

## 6 Incommensurability and Vagueness in Population Axiology

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### 1 Introduction

Population axiology concerns how to evaluate populations in regard to their goodness, that is, how to order populations by the relations “is better than” and “is as good as.” The main problem in population axiology has been to find an adequate theory about the value of populations where the number of people, the quality of their lives, and their identities may vary. This field has been riddled with impossibility results, which seem to show that our considered beliefs are inconsistent in cases where the number of people and their welfare varies.<sup>1</sup> There have been many creative but unfortunately failed suggestions for how to eschew these impossibility results.<sup>2</sup> Here I shall consider two suggestions to the effect that incommensurability or vagueness could help.<sup>3</sup> We shall start, however, by discussing incommensurability and Derek Parfit’s famous “Repugnant Conclusion.”

### 2 The Repugnant Conclusion and Incommensurability

The Repugnant Conclusion can be stated as follows:

*The Repugnant Conclusion:* For any population consisting of people with very high positive welfare, there is a better population in which everyone has a very low positive welfare, other things being equal.<sup>4</sup>

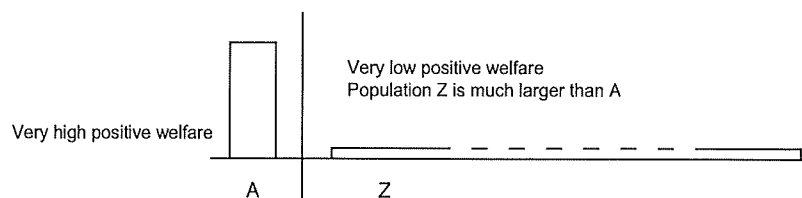


Figure 6.1 The Repugnant Conclusion.

In Figure 6.1, the width of each block represents the number of people, whereas the height represents their lifetime welfare. Dashes indicate that the block in question should be much wider than shown; that is, the population size is much larger than shown.

A population could consist of all the past, present, and future lives (in a possible world), or all the present and future lives, or all the lives during some shorter time span in the future such as the next generation, or all the lives that are causally affected by, or consequences of a certain action or series of actions, and so forth.<sup>5</sup>

All the lives in Figure 6.1 have positive welfare, or, as we also could put it, all the people have lives worth living. The A-people have very high welfare, whereas the Z-people have very low positive welfare.<sup>6</sup> The reason for this could be that in the Z-lives there are, to paraphrase Parfit, only enough ecstasies to just outweigh the agonies, or that the good things in those lives are of uniformly poor quality, e.g., eating potatoes and listening to Muzak.<sup>7</sup> However, since there are many more people in Z, the total sum of welfare in Z is greater than in A. Hence, a theory like Total Utilitarianism, according to which we should maximize the welfare in the world, ranks Z as better than A – an instance of the Repugnant Conclusion.<sup>8</sup>

A theory could avoid the Repugnant Conclusion by introducing incommensurability. It could imply that at least one large population enjoying very high welfare is incommensurable with all populations with very low positive welfare (that is, the former population is neither at least as good as, nor worse than, the latter populations) and that no population with very high welfare is at least as good as all populations with very low welfare.<sup>9</sup>

This is quite an unsatisfactory way to avoid the Repugnant Conclusion and arguably wasn't intended by Parfit. Those who find the conclusion repugnant are also likely to think, I surmise, that it is counterintuitive that a large population enjoying very high welfare is incommensurable with all populations with very low positive welfare. Perhaps, although I doubt it, it can be reasonably believed that some populations with very high welfare are incommensurable with some populations with very low positive welfare, but that some populations with very high welfare are incommensurable with *all* larger populations with very low positive welfare seems, given that other things are equal, clearly counterintuitive.

Some incommensurability among populations is pretty plausible, I think, if there are other considerations apart from welfarist ones that are relevant for the evaluation of populations. If some kind of pluralism is true and there are other values than welfare, then it wouldn't be remarkable if some populations turn out to be incommensurable. For example, it might be that both liberty (of some kind) and welfare should count but that there is no way of weighing gains in welfare against losses in liberty and vice versa. If one population is better than another population in respect to welfare but the other is better in respect to liberty, then these two populations would be incommensurable if the aforementioned pluralism were true.

It is important to remember, however, that we are discussing cases where other things are equal: roughly, the populations that we are comparing only differ in respect to the welfare levels of their constituent lives and size. In general, for an appeal to incommensurability to have any credibility as an argument against the adequacy condition we are discussing here, one must produce a good *welfarist* reason for incommensurability. With respect to the Repugnant Conclusion, I don't see any such reason presenting itself (more on this later).

Let's formulate an adequacy condition that avoids this unsatisfactory way of dealing with the Repugnant Conclusion:

*Quality:* There is a perfectly equal population with very high welfare which is at least as good as any population with very low positive welfare, other things being equal.

Avoidance of the Repugnant Conclusion implies that there is at least one population with very high welfare that is at least as good as or incommensurable with all larger populations with very low welfare. Quality is in one sense logically stronger than avoidance of the Repugnant Conclusion since it rules out axiologies that imply that at least one population with very high welfare is incommensurable with all populations with very low positive welfare but none is at least as good as all such populations.<sup>10</sup>

It is otherwise a very weak condition. A theory that implies that most but not all large populations with very high welfare are worse than some populations with very low welfare doesn't violate Quality. Likewise, neither a theory that yields that only one perfectly equal population with very high welfare is better than all populations with very low positive welfare, nor a theory that deems all such pairs of populations to be equally good, violates Quality (nor do these theories imply the Repugnant Conclusion).

If one holds that the Repugnant Conclusion is unacceptable, then it would be odd, one might argue, to accept such theories. Arguably, the axiological intuition most people have about the relation between populations with very high and very low positive welfare is much stronger than what is captured by Quality. Perhaps we believe that if the high welfare population is sufficiently large, then such a population and any larger high welfare population is better than any very low welfare population. As true as this might be, one should remember that Quality is only a necessary and not a sufficient condition for an acceptable axiology.

### 3 Critical-Level Utilitarianism

Charles Blackorby, Walter Bossert, and David Donaldson have in a number of papers developed a theory, or rather a family of theories, called Critical-Level Utilitarianism.<sup>11</sup> John Broome has also defended a version

of this theory.<sup>12</sup> We are here interested in a version of this theory that incorporates incommensurability, but to get there, we need to first present the simplest version of the theory and its properties. As such, Critical-Level Utilitarianism, or CLU for short, is a modified version of Total Utilitarianism. The contributive value of a person's life is her or his welfare minus a positive critical level. The value of a population is calculated by summing these differences for all individuals in the population. CLU could thus be expressed in the following form:

$$CLU(X) = \begin{cases} \sum_{i=1}^n (u_i - k) & n > 0 \\ 0 & n = 0 \end{cases}$$

In the formula,  $n$  is the population size of  $X$ , and  $u_i$  is the numerical representation of the welfare of the  $i$ :th life in population  $X$ , and  $k$  is the critical level.

The critical level  $k$  is supposed to be the level at which it is axiologically neutral whether a life is created or not, what Broome calls "the neutral level for existence." Blackorby et al. and Broome don't equate this level with the welfare level of a life that is neutral *for* a person – that is, neutral welfare, an option that the classical Total Utilitarian would use. As Broome writes, "[T]he neutral level for existence [the critical level] is positive, once the zero of lifetime wellbeing is normalized at the level of a constantly neutral life."<sup>13</sup> Hence, since the critical level is positive, the contributive value of lives with positive welfare below the critical level is negative.

Consequently, assuming that the critical level is higher than very low positive welfare, the Repugnant Conclusion is avoided and Quality is satisfied since the value of a huge population with positive but very low welfare will be negative.

CLU violates a number of other intuitively attractive conditions, however. Here we will limit the discussion to a few that will be especially relevant when we proceed to the discussion of the incommensurability version of CLU. First, CLU violates the following attractive condition:

*Non-Sadism:* An addition of any number of people with positive welfare is at least as good as an addition of any number of people with negative welfare, other things being equal.

It is easy to see that CLU violates Non-Sadism and that its violation of this condition becomes especially disturbing if the critical level is set high:

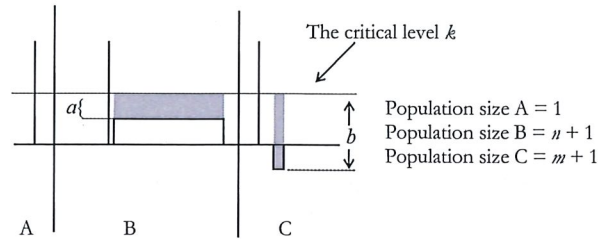


Figure 6.2 CLU and Non-Sadism.

Population A in Figure 6.2 consists of one person with welfare well above the critical level. In outcome B, we have added  $n$  people with positive welfare  $x$ . Their welfare is  $a$  units below the critical level  $k$ , as indicated in the diagram. The negative value of this addition is thus  $n(x - k) = -na$ , which is represented by the gray area in outcome B. In C,  $m$  people with negative welfare  $y$  have been added,  $m < n$ . Their welfare is  $b$  units below the critical level,  $b > a$ , as indicated in the diagram. The negative value of this addition is  $m(-y - k) = -mb$ , which is represented by the gray area in outcome C. For any values of  $a$  and  $b$ , we can find values of  $n$  and  $m$  such that  $mb < na$ , as in our previous case (the gray area in outcome C is smaller than the gray area in outcome B). In such cases, it is better to add the people with negative welfare rather than the people with positive welfare, a clear violation of Non-Sadism.

CLU implies especially troublesome violations of Non-Sadism, such as

*The Very Sadistic Conclusion:* For any population with negative welfare, there is a population with positive welfare that is *worse*, other things being equal.

There is always a population with sufficiently many people with positive welfare slightly below the critical level such that the total negative value of these people is greater than that of a given population made up of people with negative welfare. This holds irrespective of how much people suffer and of how many they are. Thus, CLU implies the Very Sadistic Conclusion and violates

*Weak Non-Sadism:* There is a negative welfare level and a number of lives at this level such that an addition of any number of people with positive welfare is at least as good as an addition of the lives with negative welfare, other things being equal.

Finally, to avoid the worst versions of the Repugnant Conclusion where the Z-lives are just barely worth living, the critical level has to be set fairly high. If the critical level is set at the level of a fairly good life, however, we get the Very Sadistic Conclusion that a population with horribly tormented lives may be better than a population with fairly good lives. In

this sense, CLU is caught between the sadistic Scylla and the repugnant Charybdis.<sup>14</sup>

#### 4 Incomplete CLU

Blackorby et al. acknowledge the aforementioned and related problems, and they have suggested an interesting solution involving incommensurability.<sup>15</sup> Here's the idea. Instead of using one critical level, they propose an interval of critical levels when comparing populations of different size. The interval of critical levels is assumed to be between zero and a positive welfare level  $\alpha$ . The idea is that a population A is better than another population B if and only if A is better than B for all critical levels in the interval. If A is better than B for only some critical levels in the interval, and B is better than A for some other critical levels, then A and B are incommensurable; that is, A is neither at least as good as B nor worse than B. They call this principle Incomplete Critical-Level Utilitarianism (Incomplete CLU for short).<sup>16</sup> We shall formulate this principle as follows:

*Incomplete CLU:* Population A is at least as good as B if and only if  $CLU(A) \geq CLU(B)$  for all  $k$ ,  $0 \leq k \leq \alpha$ , where  $\alpha$  is the upper bound of the critical interval.

Given the standard properties of "at least as good as" it follows from the above that if A is better than B for only some critical levels, and B is better than A for some other critical levels, then A and B are incommensurable (since then it is neither true that A is at least as good as B, nor that B is at least as good as A).<sup>17</sup> As Blackorby et al. point out, Incomplete CLU avoids the Repugnant Conclusion and the Sadistic Conclusion.<sup>18</sup>

It does this in a questionable manner, however, since it does this by rendering all the populations involved incommensurable. For example, let's say that A is a large population with very high welfare and total welfare  $x$  and that B, C, D, and so forth, are populations with very low welfare and with total welfare greater than  $x$ . Assume that very low welfare is below the maximal critical level  $\alpha$ . If  $k = 0$ , then CLU is equivalent to Total Utilitarianism and, consequently,  $CLU(A) < CLU(B)$ ,  $CLU(A) < CLU(C)$ , and so forth. If  $k = \alpha$ , on the other hand, then the value of populations B, C, D, and so forth are going to be negative whereas the value of A is going to be positive. Thus, Incomplete CLU renders all populations B, C, D, and so forth, with very low welfare and with total welfare greater than  $x$  as incommensurable with A.

There are at least two problems with this result. First, it is a rather extreme result. Along the lines of the discussion of the Repugnant Conclusion and the Quality Condition, even if (and that is a big "if") it can be reasonably believed that some populations with very high welfare are incommensurable with some populations with very low positive

welfare, it is counterintuitive that *all* of the high welfare populations are incommensurable with *all* larger populations with very low positive welfare but higher total welfare, given that other things are equal.

Consider for example a low welfare B-population with total welfare just slightly higher than A. If one rejects the Repugnant Conclusion, then one will of course consider A better than B since one would also think so if the total welfare was much higher in B than in A. If one accepts the Repugnant Conclusion, one might be a bit unsure about this case (if one isn't a hard-nosed Total Utilitarian who of course will rank B as better than A), perhaps even think that there is some kind of incommensurability here, but somewhere along a spectrum of low welfare populations with successively higher total welfare, one will judge the low welfare population as better than A. Hence, there seems to be no intuitive space for a wholesale classification of all the involved populations as incommensurable. It is a kind of "greedy" incommensurability (more on this below).

The second problem concerns the source of the incommensurability. As we pointed out previously, for an appeal to incommensurability to have any credibility as an argument against the adequacy conditions involved in the impossibility theorems, and in particular for welfarists such as Blackorby et al., one must produce a good *welfarist* reason for incommensurability. There are, I think, three plausible sources of incommensurability among populations that are relevant in respect to the adequacy conditions involved in the impossibility theorems in population ethics.

The first apparent source of incommensurability from a welfarist perspective has to do with comparisons of different people's welfare: one can reject interpersonal comparability of welfare. This move certainly yields extensive incommensurability among populations, but it would be, I surmise, too extensive to be plausible, and rejecting interpersonal comparability of welfare leads to Arrowian impossibility theorems.<sup>19</sup> At any rate, Blackorby et al. are obviously not denying interpersonal comparisons of welfare since their theories presuppose the meaningfulness of such comparisons.

The second welfarist source of incommensurability can be found in the orderings of lives. It seems possible that there are pairs of lives such that we cannot say whether one is better than the other, nor can we say whether they are equally good. In real life, such cases are of course numerous because of epistemological problems. But it also seems possible that there are lives whose welfare is incommensurable in principle. An example might be a life that has somewhat more joy and true friendships but somewhat less important achievements than another. This kind of incommensurability would carry over to population axiology. Let's say that we have two populations of the same size consisting of lives whose welfare is incommensurable; that is, we cannot determine whether the lives in one of the populations have at least as high welfare as the lives in the other populations, and *vice versa*. Other things being equal, these populations are incommensurable.

If there are lives whose welfare is incommensurable, then the relation “has at least as high welfare” is not complete over the set of all possible lives and we will only have a quasi-ordering of possible lives. The adequacy conditions discussed here only presuppose a quasi-ordering of lives, however. Blackorby et al., on the other hand, presuppose completeness, since they assume that welfare can be measured on a ratio-scale and measurement on this scale, in turn, presupposes the completeness of the relation “has at least as high welfare as” over the set of lives whose welfare is measured. In other words, incompleteness in the ordering of lives in regard to welfare is not available for Blackorby et al. as a source of incommensurability among populations.

More importantly, incompleteness in the ordering of lives would hardly yield the kind of incommensurability among populations that Incomplete CLU implies. It would be bizarre to claim that lives with very high welfare are incomparable in regard to welfare with lives enjoying very low positive welfare, or, for that matter, that hellish lives are incomparable with flourishing lives. Hence, the plausible incommensurability among lives that may exist cannot support the kind of incommensurability to which Blackorby et al. resort and can hardly be wielded as an argument against the adequacy conditions in population ethics that we have discussed here.

The third somewhat plausible source of incommensurability from a welfarist point of view is the following: we might find it impossible to weigh a greater number of small gains in welfare against a smaller number of great losses. And one might think that the Repugnant Conclusion involves such a weighing since we are weighing lives with very high positive welfare against lives with very low positive welfare and that a move from A to B would involve a great loss for the A-people and just a slight gain for the B-people.

There are several problems with this reasoning, however. Let me bring up some of the more important ones. First, talk about “gains” and “losses” might be quite misleading in the present context – it sounds like we are “taking” welfare from some well-off people and “giving” it to some worse-off people whom we are considering “moving” from an existing population to another population. This need not be the case, however. For example, the compared populations might be two future populations consisting of different people. So no one is gaining or losing, at least as long as we don’t think one can gain from being created and lose from not being created. Especially the latter claim is a tall order to defend.<sup>20</sup>

Second, and more interestingly, this won’t generate the kind of incommensurability generated by Incomplete CLU and points to a general problem for an appeal to incommensurability in population ethics. With this source, it would be counterintuitive if the zone of incommensurability wasn’t limited but “greedy.”<sup>21</sup> Even if we could get incommensurability when we weigh a greater number of small gains in welfare against a



smaller number of great losses, it seems likely that we should get out of the zone of incommensurability at some point if we increase the number of people that gain. Applied to the Repugnant Conclusion, we would then get incommensurability in some zone of the sequence of populations with very low positive welfare but increasing total welfare. At some point, however, when the number of people gaining is so much greater than the number of people losing, one might not find it a hard call anymore to judge that the gains outweigh the losses. So this source will generate a limited incommensurability among populations and not the wholesale incommensurability implied by Incomplete CLU.

We should also consider the incommensurability implied by Incomplete CLU in cases involving lives with negative welfare. Here it yields even more counterintuitive results, I'm afraid. Consider the Very Sadistic Conclusion. For any number  $n$  of hellish lives, there is a number  $m > n$  of lives with positive welfare just below the highest critical level, such that a population consisting of the hellish lives is incommensurable with the population consisting of the lives with positive welfare. Thus, Incomplete CLU avoids the Very Sadistic Conclusion but, again, in a disputable manner since the population with hellish lives is not incommensurable with the population consisting of the lives with positive welfare but clearly worse.

Lastly, although Incomplete CLU can avoid the Repugnant Conclusion and the Very Sadistic Conclusion, it cannot avoid violating Quality and Weak Non-Sadism. According to the former condition, there is at least one perfectly equal population with very high welfare that is at least as good as all populations with very low welfare, other things being equal. Incomplete CLU implies that for any population with very high welfare, there is a population with very low positive welfare that is incommensurable with or better than the former.

Weak Non-Sadism yields that there is a negative welfare level and a number of lives at this level such that an addition of lives with positive welfare is at least as good as an addition of the lives with negative welfare, other things being equal. According to Incomplete CLU, for any addition of lives with negative welfare, irrespective of how much people suffer and of how many they are, there is an addition of lives with positive welfare that renders the compared populations incommensurable.

## 5 Vague CLU

Broome suggests a structurally similar solution to Blackorby et al.'s, but instead of incommensurability, he introduces vagueness in the ordering of populations. The idea is that the critical level is vague.<sup>22</sup> Broome adopts a supervaluationist account of vagueness. According to this account, we can say that a population A is better than B if and only if it is better under every sharpening (or interpretation) of the critical level; otherwise, it is indeterminate whether it is better.

We can, with Broome, assume that the sharpenings of the critical level lie in an interval between zero and a positive welfare level  $\alpha$ .<sup>23</sup> Hence, we can say that population A is better than B if and only if  $CLU(A) > CLU(B)$  for all sharpenings  $k$ ,  $0 \leq k \leq \alpha$ ; otherwise, it is indeterminate whether A is better than B. The structural similarity with Blackorby et al.'s proposal should now be evident. Let's call this theory Vague Critical-Level Utilitarianism or Vague CLU for short.

Does it help substituting vagueness for incommensurability? Well, the implications will be similar to those of Incomplete CLU pointed out earlier, although instead of the populations being rendered incommensurable, it is indeterminate whether they are better or not. For example, according to Vague CLU, for any addition of lives with negative welfare, irrespective of how much people suffer and of how many they are, there is an addition of lives with positive welfare such that it is indeterminate whether is better to add the lives with positive welfare rather than the hellish lives. Of course, that is exactly what we think we can say with confidence, and the reason why Weak Non-Sadism is so compelling. What we believe is that the addition of lives with positive welfare is determinately better than the addition of the lives with very negative welfare. All the other troublesome implications of Incomplete CLU discussed previously can be reproduced for Vague CLU, including the greediness problem. An appeal to vagueness doesn't help here.<sup>24</sup>

## Notes

- 1 The informal Mere Addition Paradox in Parfit (1984: 419ff) is the *locus classicus*. For an informal proof of a similar result with stronger assumptions, see Ng (1989: 240). A formal proof with slightly stronger assumptions than Ng's can be found in Blackorby and Donaldson (1991). For theorems with much weaker assumptions, see my (1999), (2000a), and especially (2000b), (2001), (2011), (forthcoming).
- 2 See Arrhenius (2000b), (forthcoming).
- 3 For some other suggestions (most of them presented just as a solutions to a specific simple impossibility result) and criticism of these, see e.g., Arrhenius (2016), (2021); Hájek and Rabinowicz (2021); Handfield and Rabinowicz (2018); Parfit (2014), (2016); Qizilbash (2000), (2021); Rabinowicz (2021).
- 4 Here's how Parfit (1984: 388) formulates the conclusion: "For any possible population of at least ten billion people, all with a very high quality of life, there must be some much larger imaginable population whose existence, if other things are equal, would be better, even though its members have lives that are barely worth living." Hence, our formulation is more general than his. The *ceteris paribus* clause in the formulation is meant to imply that the compared populations are roughly equal in all other putatively axiologically relevant aspects apart from individual welfare levels.
- 5 More exactly, a population is a finite set of lives in a possible world.  $A, B, C, \dots, A_1, A_2, \dots, A_n, A \cup B$ , and so on, denote populations of finite size. We shall adopt the convention that populations represented by different letters, or the same letter but different indexes, are pairwise disjoint. For example,  $A \cap B = A_1 \cap A_2 = \emptyset$ . We shall assume that for any natural number  $n$  and any welfare level  $X$ ,

- there is a possible population of  $n$  people with welfare  $X$  (for a discussion of this *No-Limit Assumption*, see Arrhenius (2000b: ch. 3), (forthcoming)).
- 6 We shall say that a life has *neutral welfare* if and only if it is equally as good for the person living it as a neutral welfare component and that a life has *positive (negative)* welfare if and only if it has higher (lower) welfare than a life with neutral welfare. A welfare component is neutral relative to a certain life  $x$  if and only if  $x$  with this component has the same welfare as  $x$  without this component. There are a number of alternative definitions of a neutral life in the literature, many of which would also work fine in the present context. For a discussion, see Arrhenius (2000b), (forthcoming: chs. 2 and 9), Broome (1999), (2004), Bykvist (2007: 101), and Parfit (1984: 357–358 and appendix G). Notice also that we actually don't need an analysis of a neutral welfare in the present context but rather just a criterion, and the criterion can vary with different theories of welfare.
  - 7 See Parfit (1984: 388) and Parfit (1986: 148). For a discussion of different interpretations of the Repugnant Conclusion see Arrhenius (2000b), (forthcoming) and Parfit (1984), (2014), (2016).
  - 8 Throughout this chapter “better” means “better, all things considered,” if not otherwise indicated.
  - 9 We could extend this definition for the purpose of this chapter to include Ruth Chang's (2002), (2005) (2021) proposal that there is a forth value-relation: “on a par” – that is, define incommensurability as “neither at least as good as, nor on a par, nor worse than.” Likewise for Parfit's (2014), (2016) idea of imprecise equality. For a discussion of the latter, see Arrhenius (2016), (2021).
  - 10 Quality doesn't imply avoidance of the Repugnant Conclusion, and vice versa, but given full comparability among populations and satisfaction of a weak dominance condition, avoidance of the Repugnant Conclusion implies satisfaction of Quality. For a proof, see Arrhenius (2000b), (forthcoming: appendix B).
  - 11 See Blackorby, Bossert, and Donaldson (1995), (1997), (2005) and Blackorby and Donaldson (1984). These authors also propose a more refined version of CLU where the contributive value of people's welfare is dampened by a strictly concave function. This modification has no relevance for the arguments made here. For a precursor to Blackorby et al.'s theory, see Kavka (1982).
  - 12 Broome (2004). Broome develops his theory from some foundational ideas in axiology, drawing on some of the results from his earlier book *Weighing Goods* (1991), and carefully working toward a comprehensive population axiology. Unfortunately, space limitations prevent me from doing full justice to Broome's rich book, and I shall here focus on the implications of the population axiology that he formulates in the final chapters.
  - 13 Broome (2004: 259). See also the discussion of Broome's definition of a life with neutral welfare in Arrhenius (forthcoming: section 2.2.3). Blackorby et al.'s zero represents the welfare of a life with neutral welfare where neutral welfare is the limit that the welfare of all kinds of lives approaches as they get shorter and approach zero length (2005: 25). Cf. Arrhenius (forthcoming: section 2.2.3, fn. 27).
  - 14 Broome (2004: 213–214) acknowledges this dilemma: “To ease the discomfort of the ... repugnant conclusion, I suggested that the neutral level might be a reasonably good level of life. If this is so, the ... [Sadistic Conclusion] is more poignant. A life just below the neutral level will also be reasonably good. It may contain no suffering, so the [distribution with such lives] ... may contain no suffering. Yet according to the [Sadistic Conclusion], this distribution

is supposed to be worse than a distribution that contains a very great deal of suffering. – The implausibility arises principally from the interaction between the positive [repugnant conclusion] and [the Sadistic Conclusion]. To make ourselves comfortable with the positive one, we need a high neutral level, but this makes us uncomfortable with the [Sadistic Conclusion]... – The best we can hope for is a compromise that reduces the strain on our intuitions to a tolerable level. I see no guarantee that this is possible.”

- 15 See Blackorby et al. (1997: 216–219), (2005: ch. 7).
- 16 See Blackorby et al. (1997: 216–219, 226). That the critical levels consist of all numbers between zero and a positive welfare level is not part of Blackorby et al.’s definition of Incomplete CLU, but they assume this in their discussion of it. See also Blackorby et al. (2005: 219–221, 248–252).
- 17 It also follows that if A is at least as good as B but B isn’t at least as good as A, then A is better than B; and if they are both at least as good as the other one, then they are equally good.
- 18 See Blackorby et al. (1997: 218–219, 226) and Blackorby et al. (2005: 221).
- 19 For a discussion, see Arrhenius (2000b), (2000a), (forthcoming).
- 20 For a discussion of whether it can be better for a person to exist than not to exist, see, e.g., Arrhenius (2015); Arrhenius and Rabinowicz (2010), (2015).
- 21 Broome (2004: ch. 12) uses the term “greedy” to describe incomparability that spreads way beyond its intuitive limitations. See also Arrhenius (forthcoming); Handfield and Rabinowicz (2018); Herlitz (2020).
- 22 Broome (2004: 180). Cf. Broome (2021).
- 23 Broome (2004: 180, 259).
- 24 I would like to thank Anders Herlitz and Henrik Andersson for helpful discussions. Financial support from Riksbankens Jubileumsfond (grant M17-0372:1) is gratefully acknowledged.

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