can turn out that Richard's loss, even thus corrected, is socially valued (using the Universal Scale) to exceed Polly's gain, notwithstanding that they both lose the same amount of time and gain the same amount of money and that the money brings more welfare benefit to Polly than to Richard. In Universal Scale interpersonally comparable units, on plausible assumptions, Richard's *loss* from the policy change would be 0.045 Universal Scale welfare units against Polly's *gain* of 0.025; see Appendix for the assumptions of this example, and the arithmetic.

It is certainly not objectionable in itself to assess Richard's gain to exceed Polly's loss. (Even were we to wish to adopt a social welfare function that gives excess weight to the welfare gains of the less well-off because they are less well-off, such a valuation would be outside the scope of the narrow appraisal of personal welfare impacts that we are here discussing.) Rather the question is whether we are content with an accounting of personal welfare impacts that attributes different social value to the time of different individuals' lives.

4. Equality of human worth

The value of life – what makes it worth living – is measured by welfare achieved during its course: as Broome (2004: 249) has it, 'the value of your life is the total of temporal wellbeing you enjoy in your life'. The concept of welfare indicated in section 2 is broad enough for this claim of Broome's to be true by definition – at least with regard to life's intrinsic or personal value. Recall that a life's going well – its welfare – will involve both critical and experiential value – what is achieved as well as what is enjoyed.²⁴ So if we attribute less value to the welfare attainable for a given time of someone's life we are constraining the value that can be attributed to that life-time itself. The challenge to the Universal Scale of Wellbeing approach to conducting social cost-benefit option appraisal therefore comes from the doctrine of equality of human

²³This again affects decisions regarding insurance: there is a lower willingness to pay for insurance cover for illness affecting periods in a person's life with lower levels of expected income (and worse underlying health). A utility function that can act as a Universal Scale is constructed and empirically estimated by Murphy and Topel (2005). As with the HM Treasury guidance, a single individual utility function, a Universal Scale, is applied to all individuals, whose welfare gains can thereby be judged. They propose that an individual's expected utility (i.e. that which drives their welfare-pertinent preferences and choices) is a multiplicative function of health and of survival on the one hand, and of consumption of goods and of leisure on the other (Murphy and Topel 2005: 7, equation 1). This model, in which health and 'consumption of other goods are natural complements' implies that 'as health declines at older ages . . . consumption will decline as well. This is consistent with empirical studies of lifecycle consumption'.

²⁴Dworkin (1993: 201), referred to in fn 5 above.

worth. For when we use the Universal Scale approach to make inter-personal comparisons of welfare impact, we implicitly attribute less potential value to the lives of the irremediably disadvantaged.

In this section, I clarify this challenge with reference to a theoretical grounding for the doctrine of equality, drawing out the inconsistency of the doctrine thus grounded with the Universal Scale approach to option appraisal. Next, I argue that the proposed grounding provides a more coherent account of our equalitarian ethical intuitions than alternatives that lack such implications for appraisal methodology. I then support this invocation of ethical authority for what might be viewed as a technocratic methodological choice by reference to Robbins' argument that appraisal methodology is necessarily a matter of ethics. That sets the scene for section 5, in which I propose a methodology designed to meet the equalitarian ethical challenge.

To clarify the challenge from equality to the Universal Scale approach, we need to attend to the explanatory ground of equality: that in virtue of which humans have equal worth. Franklin (2008) sets out criteria to be met by any account of the ground upon which equality of human worth is asserted, including that the ground should be 'invariant in intensity between human beings', that 'it should eclipse the qualities wherein people differ' and that it should be 'action-guiding'. The conclusion is that 'equal value can only be found in each person's capacity to realize ethical value *within the limits set by their own natural endowments*, whilst normative consequences flow from our dependence upon each other to help to realise that ethical potential' [emphasis added]. On such an account, equality is a consequence of all individuals having equal capacities to fulfil their own ethical potential prospectively.²⁵

An attraction of this account of equality is that it is consistent with a range of different accounts of the good for human beings – what is ethically valuable may be the realization of virtue, pleasure, happiness, or the free exercise of good will; or a plurality of values may be deemed ethically worthy; and the individual may be deemed defeasibly authoritative in determining how she can realize ethical value. However, it is clearly inconsistent with a metric of life value that attributes varying potential value both to different persons' lives and to their life-years, as does the Universal Scale. (In section 5, we will turn briefly to the question whether equal capacity to realize value is attributable to lives or to life-years; the University Scale is consistent with neither claim.)

In our exemplar option appraisal, we attributed a higher value to the life-time (those 2 hours in the queue) of a person (Richard) who, due to wealth, is enjoying a higher position on the Universal Scale. This is clearly inconsistent with an interpretation of the equality of human worth that is based, as explained, upon the equal value of each person's ethical potential. Indeed,

²⁵Franklin (2008: 12–13). Note that on this account there is no need to deny that in outturn some lives go less well than others, that individuals can waste their lives, or have their prospects thwarted. The focus of the judgement of equality of worth is most plausibly on their *capacity* to create value, the *potential* value of each life-year. As option appraisal is always forward-looking, it is always prospective rather than retrospective life-time that is relevant in option appraisal; it is consequently anchored to the time of the appraisal (a restriction discussed further in section 6).

unequal valuation of life-time would characterize any option appraisal that trades time against money impacts using the Universal Scale approach. Similarly, were it applied in safety appraisals, the Universal Scale approach would result in a higher value being attributed to increments in safety or decrements in mortality risk for the well-off.²⁶

Attributing less value to the life-time of the less well-off is also implicit in other valuations that the Universal Scale methodology delivers. Suppose Richard is enjoying, on average, 20 interpersonally comparable welfare units per week measured on the Universal Scale (assessed by calibrating his dollar consumption level for its impact on welfare) and Polly is enjoying 10 units per week. If there is some good for which Polly would be willing to sacrifice one unit, that good will of course be valued under the Universal Scale methodology equally to a good for which Richard is willing to sacrifice one unit. But that implies that a 10th of what makes Polly's life valuable is worth the same as a 20th of what makes Richard's life valuable; *ergo* less value is attributed to her life than to his.

One consequence is that cost-benefit assessments using the Universal Scale to appraise rival uses of public funds by calculating the *wtpw* of those affected for the alternative goods, notwithstanding adjustment for the diminishing marginal utility of consumption, favour luxury goods (such as university education, or the consumption displaced by taxation) over inferior²⁷ goods (perhaps public playgrounds and means-tested housing-benefit or food stamps). Such appraisals give value to luxury goods out of proportion to the share of life value that these goods represent to those that enjoy them, compared with the share of life value that inferior goods represent to the poor.

The problem arises dramatically in comparing the relative value of goods in a high consumption relative to a low consumption economy. This is one aspect of the notorious World Bank memorandum 'encouraging *more* migration of the dirty [polluting] industries to LDCs' (less developed countries) that is used by Hausman *et al.* (2017: 19 *et seq.*) as the starting point for a critique of 'Ethics in Welfare Economics'. Using a Universal Scale methodology, if absence of pollution is a luxury (in the technical sense) pollution will be less dis-valued in low-income countries, even where it does proportionately greater damage to poorer people's capacity to realize life-value.

(None of these equality challenges would arise in a policy scenario in which we were considering an intervention to transform the lives of the disadvantaged such as to remove their disadvantage. But it is commonplace for the context of policymaking to preclude such radical redistribution due to constraints on the power of the decision maker. Equality of respect should apply also where choice is constrained.)

²⁶Normal practice in risk-assessments is, on the contrary, to apply a standard social value to a life year or a prevented fatality. This paper takes the equalitarian perspective that is thus applied in risk assessments (at least in those conducted *within* wealthy economies), gives it a welfarist conceptual anchor, and applies it across all of welfare economics. This claim is discussed further at the end of section 5.

²⁷Using the standard definitions of 'luxury' and 'inferior', whereby luxury goods are those that attract a higher valuation relative to income from those higher up the income scale (and thus generally higher up the Universal Scale of wellbeing), whilst inferior goods attract a lower valuation.

Poverty does, however, make life go less well. A defender of standard practice in policy appraisal, and of the Universal Scale approach, might argue that we should not deny this even when making inter-personal comparisons. Rather we should acknowledge the greater level of welfare that wealth confers.

This could still be consistent with a narrower principle of equality: one that is detached from the value that persons realize (critically and experientially) through their lives. For example, we might assert that just the quality of being human (in view of self-consciousness or freedom of will, for example) is that in virtue of which we are equal. We would then not deny that people (e.g. with some forms of disability, or living in extreme poverty) can have bad lives; however, we should deny that on account of this they have less value or worth as persons. If it is to pass beyond lip-service, such a claim requires that the residual commitment to equal worth, that less advantaged lives have no less value or worth as persons, be freighted with something of substance in our collective behaviour. But that something could, for example, include: equality before the law; equality in democratic process; and, in the appraisal context, attribution of equal value to a healthy wealthy life year whoever enjoys it.

This is clearly a narrower account of equality, precisely because it denies that the commitment to equality can be tested by our approach to social option appraisal. If we attribute low value to the best lives that are actually open to disadvantaged individuals (given their circumstances and the constraints on what we and they can do to ameliorate them), our valuation methodology will prescribe prioritizing avoidance of disability-risks and of life-risks to those whose life-quality is already strongest, as 'the value of saving your life is the total of temporal wellbeing you enjoy after you are saved'.²⁸

Higher safety standards that prevail in rich countries and rich neighbourhoods would thus be justified – it really would be deemed to maximize aggregate personal welfare for risk to be borne by those whose lives are in any case blighted. In which case, our decisions transparently embody our lower valuation of the life-value of the less advantaged. We may wish to mitigate the policy implications of such results by adopting compassionate and egalitarian equity weights that attribute *extrinsic* social value to shifting the worst-off up the universal scale; but – so Broome might argue – we should not deny the real difference in welfare.

That approach is available, and indeed it is not far from our discourse, for example when we regret especially the loss of a person who showed great promise in one way or another. Should we endorse that intuitive response as reflecting a valid attribution of greater prospective intrinsic worth to the gifted and talented?²⁹

²⁸Broome (2004: 249). Broome could subscribe to a rule of rescue that would set aside such comparisons of welfare gain in rescue contexts; however, valuation of marginal risk mitigation (outside a rescue context) would certainly be greater for the wealthy than for the poor using the logic of the Universal Scale.

²⁹It might be objected that differentiating life value on account of differences in natural gifts is more objectionable because such giftedness is core to a person's identity; so the insult to a non-gifted person is greater than that to a poor person – who may more readily consider herself but contingently poor. However, the logic of the discrimination, if allowed in the one case, is hard to resist: once we grant that a wealthy person's life-time is more valuable, on what grounds can we deny attribution of more value to the life of a healthy, educated, cultured or gifted person? Would not most people prefer those lives in the life-betterness comparisons from which the Universal Scale is created?

Yet, separating the ground of equality from the account of the value humans can realize in their lives comes at a cost in coherence. The coherence in question is that between the ground of equality and the implications of the doctrine of equality for distributive justice. If the doctrine of equality is grounded in the equal value that each can realize in their lives, then an explanation is immediately given for why we should treat people with equal respect; the explanation lies in the equal value that each can realize in their lives, through their doings and experiences. Likewise, the *pro tanto* obligation that falls upon us to contribute what we can to the realization of others' ethical potential will necessarily count each for one and none for more than one. Whereas, if the doctrine of equality is grounded elsewhere, and we assess life value on the Universal Scale, we would need some other argument to prevent the fact that person A can realize more value than person B from affecting our duties towards each other. We must somehow else prevent the fact of inequality in life-value from justifying our paying more respect to person A, making more effort to support their endeavours, perhaps weighting democratic decision making to heed their interests, and so forth.

Grounding of the doctrine of equality in the potential value that individuals can realize in their lives is thus attractive for avoiding such inegalitarian consequences; with the corollary that an equalitarian appraisal methodology is required, i.e. not the Universal Scale approach.

This critique of the Universal Scale approach is of course an argument from ethics. In this respect, our difficulty with the Universal Scale is instructively related to Robbins' difficulties with utilitarianism, which likewise turn on an ethical principle: 'I well remember how they were brought to a head by my reading somewhere – I think in the works of Sir Henry Maine – the story of how an Indian official had attempted to explain to a high-caste Brahmin the sanctions of the Benthamite system. 'But that,' said the Brahmin, 'cannot possibly be right. I am ten times as capable of happiness as that untouchable over there.' I had no sympathy with the Brahmin. But I could not escape the conviction that, if I chose to regard men as equally capable of satisfaction and he to regard them as differing according to a hierarchical schedule, the difference between us was not one which could be resolved by the same methods of demonstration as were available in other fields of social judgment' (Robbins 1938: 636).

Imagine that we go further than the Benthamite by insisting upon attributing the same intrinsic social value to the life-hour of each person, irrespective not only of their caste but also of their comparative prosperity. We explain this approach to a wealthy person, who retorts, 'But that cannot possibly be right. I can obtain a much more valuable level of being than that pauper over there, because I have the resources to do so'. Do we not, like Robbins against the Brahmin, lack sympathy for the wealthy person's perspective, but also like Robbins find ourselves requiring an ethical ground for our objection – an ethical commitment to equality of human worth?

If the objection from equality is sustained, we are forced to abandon the Universal Scale of Wellbeing.³⁰ The Benthamite economist wishes to assert,

³⁰Robbins himself suggested that the metric for interpersonal comparison of welfare should be opened to debate: 'The postulate of equal capacity for satisfaction, for instance, about which all the trouble had arisen, needed much more refinement if it were to be applied sensibly: it was possible, indeed, that an equalitarian

against the Brahmin, that each person has an 'equal capacity for satisfaction'; but equality of capacity *against the Universal Scale* is not credible – at least within the bounds of the options available to most decision-makers. Realistically not everyone can reach the same position on the Universal Scale – and to base welfare assessment on an assumption that they can is systematically to exaggerate the *potential* gains of the less fortunate, and therefore to *undervalue* any realistic gains, by calibrating them relative to an unrealistically demanding maximum.

Broome would certainly counter, in defence of the Universal Scale of Wellbeing, that the comparison to the case of the Brahmin is inapposite, because Broome would not be attributing to a class of people lower life-value on account of their class. The poor person could have been or could become rich, whereas the 'Untouchable' could not become a Brahmin. However, in many contexts even the former 'could' is forced: what content can be given to a claim that a poor person *could* be rich if she has no realistic likelihood of wealth on account of accidents of birth and circumstance, and the constraints on the policymaker? A commitment to equality of human worth is weak if equal worth in valuation is dependent upon possession of qualities or resources that are in practice unequally available.

Robbins did not deny that the Brahmin enjoyed greater social respect and all the other advantages associated with high caste and the refinement of his education. The point was rather that even granting this, when it came to interpersonal comparisons of benefit or harm, we require an ethical framework to determine the basis of such comparisons. In which case, there is an ethical argument from our commitment to equality that we should choose one that accords equal respect to the life-potential of each person, irrespective of caste, and also irrespective of any of the other attributes that are, in specific decision contexts, fixed for the individuals that bear them. Which might mean that neither the Brahmin's nor the wealthy person's advantage, however characterized, is allowed to translate into a judgement of greater life-value in option appraisal.³¹

What alternative methodology is available?

5. The equality of respect approach

To find an alternative approach to inter-personal comparisons, we can exploit the equalitarian ethical axiom itself. The equality of human worth does, after all, represent a standard for interpersonal comparison of value. Let no more value be attributable to a unit of one person's prospective life-time than to another's.³²

postulate involving no reference to satisfaction might prove in the end to be more suitable' Robbins (1938: 640). The Equal Respect approach proposed below is built upon an equalitarian postulate that relativizes reference to satisfaction to individuals' own capacity for wellbeing – so perhaps it would have found favour with Robbins.

³¹This concern from Robbins is echoed in Nozick's worry about utilitarianism: 'Utilitarian theory is embarrassed by the possibility of utility monsters who get enormously greater sums of utility from any sacrifice of others than these others lose ... the theory seems to require that we all be sacrificed in the monster's maw, in order to increase total utility' (Nozick 1974: 41).

³²This approach is actually supported by a hint from Sen, that we might prohibit a set of welfare functions for interpersonal comparisons 'that 'blows up' the welfare function of one person arbitrarily keeping those of others unchanged' (Sen 1982: sec. 4, 'Comparability Types: Formal Structures').

Life-time becomes the standard metric of welfare impact (in place of the marginal-utility-of-welfare-adjusted dollar of conventional cost-benefit appraisal, on the Universal Scale approach), yielding units of equal intrinsic social value.

In this section, this Equality of Respect approach to appraisal methodology is explained and justified, and illustrated with reference to our running example. I then turn to the question of why we choose to anchor equality on life-years rather than whole lives. And finally in this section, I relate this methodology to those used in the economics respectively of health and of safety, suggesting that the Equal Respect approach can establish the whole of normative economics on a firm, common, equalitarian foundation.

Time, like wealth, is a factor productive of everyone's welfare.³³ Just as the amount of money one is willing to pay can be used to calibrate the relative importance to one's welfare of different outcomes, so the amount of time one is willing to sacrifice can be used for the same purpose.

Now, it is important to its use as a measure of value that the money that one would be willing to pay to achieve something has a standard opportunity cost: money is fungible – the wealth that one deploys for one purpose could equally have been used for any other purpose. This is not the case with time: one's willingness to give up an hour for some purpose will vary greatly depending upon what else one could have done with that particular hour.

It is also helpful that the spending of money, in general, yields no intrinsic benefit – someone's *wtpw* is normally a measure of the value only of what is sought, undistorted by welfare arising from the spending.³⁴ In principle, we would restrict the proposed time-measure-of-value to uses of time that, like money, yield no intrinsic utility. We would want to know how much time someone would be willing to sacrifice for something where there is no value (positive or negative) in the sacrifice other than its yielding the good sought. This no-intrinsic-utility time is, as Becker says, a limit case: what he calls 'pure work' – 'a limiting commodity ... in which the contribution to consumption [is] nil' (1965: 504). Most work-time, by contrast, does not merely yield a wage, it also yields the intrinsic benefit of employment, in self-worth for example, and the intrinsic disbenefit of effort, coloured by pleasant or adverse working conditions.

Both drawbacks to the use of willingness to sacrifice time as a measure of welfare value – lack of fungibility and intrinsic welfare impacts – can be avoided if we restrict ourselves to a particular way of sacrificing life-time: reducing life expectancy by taking mortality risk. Willingness to risk death effectively involves the sacrifice of expected life-time without intrinsic welfare-gain, and mortality risk is thus, like money, 'pure' in Becker's sense: assumption of higher mortality risk does not in general yield any utility in itself.³⁵ Further, this type of sacrifice of time is within its class fungible: a fall in life expectancy consequent upon assumption of mortality risk dents the potential to satisfy welfare-pertinent

³³Becker (1965).

³⁴An exception might be *wtpw* for a gift for a friend, where the welfare value of the gift as a gift might be enhanced by its cost.

³⁵Exceptions in this case might include the thrill of participation in high-risk sports, or the assumption of heroic risks, wherein the valour is increased by the risk.

preferences in the same way whatever the nature of the mortality risk (once we have allowed for timing of the risk, discussed below).

This combination of purity and fungibility, in the senses just elucidated, renders a willingness to assume mortality risk a good metric of the importance of an outcome to one's welfare.³⁶ To emphasize that the time being sacrificed is of this kind, I refer to it as sacrifice of 'life-time', and the proposed measure is willingness to sacrifice life-time (*wtsl-t*).

(Both *wtpw* and *wtsl-t* as metrics of welfare impact can be distorted by a budget constraint: you cannot sacrifice more money or time than you have, constraining valuation of very large impacts on individual welfare. In both cases, this can be addressed by estimating marginal *wtpw/wtsl-t* for a tiny chance of achieving the welfare gain or avoided loss in question.)

If the equalitarian axiom is accepted, then, with one nuance, statistical life years (SLYs),³⁷ and willingness to forego them (*wtsl-t*) to obtain welfare, can provide the units of inter-personal comparison of personal welfare impact. The nuance is to make allowance for differences in the timing of risk-incidence. For example, latent hazards, which do not affect survival probabilities for many years, may be judged to dent life-value by less than do contemporary risks with the same impact upon life expectancy, due to time-preference (the favouring of early-arrival of goods and late-arrival of evils). The time-preference complication can be addressed by insisting on the equality of value of *discounted* statistical life years (dSLYs), using whatever social time preference rate is appropriate for the appraisal.³⁸

Consider again our medical rationing problem. Let us assume that queueing is of no intrinsic worth (not an unreasonable assumption given the unpleasantness of waiting when in need of diagnosis, and the lack of amenity in public facilities).³⁹ This would therefore be a period whose direct 'contribution to consumption [is – roughly] nil' in Becker's terms; a period which someone would rationally skip over, notwithstanding they would be 2 hours older – and closer to death, forfeiting that portion of a dSLY.

In dSLYs, the queueing renders each of Richard and Polly worse off to the same extent. The question then switches to their valuation of the £30 fee avoided. This we

³⁶Willingness to accept risk of death or loss of life-time are used in health economics to elicit personal valuations of different health states and thereby to derive Quality Adjusted Life Year (QALY) impacts. This paper is arguing that the techniques employed in that sub-discipline (respectively Standard Gamble and Time Trade Off) can be adapted for general use in welfare economics; see fn 42.

³⁷An impact upon a risk exposure can be expressed as an impact upon life expectancy, to be measured in SLYs, by weighting the range of possibly outcomes by their likelihood.

³⁸Discounting is of course itself ethically contentious; the argument here should be considered to run on the basis of whatever social time preference rate (if any) is ethically justified. Where the social time preference rate differs from the personal rate of time preference, an adjustment to elicited *wtsl-t* estimates of welfare impact is required, as impatient individuals will be too-willing to sacrifice future life-time for current benefit, and social appraisal will need to correct for this bias; see also fn 47.

³⁹Note that this assumption does not generalize to other contexts in which public policy options have impacts on individuals' time. For example, journey time often does make a contribution to welfare, depending upon comfort, ability to use time productively, cleanliness of train windows, etc. As these amenities are valued differently by different individuals, so options appraisal should ideally value such time differently for different groups. No differentiation of life-time-value is implied thereby.

value by assessing what tiny shortening in discounted life expectancy they would be willing to sacrifice in order to gain £30. (We might for example observe how much poorer safety performance in an automobile they forego to save £30 in its purchase price, fractionally increasing their risk of death.)

If Richard would implicitly be willing to sacrifice little life-time, say less than 15 minutes, to avoid the £30 fee, he would be more than $1\frac{3}{4}$ hours worse off from the switch from fee to queue. If Polly would be willing to sacrifice more than 4 hours to avoid the fee, her gain from the switch would exceed 2 hours. (That these numbers are plausible, given their respective circumstances, is shown in the Appendix.) In that case, the switch generates a gain in equal-value welfare units (discounted statistical life hours) overall. The gain to Polly's welfare would be deemed to exceed the loss to Richard's in units of equivalent intrinsic value. It is thus plausible that a different policy prescription may arise from respecting equality in appraisal.

Note that the argument is not that this particular policy decision is unquestionably the right one, and that, therefore, *wtsl-t* should be preferred to *wtpw* on these grounds. The argument is, rather, that *wtsl-t* is preferable due to its better accordance with the equality of human worth, as argued in the previous section. The analysis here illustrates that this shift in the basis on which interventions are appraised may have significant policy implications.

Note also that the Equal Respect proposal does not deny that Richard's time is worth more of Richard's money than Polly's time is worth of Polly's money. But as it is uncontentious that *money* confers benefit of different value to different people (as was rehearsed in section 2 above), we cannot deduce from the fact that Polly's time is worth so little to her in money terms that it should be valued less highly than Richard's time in social appraisal. The question is, on what basis *can* the value of their respective life-time be compared? One option (the Universal Scale Approach, set out in section 3) is to ask how a single person would choose between sacrificing time from a period in which they are as rich as Richard and sacrificing time during which they suffer poverty like Polly's (and it is clear that most people would much prefer to avoid losing time-when-rich). Yet under Equal Respect we deny the applicability of that result to the context of inter-personal comparison, insisting that Polly's life-time *now* is as valuable as Richard's. We don't deny that Polly would sacrifice her time for little money – but as life-time-value is what we hold constant in inter-personal comparisons (that constancy being the very basis of such comparison), the low monetary value that Polly puts on her time is but a proof of the enormous welfare gain that can be achieved by putting more money in her hands.

Why are we using life-time to express equality of human worth, rather than considering lives as a whole to have equal value? Baker *et al.* (2008), building upon Somanathan (2006), favour attributing a constant value to a prevented fatality as a metric of impact of interventions reducing mortality risks. Somanathan (2006: 123) explicitly justifies this practice from 'the widely shared view that all lives should be valued equally'.

It is embarrassing to concede at this point that the shared strong conviction of human equality is vague in its detail: different decision contexts elicit quite inconsistent intuitive responses. Typically, in safety contexts we wish not to discriminate between lives according to life years remaining, whereas in healthcare the value of interventions is often calibrated in terms of potential gains in life expectancy. One way through this thicket of conflicting ethical intuitions is to choose an equality principle consistent with the theoretical grounding of equality, discussed above, so long as its implications are not too rebarbative.

We can on this basis rule out assigning equality to whole lives given that to do so would give the same social value to mitigating fatality risk for a group of end-stage cancer patients hoping to gain a few months as to a group of youngsters at risk of death from meningitis, with 60 or more years' life expectancy at issue, and it is not plausible that what gives life value can be achieved as well in a few months as over 60 years.⁴⁰ Should we, conversely, if dSLYs are our metric of comparison, be content to insist on more stringent fire regulations for nurseries than for care homes, given the greater number of life years at stake? We perhaps intuitively resist from denying safety enhancement on grounds of remaining life expectancy, but that intuition may be an error; one dispelled when we are forced to reckon with the facts of our mortality and the budget constraint on safety measures.

Life-time is a measure of welfare impact that is related to those used respectively in the economics respectively of safety⁴¹ and of health.⁴² And it is an attraction of this

⁴⁰A third option might be to standardize the value not of remaining life (the prevented fatality standard) but of a whole life – attributing more value to each life-year the shorter is a person's *total* life-expectancy (i.e. their expected age at death). This has some intuitive attraction, but it would involve age-discrimination – denying equal ethical significance to the ways in which the elderly can achieve value with their life-time.

⁴¹Although risk appraisals tend to use 'prevented fatalities' (PFs) rather than SLYs as a metric of impact, this may be understood as a pragmatic short-hand employable in contexts in which all PFs involve similar numbers of dSLYs. (See Her Majesty's Treasury 2019: para. A.2.51: 'SLYs help with the appraisal of options where the number of years of life expectancy at risk differs between options; valuing impacts in terms of SLYs offers a way of allowing for this difference.' The implication being that only where the average life expectancy of those affected by different options does not differ should one employ PFs.)

⁴²As mentioned in fn 36, QALYs are derived using techniques to establish individuals' willingness to sacrifice life expectancy to achieve gains in health-related quality of life. With one caveat, this implies equivalence of social value of discounted QALYs and dSLYs. To see this, imagine you have an unpleasant health condition and a life expectancy of 10 years. Suppose you would have been *wtsl-t* of 2 SLYs in exchange for a cure yielding full health for your remaining life, implying a social value on the Equal Respect approach of 2 SLYs (ignoring discounting) for the cure (which does not actually affect life-expectancy); it also implies a gain of 2 QALYs, as indifference between 8 years in full health and 10 years with a health condition defines the Health Related Quality of Life (HRQoL) of the condition to be 0.8, so that the gain is $0.2 \times 10 = 2$ QALYs. The caveat is that if you are irremediably disabled in some way unrelated to your health condition and its cure, you may be willing to sacrifice 2 SLYs for what would be full health for you, but your health gain will fall short of 2 QALYs, as HRQoL is usually defined against an absolute rather than a personal standard of full health. In Franklin (2017), I elucidate an interpretation of QALYs that respects equality by calibrating full health to the normal health of the individual concerned; on that interpretation dQALYs and dSLYs would retain equivalence of social value. Esposito and Hassoun (2017) have an alternative approach to avoiding discrimination

proposal that it could help to reconcile the mainstream of welfare economics practice to that of these sub-disciplines. The Equal Respect approach thereby provides a firmer foundation for health- and risk-economics themselves.⁴³

Admittedly, the Equal Respect approach is not the only way of reconciling the sub-disciplines. Canning (2013) also advocates use of life years to measure utility, but he insists that the life years to be used as numeraire be 'lived in full health.' In principle, indeed, he speculates that we might wish to 'adjust the social value of life years of the poor for the fact that they are low quality years in terms of income'. 'From an ethical point of view', he continues, citing Broome, 'quality adjusting life years for all aspects of life that people value may be desirable' (2013: 1410). That his analysis does not do so is merely because he aims only to 'justify cost-effectiveness analysis, which usually only quality adjusts for health'.⁴⁴ And indeed Cookson *et al.* (2016) develop the Canning approach precisely to adjust attributed impact for difference from reference income as well as from reference health.

Canning's analysis thus elegantly shows how dSLYs can be used within a Universal Scale framework, by creating a reference dSLY: the life-year of a healthy individual with reference-level wealth and reference-level other determinants of welfare. A person's life-value on the Universal Scale can then be given by the number of life years lived at that reference quality of life for which a person would swap her current health/wealth/etc. prospect; impacts can be appraised against the Universal Scale by calculating the difference in that number of life years brought about by different options.⁴⁵

However, to make adjustments for lower levels of utility attributed to the poor and/or to the disabled, even where there is no remedy to poverty or to illness in the ambit of the appraisal, is, we are arguing, *pace* Broome (1991), Canning (2013) and Cookson *et al.* (2016),⁴⁶ to undervalue the life years and hence the life-value of these persons.

against the disabled. Their methodology also stipulates the equal value of the life years of all individuals. However, their analysis concerns the Disability Adjusted Life Year (DALY) metric, which is calibrated using social consensus, and therefore cannot be calibrated using individuals' own valuations of benefit; hence their account, whilst assigning equal value to equal life extension, leaves in place discrimination in assessment of health improvement.

⁴³The literature wrestles with the difficulties of justifying the use of SLYs or QALYs from a conventional welfare economics perspective. See Loomes and McKenzie (1989: 299). See also Cookson (2003), who here and elsewhere makes the positive case for the QALY as an application of a Sennian capabilities-based approach to assessing health gains – one that is I believe in harmony with the Universal Scale approach discussed above.

⁴⁴Canning aims to produce a welfarist axiomatization of cost-effectiveness analysis in health economics. Although much health economics discourse is elitist in the way here described, health economics practice is actually ambiguous in this regard (Franklin 2017); it can largely be understood as undertaking *intra*-personal appraisal, where the government is designing the basket of health interventions to maximize quality of life for a healthy population at risk of ill health.

⁴⁵As Canning shows, this is equivalent to 'a weighted cost benefit analysis ... where we weight each person's willingness to pay in money terms ... using the weight $\partial I_i^*/\partial m_i^*$ ' (2013: 1412), i.e. the marginal rate of substitution (MRS) for individual *i* of *standardized* healthy life-years, I_i^* , for money.

⁴⁶In a personal communication, Cookson acknowledges the concern that this could give too large a valuation to welfare gains for the well-off, who would act as Nozick's utility monsters (see fn 31). However, he takes the objection to pertain only to the possibility of this over-valuation being of

Conversely, the Equality of Respect approach involves using for numeraire the life years available to a person at the time and in the context of the appraisal currently in view. What Canning shows, however, is that setting equivalent impacts upon life expectancy as the measure with which to assess personal welfare impacts (whether that life expectancy is assumed to be at the affected individual's current income and health prospect, as under the Equal Respect approach, or an ideal standard, as under the Universal Scale approach) is equivalent to weighted *wtpw* cost-benefit analysis, where the weight to be used under Equal Respect is the marginal rate of substitution of money for *own* [discounted]⁴⁷ life expectancy. Each individual's *wtpw* for a policy change can be weighted by their personal marginal rate of substitution between wealth and risk. There is a large empirical safety-economics literature devoted to estimating this rate (e.g. from willingness to pay for additional product safety). This literature can be drawn on to derive the Equal Respect weights for different socio-economic groups that can be used to convert *wtpw* valuations of impact into equality-respecting interpersonally comparable dSLY valuations.

6. Compassion or *mitgefühl*

In this section we consider challenges to the Equality of Respect approach respectively from personal risk-taking and from policies to raise community welfare; in both cases our evaluative practice appears to attach uneven value to prospective life-years, whether across time or across persons.

Specifically, first, when considering options to change our own lives, we often attribute more value to our prospective life-years under one option than another; we can express this by taking risks to achieve the better option. Yet the prospective life-years under each option (before and after the change for which we take the risk) might at different times be compared to an identical welfare impact on another person, and accordingly be given the same comparative value under the Equal Respect approach. And, second, policies to ameliorate miserable lives are most obviously grounded on an assumption that without that support their lives are less valuable: what is the motivation for egalitarian concern, or indeed for compassion and succour, if even miserably disadvantaged lives are reckoned of equal value?

'monster' proportions: 'I agree that large 'utility monster' type differences in the value of an extra year of life would be ethically problematic – e.g. if giving an extra year to a fantastically rich and happy person were 10 or 100 times more important than giving an extra year to an average person. However, QALY type metrics typically will only give much smaller differentials of 10 to 100 percent, since most people bumble along most of the time at QoL [Quality of Life] scores of between 0.5 and 1, and thankfully it is rare for people to be so extremely ill that their life is barely worth living with a QoL score approaching zero.' Yet by the equality axiom *any* differentiation of valuation due to irremediable differences in measured QoL indicates that the methodology is ethically flawed; furthermore, the undervaluation of improvements to the lives of the disadvantaged may actually be substantial in development or trade economics.

⁴⁷When the money to be foregone would be funded current consumption, the willingness to pay for safety will reflect individuals' own time preference; hence it is important when estimating the marginal rate of substitution between money and safety to discount the years to be gained using a *personal* rather than a social rate of time preference. As this can be difficult to uncover, an alternative that has been used is to elicit what regular payment individuals are willing to make to improve their safety.

Consider first personal life-enhancing risk-taking. Suppose A is willing to take a risk of death to gain some life-advantage. Perhaps she is willing to risk her life to gain the opportunities associated with migration. She implicitly attaches lower value to life years at home.

The tension with the Equal Respect approach can be brought out by placing A's opportunity to migrate within an interpersonal option appraisal. Suppose a policymaker must choose whether to support a risk-free option to enable A to migrate against an alternative intervention that would increase person B's life expectancy by one year, a gain of one SLY. Suppose the policymaker knows that A, with a 40-year life expectancy, would migrate even were there an associated risk of death of 5%, and the policymaker deems A's judgement a reasonable representation of the welfare gain to her (given the life-enhancement associated with it). Under Equal Respect, the policymaker attributes two SLYs (5% of 40 years, ignoring discounting) of personal welfare-enhancement to the intervention to support A's migration.

Suppose that A migrates, and her welfare is as good as she had hoped. Now, a new option to enhance her life yet further emerges, an intervention dramatically to enhance her vision, and that this is another option for which A would prior to her migration have been willing to take a 5% risk of death to secure. B's life expectancy enhancement remains in the policymaker's sights and is again competing with A's potential further gain.

We started out from the worry, under conventional welfare appraisal interpreted using the Universal Scale, that a well-off person's life will be considered more valuable as she's willing to pay more (even adjusted for diminishing utility of wealth) for like percentage enhancements in welfare. But now we seem to have a similar problem: A's willingness to give up life expectancy may again trump an option to extend B's life.

However, there is no unfairness here, as A and B are treated equally in the appraisal. A is simply benefiting from her good fortune that the enhancement opportunities becoming available are those from which she can benefit to a greater extent than B. (We have said nothing about their starting positions, and it would be easy to create a narrative either to make us sympathize with B's plight or with A's opportunity; but under Equal Respect we posit equal value to the value of the non-intervention life years ahead of each of them.)

The challenge to the Equal Respect approach from intra-personal comparisons comes rather from the fact that as A's welfare has been enhanced she will rationally become more risk-averse, limiting her valuation of vision-improvement in terms of SLYs (the life years she is willing to forego). She may now not be willing to take a 5% death risk to gain an enhancement for which she would have taken such a risk before she migrated.

The Equal Respect approach uses A's reduced willingness to risk her prospective life years to obtain vision-enhancement as a measure of its value, ignoring her earlier greater willingness to take risks – before migration. So this does give B a better chance of receiving treatment. Under the Universal Scale approach, A's higher standard of living and range of opportunities after migration would have enhanced her and our valuation of the vision-enhancement; under Equal

Respect, the value of the vision enhancement is scaled down as she deems it relatively less important – giving B more of a chance in the comparison of benefits.

But this is paradoxical: the whole point of the migration was to enhance A's welfare and hence her life-value (remembering that life value is understood to be life's cumulative welfare). Surely her post-migration life years *are* more valuable than before, and that should be taken into account in the valuation? If they were of equal value to B's before the migration, they should now be worth more, given that B's life circumstances (we may suppose) have not changed.

To make sense of this, we must allow that the Equal Respect approach fails to support comparisons of welfare levels assessed at different times. The Equal Respect approach restricts comparability of welfare enhancement to the time and the circumstances in which the intervention-decision is to be taken, where what is compared is the impact upon the prospective value of life under different options from the decision point. This restriction follows from the derivation of the metric of inter-personal comparability from the justificatory ground of the doctrine equality, the axiomatic equality of value of each year of each person's life looking forward from the time of comparison. Comparison of the value of life-enhancements assessed at different times, whether for different persons or for the same person, exceeds the terms of the licence for comparability.

This means that even our migrant, though she can compare her welfare prospect with and without migration, cannot atemporally compare the value of her life years before migration with those afterwards; but she does not need to do so – there is no decision for which she needs to make such a comparison. (She can, however, evaluate her migration against how her life might have turned out had she stayed – as there is in that case consistency of time frame between the options being compared.) Comparisons of personal welfare impact do not get a purchase other than when based on the principle of the equality of value of life prospects at a moment of comparison.⁴⁸

The Universal Scale approach by contrast creates a more robust concept of personal welfare, one that can support comparisons of welfare levels over time. The gain in inter-temporal comparability in appraisal valuation is bought at the cost of failing to respect inter-personal equality of human worth, for if her life years change in value with her migration, they cannot be equal in value to non-migrants' life years both before and also after the enhancement.

The Equal Respect approach forgoes inter-temporal comparison of welfare level in order to insist on interpersonal equality. We anchor inter-personal comparability of personal welfare in *wtsl-t* as the best regulative principle to give coherence to our overall axiology, as it respects the principle of equality whilst allowing us to compare benefits or costs imposed by different policy options at the moment of appraisal. This is what we need to be able to insist that within the narrow ambit

⁴⁸That a similar such restriction in interpersonal comparability is not in itself problematic in the contexts of social decision making was pointed out by Sen (1970: 393): 'in comparing the sums of individual welfare levels for distinct alternatives, as under 'utilitarianism,' what we take as 'origins' of the respective individual welfare functions of different persons makes no difference to the ordering of the alternatives, because the origins get subtracted out in pairwise comparison'.

of inter-personal comparison of welfare impacts, we hold each person's prospective life years of equal value; this is our expression of equality of respect.

And conversely, to return to the worry that the Equal Respect approach over-values miserable lives, if A's migration is in competition with B's life expectancy gain, but A lives in very difficult circumstances, we insist that there is no legitimate perspective from which to judge that B's high-performing life-years have more value than those that A is prepared to risk.

We can now see that the Equal Respect account will in fact appraise affordable gains for the disadvantaged more fully than the Universal Scale account. Under Equality of Respect, we attribute equal value to each separate life's prospective years – whilst recognizing that those prospects are dependent on our support. We value that support according to what the beneficiary would be willing to sacrifice in life-risk to attain it.

The objection from miserable lives spawns a further challenge, however: what is the motivation for egalitarian concern, or indeed for compassion and succour, if even disadvantaged lives are reckoned of equal value?

Note that even under the Equality of Respect approach disadvantage that is susceptible to mitigation is, *ipso facto*, of concern to the decision maker for whom the social option appraisal is being conducted. Yet under the Equal Respect approach, the motivation for action is *not* grounded in compassion, for we refuse to denigrate disadvantaged lives by attributing to them less worth. Rather, we must value enhancements in their quality of life just to the extent that they would reckon such enhancement to be of value, from the perspective of their own prospects. This is a reckoning that uses the common currency of life years, and puts their possible gains on a par with the possible gains of others. Polly's 2 queue-hours, as well as the additional life hours she would have been willing to sacrifice to gain £30, are valued the same as Richard's; we recognize their equal importance to their lives. We need not justify concern by condescending compassion for her impoverished circumstances.

And where no improvement is possible, i.e. where disadvantage is irremediable by that decision maker, we still owe that individual equal respect in appraisal of options affecting life expectancy. We can, then, ground that respect solidly on the value inhering in that person's realizing the ethical potential available to them.

The Equal Respect account dislocates compassion: compassion involves a condescension for the irremediably disadvantaged that finds no place in a world in which all inter-personal comparison of prospective welfare is mediated by the principle of equality.

The avoidance of compassion may then indeed seem an advantage. Kundera (1984: 19) contrasts the sentiment expressed by the Latin-rooted word *compassion*, that views the other as suffering (*passio*), with that conveyed by the German *mitgefühl* or the Czech *sou-cit*, whose etymology links to fellow-feeling. Compassion is like pity in that it 'connotes a certain condescension towards the sufferer. 'To take pity on a woman' means that we are better off than she.' Whereas *sou-cit* means 'to feel with [the other] any emotion – joy, anxiety, happiness, pain ... [it] therefore signifies the maximal capacity of affective

imagination'. The Equal Respect methodology aims to capture welfare impact through the lens of *sou-cit*, without pity or condescension.⁴⁹

The objection from misery states that the dSLY (a year added or subtracted from discounted life expectancy) is implausible as a measure of uniform intrinsic social value in that it attributes equal value to the year that someone in a permanently wretched state is willing to sacrifice,⁵⁰ someone who may hold their dSLYs cheaply relative to the possible welfare enhancements we seek to value. A destitute person might be willing to take severe life risks for what a wealthy person might consider very limited gains in welfare.

The Equal Respect account dismisses this objection by insisting that this is what it is to take seriously the equality of human worth. As we suggested in section 4, on our preferred account of the ground of the ethical commitment to equality, a test of whether we attribute equal value to different individuals' lives is whether we are willing to attribute like value in social appraisal to increasing each person's chance of survival, or to enhancing their lives in other ways that *they* individually deem as valuable as enhancing their life expectancy would be. Denial of this principle would have the abhorrent implication that interventions increasing the lifespans of the wealthy at the expense of those of the poor would be justified.

Yet the disvalue of inequality and misery must be of some concern; and under this Equal Respect approach we seem unable even to express that concern. We cannot say, for example, whether the personal welfare of the community, in aggregate or on average, is higher now than it was 10 years ago, because our standard of inter-personal comparison is not applicable outside a context of appraisal, anchored to a time and set of circumstances.

However, the Equal Respect approach is not only restricted in domain to contemporaneous inter-personal comparison, excluding intertemporal comparisons. As we emphasized in section 2, it is also restricted to comparisons of *personal* welfare, in contradistinction to other aspects of social value such as the impacts of different options on the attainment of procedural, egalitarian and perfectionist goals for society, goals to which the history, level and distribution of welfare across the community relate. And this is helpful in that those other dimensions of social value may provide bases for inter-temporal comparisons of welfare level, so that our intuitive ability to measure progress is not left homeless.

Consider an example used by Esposito and Hassoun (2017: 637) as a test of ethical soundness: whether an appraisal methodology favours Treatment B for one patient over Treatment A for another where 'Treatment A saves the life of a

⁴⁹There is a long philosophical tradition, from Socrates through the Stoics to Nietzsche, disparaging pity. The connection between that tradition and the doctrine of equality may be as follows. Pitying someone attributes to them a dependence upon their circumstances that belies the fundamental nobility of persons, which all equally have the capacity to embody. This does not mean that we have no reason to help each other – which is why Spinoza disparaged pity only 'for those who live according to the guidance of reason' (Spinoza 1985 [1677]: *Ethics*, IV, proposition 50, p. 574). The Equal Respect approach provides reason for us to contribute to each other's welfare as equals.

⁵⁰By anchoring measures of impact on individuals' *willingness* to sacrifice, we sidestep the ethically and legally vexed question of how to value longevity impact upon individuals who permanently lack capacity to make such judgements.

patient with a . . . disability. Treatment B simultaneously saves the patient's life and cures her of a similarly severe disability.' The Equality of Respect approach taken here would *not* favour Treatment B;⁵¹ it thus fails Esposito and Hassoun's test – whereas a greater value would be accorded to B's life-time under the Universal Scale methodology, enabling it to pass the test. A Universal Scale advocate might ask: Would not the beneficiary of Treatment A recognize that she would have been better off with Treatment B if it had been available to her? Perhaps, retorts the Equal Respect advocate, but that does not make Treatment B for B more valuable than Treatment A for A.

That the Equal Respect approach may here seem counterintuitive is I suggest attributable to our focus on a single dimension of value – impact on personal welfare. As Esposito and Hassoun point out earlier in their paper (2017: 634), there are other issues to be taken into account: 'one could certainly argue that a world with h [a healthy person] rather than with d [a disabled person] would be a healthier world, or that the pressure on the health system would likely be lower with h alive rather than d'. These considerations would favour Treatment A, but they are considerations that are extrinsic, and do not justly figure in our reckoning of aggregate *personal* impacts.

If we do recognize the healthiness of the community as an additional legitimate aspect of social value, then we have a base for judgements of intertemporal gain. Thus, we may say that a community is healthier, and indeed longer-lived, than it was 50 years ago. We cannot say that we value the healthy life of one person more than the ill life of another without compromising equality of respect, but we can value the former as a constituent of a healthy community.

Why would the health of the community be valued except in so far as it benefits individuals within it? The answer may be precisely in the fact that one may value an improvement in the average health of the community as a characteristic of the community even where there are no individuals who are better off (for example because the benefit of an intervention falls on a future generation comprising different individuals from those who would have been there without the intervention).⁵²

So the Equal Respect approach to valuing personal welfare impacts need not deny that the fact of even irremediable misery is of account in social decision-making. Such misery may be a consequence of procedural or social injustice,⁵³ and be problematic for that reason, or it may be viewed from a communal perspective as an impairment in the flourishing of the community as a collective; in both cases there will be ethical reason to work to research and to adopt policies that avoid its recurrence, though the beneficiaries of policy interventions may yet be unborn, and may therefore lack defined personal welfare impacts. In making such assessments we are invoking societal values – of justice and of community welfare – that can and should be assessed independently from the assessment of

⁵¹Even under the Equal Respect approach, Treatment B might be included in the basket of treatments funded by social health insurance as it would be preferred by individuals who are equally likely to benefit from either treatment. But suppose Treatment A and Treatment B are indicated respectively for two distinct ethnic or gender groups, then an Equal Respect assessment of the intrinsic personal welfare value of the two treatments to those who will benefit from each will not be able to distinguish them.

⁵²A tentative solution to Parfit's 'non-identity problem'; see Parfit (1984: Ch. 16).

⁵³I am grateful to an anonymous referee for pressing this point.

personal welfare impact with which we have been concerned. (Work is needed to create metrics of communal flourishing that can be weighed in appraisal alongside impacts on personal welfare.)⁵⁴ In either case, we have independent reason for seeking to mitigate misery, whether that involves compensating someone whose life has been restricted by injustice or seeking to create conditions in which future lives will have greater scope to contribute to a flourishing community.

7. Conclusion

Section 2 highlighted the advantages of measuring welfare impacts as one would for a utilitarian appraisal, to allow assessment of the aggregate impact of different options upon the personal welfare of the individuals affected. A distinct appraisal process can then separately attempt to capture impacts upon the full gamut of societal objectives, properly and transparently informed by an appraisal of personal impacts.

However, we have argued that there are (at least) two distinct ways in which impacts upon personal welfare can be aggregated: the one using a Universal Scale, and the other based upon the principle that each person's prospective life time is of equal intrinsic value. The former is the stance of conventional cost-benefit analysis, assessing welfare in utility-units derived from willingness to pay adjusted for the diminishing marginal utility of consumption. The latter, Equal Respect, account, is adapted from health and safety economics; we have argued that it is available as a general metric of welfare impact. This paper has sought to expound this approach philosophically and technically.

Which of these approaches should be adopted depends upon how the commitment to the equality of human worth is interpreted. The second contribution of this paper is to bring out the fact that the Universal Scale approach invokes an implicit elitism regarding human welfare; one that sits well with much of our discourse but that leaves our commitment to equality thin and partial: we give less value to increments in life-time or to proportional increments in daily welfare of the disadvantaged, because their lives are going and will continue to go less well according to our universal standard of welfare.

The Universal Scale approach is sometimes complemented with distribution weights to reflect a higher social valuation of welfare increments to the least well off. This is an expression of compassion: it says that we cannot realistically treat your life as of equal value; rather we will tilt our option appraisal as much as we can (and of course how much to tilt it will be a matter of political controversy) to mitigate somewhat the poverty in life-value from which you suffer.

We saw, however, that the epistemic foundations for the interpersonal comparisons that are needed to build the Universal Scale are shaky. At bottom, it rests, as Robbins insisted, on an ethical judgement. A different methodology is

⁵⁴For contexts in which objective measures of health gain are needed, a metric of burden of disease such as the DALY might be used. Social valuation of this sort of improvement may be elicited using techniques such as the Person Trade Off, where individuals are asked to weigh benefits to others – taking a societal rather than a personal perspective. As argued in section 2 of this paper, such assessments complement but should not displace assessment of social value of the impact of policy options on *personal* welfare.

philosophically defensible. It starts with an axiomatic assertion of the epistemic priority of our commitment to the equal intrinsic value of different persons' prospective life-time. Upon that ethical foundation, the Equal Respect approach to interpersonal comparison delivers a mechanism for assessing aggregate personal welfare impacts of different options on different individuals.

If the Equal Respect approach is the right way to conduct the assessment of impacts on personal welfare, insisting as it does that the only ethically sound basis we have for interpersonal welfare comparisons is equality of prospective life-year value, not only will we have a theoretical foundation (till now lacking) for giving equal valuation to risk mitigation across all communities, but we will also be required to revalue all interventions that benefit the disadvantaged, in order to calibrate welfare gains from the personal perspective of potential beneficiaries.

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Appendix

The main text employs an example of a policy option, the substitution of queuing for payment as a mechanism to ration healthcare, and illustrates its impact on two individuals, Richard and Polly. This appendix establishes the plausibility of the example by: characterizing Richard and Polly in more detail; applying parameters derived from empirical work on *intra*-personal welfare to set the rates of substitution between time and money and utility; and then assessing the impact of the policy option on the welfare of each, using respectively the Universal Scale and the Equal Respect approaches to effect the conversion into *inter*-personally comparable welfare units.

Suppose that Polly, with a job paying around £18 per hour, earns, and consumes, £630 per week; whilst Richard, on around £180 per hour, earns, and consumes 10 times as much – £6,300 per week. (Allowing for holidays, an average week brings 35 hours' wages.) How are they respectively affected by the shift from paying to queuing? To estimate the impact, we need first to estimate at what rate they would each substitute time for money, and then use our two interpersonal-comparison approaches to derive the implications in common welfare units.

The life-time someone is willing to sacrifice for additional consumption is measured directly by the life-risks people will run for pecuniary gain (with due allowance for time preference). This will vary with income given the diminishing marginal utility of consumption. Empirical work suggests that someone like Polly on

Table 2. Welfare equivalence of adding £7 to income, and adding an hour to life-time

k set to 1/100	Base scenario	Scenario with extra time	Scenario with extra consumption
t in weeks	1	$1^{1/168}$	1
Consumption, in £s per week	£630	£630	£637
Personal welfare units, given $U = t \cdot \ln kC$	1.841	1.852	1.852

around average earnings (c. £30,000 p.a.), would typically trade some £7 for a life-hour.⁵⁵ Empirical work also suggests that marginal gains in consumption are valued roughly in proportion to the reciprocal of the level of consumption, i.e. $\frac{dU}{dC} = \frac{1}{C}$.⁵⁶ To capture these data, we propose the following personal welfare function:

■ $U = t \cdot \ln kC$

where

- U is personal welfare,
- t is the number of time-periods available for welfare-production, in weeks,
- C is the resource consumed, in £s, per week,
- k is a scalar.

We need to set k to ensure, in line with the empirical work just cited, that the value of adding £7 to average weekly consumption will increase weekly utility for someone on average income by one part in 168, and so be equivalent to the utility gained from an additional hour (there being 168 hours in a week). Setting at $k = 1/100$ achieves this: see Table 2.

Applying this personal welfare function, $U = t \cdot \ln(\frac{C}{100})$, to both individuals, we can deduce how much Richard and Polly might each value the policy shift: whether in £s (what they would be *wtpw*) or in life-hours (*wtsl-t*).

Now, the next step is to determine which units of impact are valid for interpersonal comparisons, to allow us to make the comparison that will feed into our social cost-benefit appraisal. Under the Universal Scale methodology, we can simply use personal welfare units, as these are derived using the same personal welfare function for both individuals, in line with the theory underpinning the Universal Scale approach set out in section 3. Whereas under the Equal Respect approach, which prescribes that Richard's and Polly's time shall have equal value, we can use the same assumed personal welfare function to give us for each of them an interpersonally comparable estimate of the welfare impact measured in life-hours of the impact in monetary resources of the policy shift.

Table 3 displays how the trade-off differs between our two individuals.

- In cash terms, both Polly and Richard would be *wtpw* of £30 to avoid the £30 fee. However, Polly would be willing to pay £15 to *avoid* the queue – this is her valuation of 2 hours (Polly actually values an hour at around £7.33), derived by assessing, using the personal welfare function, what change in

⁵⁵Her Majesty's Treasury (2019: para. A2.51): 'The current monetary value for a SLY is £60,000'. That Polly values her marginal life-time at only around £7 per hour suggests that she would be willing to work more hours, were her non-pecuniary utility from work positive. However, it is plausible that at the end of the day marginal utility turns substantially negative, which would explain her unwillingness to work more, even assuming extra work is available to her.

⁵⁶According to Her Majesty's Treasury (2019: para. A3.14) this function will somewhat underestimate the diminution in the marginal utility of consumption with increasing consumption. However, it is within the bounds of the empirical literature, and it is used here for simplicity.

Table 3. Shift from £30 charge to 2-hour queue for short medical check-ups required weekly. Valuation of impact for a regular health consultation that is important enough to be obtained by both Richard and Polly on either payment system. Utility Function: $U = t.\ln(k.C)$; $t = 1$; $k = 0.01$

Per week	Richard			Polly		
	£s	t, weeks, converted to life-hours	Universal Scale welfare units	£s	t, weeks, converted to life-hours	Universal Scale welfare units
Status quo ante: weekly consumption, C, per week	£6,300	168	4.143*	£630	168	1.841*
Unit:	<i>wtpw</i>	<i>wtsl-t</i>	Δ welfare	<i>wtpw</i>	<i>wtsl-t</i>	Δ welfare
Impact of avoiding the fee**	£30	0.19	0.005	£30	4.25	0.047
Impact of queuing:	-£305	-2	-0.049	-£15	-2	-0.023
Overall impact:	-£275	-1.81	-0.045	£15	2.25	0.024
Implied valuation of Statistical Life Hour	£152	1	0.025	£7	1	0.011

*Welfare under the Universal Scale approach each week is the natural log of weekly consumption times the scalar (set to ensure Polly’s willingness to pay for risk reduction is around £60,000 per life year, based on empirical evidence for someone on average earnings). For Richard, this is $\ln(6,300 \times 0.01) = 4.143$; for Polly, $\ln(630 \times 0.01) = 1.841$. ** Without the fee, weekly consumption is £30 per week higher. The increment in Universal Scale welfare units from avoiding the fee is therefore $(\ln(C + 30) \times 0.01) - \ln(C \times 0.01)$. The equivalent impact in life-time is calculated by taking the impact in welfare units as a fraction of initial welfare, and applying that to total hours (for Polly, $(0.0465 / 1.8405) \times 168 = 4.25$). According to the welfare model, the same welfare gain would have been achieved with that increase in life-time (although as income would be spread over a slightly longer period, this is a slight overstatement). Similar logic is applied to derive the impact in Universal Scale welfare units and in money terms of the removal of 2 hours of life-time consequent upon queueing.

wealth would leave her as well off as she would be if she could avoid wasting time in the queue. Hence her positive *wtpw* for the substitution of the queue for the fee is £30 less £15, i.e. £15. Richard however would be willing to pay as much as £305 to avoid the queue, so would be down £275 on the deal, i.e. he would be *wtpw* £275 each week to avoid the change. However, as this cash comparison ignores the diminishing marginal utility of income, it provides a sound basis for interpersonal comparison on *neither* valid view.

- Now consider valuation of the impact in terms of time: *wtsl-t*. Using life-time as an interpersonally comparable metric of personal welfare impact, under the Equal Respect approach, the change would be valued by Polly’s and Richard’s respective willingness to sacrifice life-time to gain £30, net of the time-cost of 2 hours. As discussed above, using our empirically supported personal welfare function, we can assess that someone on Polly’s income will be willing to sacrifice some $4\frac{1}{4}$ hours of pure life-time to avoid a £30 fee, whereas the £30 is worth around 12 minutes to Richard. To complete the analysis in *wtsl-t* terms, we need only deduct the 2 hours queuing for which by assumption Polly and Richard should respectively sacrifice precisely that much life-time to avoid (the assumption being that the time in the queue is ‘pure work’ in the sense discussed in section 4 of the main text). The aggregate picture is that Polly would value the change from paying to queueing for medical services as a *gain* of $2\frac{1}{4}$ hours. Richard would value it as a *loss* of $1\frac{1}{5}$ hours (see Table 3). There is an aggregate personal welfare *gain* of $\frac{9}{20}$ hour, or 27 life minutes.
- In Universal Scale welfare units, however, we would conclude that we should *not* implement the switch. And the reasoning would be that Richard’s loss would make a greater impact upon his welfare (a loss of 0.045 welfare units) than would Polly’s gain upon hers (0.024 welfare units, on the Universal Scale), because his time is 2.3 times more valuable than hers – because he has a

higher level of consumption than she has, and therefore occupies a higher place on the Universal Scale of Wellbeing, and hence more welfare is lost with every minute he foregoes. (His time is only 2.3 times more valuable whereas his consumption is 10 times greater because we recognize the diminishing marginal utility of consumption.) On the Universal Scale approach – in contrast to the Equal Respect approach, all that extra consumption is reckoned to give him a substantially more valuable life than hers.

Note that in this exercise, even for the Equal Respect approach, we use the same illustrative welfare function to understand each individual's trade-off between time and money. The methodological choice arises later, in deciding whether to use the derived personal welfare units as the *interpersonally comparable* metric of impact, or whether rather to insist that only prospective life-hours can be attributed equal social value. By design, the example shows how the methodology might yield a different conclusion from this stage of the policy appraisal.

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