



Resources and the acceptability of the Repugnant Conclusion[&]

(Recursos y la aceptabilidad de la Conclusión Repugnante)

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ABSTRACT: Parfit's Repugnant Conclusion argues, against intuition, that for any world A, another world Z with higher population and minimal well-being is better. That intuition is incorrect because the argument has not considered resources that support well-being. Z must have many more resources supporting well-being than A does. Z is repugnant because it spreads those resources among too many people; another world with Z's resources and fewer people, if available, would be far superior. But Z is still better than A; it is worth accepting its very large population to get the resources needed to support their well-being.

KEYWORDS: Repugnant Conclusion, resources, feasibility, population ethics.

RESUMEN: *La Conclusión Repugnante de Parfit argumenta, contraintuitivamente, que para cada mundo A hay otro mundo mejor Z con una población mayor y mínimo bienestar. Esa intuición es incorrecta porque el argumento no ha considerado recursos que sostienen el bienestar. Z debe tener muchos más recursos para sostener el bienestar que A. Z es repugnante porque esparce esos recursos entre demasiada gente; otro mundo con los recursos de Z y menos gente, si fuese posible, sería muy superior. Pero Z es aún mejor que A; merece la pena aceptar su alta población para conseguir los recursos necesarios que sostengan su bienestar.*

PALABRAS CLAVE: *Conclusión Repugnante, recursos, factibilidad, ética poblacional.*

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Introduction

Utilitarian-type approaches to population ethics inevitably have to confront what Parfit (1984) has named the Repugnant Conclusion (RC). The RC starts from three plausible axioms; that adding a life worth living to a world makes it better, that distributing well-being more equally among a world's population makes it better or at least no worse, and that betterness of worlds is transitive. Parfit demonstrates that these three axioms imply that, for any world A with any level of average well-being, there exists another world Z with an extremely large population whose lives are barely worth living, which is better than the original world A. This conclusion seems intuitively wrong, but one can reject it only by rejecting one of the three axioms, all of which seem difficult to deny. Most authors writing on the RC have chosen to deny one of the axioms.¹ A smaller number have accepted the RC and tried to explain why our intuition that it must be false is misleading.²

In this article, I offer a new explanation of why the RC is correct, and our intuition that it is false is not. The discussion of the RC has generally not considered the question of the resources required to support the well-being of the populations of the worlds.³ Parfit's original argument recognizes that world Z may not be feasible, but then states that Z does not have to be feasible for a comparison between A and Z to be meaningful. The betterness ordering of two worlds should be the same whether we have enough resources to produce those worlds or not. I agree; but I propose that our intuition about their betterness could depend on their feasibility. If we fail to consider feasibility, our intuition about desirability could be misleading, making world Z feel repugnant even though it is preferable to world A. I argue that this is in fact what has happened in the discussion of the RC. I claim that our intuition about the comparison between A and Z is misleading because of this failure to consider resources required to support well-being. When we take them into consideration, the RC does not change, but our intuition that Z is worse than A changes, and that eliminates the conflict between the logic of the RC and our intuition about it.

I establish this claim in two parts. First, I show that our intuition about the betterness of two worlds can depend on whether we have thought about the resources they require or not. Second, I show that this applies to the RC; Z requires more resources than A does, and not considering this is a plausible reason for our intuition to be wrong. The reason that Z is better than A is not because there is something desirable about having a lot of lives barely worth living. On the contrary, holding resources constant, it would be much better to have fewer people than in Z, with a higher standard of living. But in Parfit's construction, resources are not held constant. Z is better than A is because Z offers many more resources to use to generate well-being, even though they are distributed in an undesirable—indeed repugnant—way. Nonetheless, to get a sufficiently large increase in resources that create well-

¹ The list includes Pressman (2015), Blackorby, Bossert and Donaldson (1997), Cowen (2004), Ng (1989), Parfit (2016), Temkin (1987), Rachels (2001), and many more.

² These include Huemer (2008a), Ryberg (1996), and Tännsjö (2002).

³ The optimal growth path literature is an exception, though it generally does not address directly the moral issues the RC raises. See, for example, Boucekkin and Fabbri (2013).

being, it can be worth accepting a low average level of well-being. That is why a world Z can always be constructed that is better than A – one can always add enough resources that support well-being to offset the undesirability of distributing them among a too-large population, as Z requires.

If we do not think about how many resources the two worlds have, then the fact that Z's total well-being is spread among too large a population, whereas A's well-being is not, makes Z seem inferior to A; and in that regard it is inferior to A. But that is not the only difference between them; Z has additional resources that can generate well-being, and using them to support lives worth living makes Z better. The absence of resource issues in the discussion has left this point unconsidered. Once we realize that accepting a poor distribution of resources among a too-large population is just the price that the RC forces us to pay to get those resources, and the well-being they create, then it is no longer problematic to think that Z could be the more desirable world. Then the conflict between our intuition and the RC disappears.

What our intuition claims, correctly, is that Z is repugnant because we would never choose it if we could its additional resources freely. It would instead be better to use those resources to support a not-so-much-larger population at a much higher level of well-being. A world which does that is better than both A and Z; better than A because it has more resources than A does, and better than Z because it has the same level of resources but uses them in a better way. If we have enough resources for Z, other worlds with lower population and a higher standard of living are available to us and preferable. But if we don't have enough resources for Z, then we might choose A; it is not obviously dominated in this way. Our intuition tells us that A, a world we might plausibly choose to bring about, is better than Z, a world we would never choose to bring about. That would be correct if A and Z required the same resources; but it is not correct if Z requires more resources than A. The traditional presentation of the RC obscures the fact that A and Z do not require the same amount of resources, which leads us to the intuition that A is better than Z. But considering resource requirements shows us that that intuition is incorrect.

This does not demonstrate that utilitarian population ethics, or other population ethics that imply the RC, are correct. But it removes one of the obstacles to accepting such theories, if we have other reasons for wanting to accept them. We do not have, and are unlikely to get, any theory of variable-population ethics that satisfies all our intuitions about what such a theory should look like. As Greaves (2017, 1) observes, which ethical system we accept involves “a choice of which intuition one is least unwilling to give up.” A plausible reason to give up the intuition that the RC is repugnant helps us get around this dilemma and brings us a step closer to identifying an acceptable theory of population ethics; or at least, allows us to focus our search on those theories whose main flaw is that they imply the RC.

The Repugnant Conclusion

Parfit develops the RC by construction, starting from any world A with any level of well-being and any size population. Given that world, create a new world A' by adding one more

person with a life barely worth living. A' is better than A by what Ng (1989) has called the Mere Addition Principle.⁴

Mere Addition Principle (MAP): In two worlds X and Y, if X has extra people whose lives are worth living, and all the people who exist in Y exist in X and are as least as well off in X as they are in Y, then X is better than Y.

MAP says that given a choice between two worlds, if everyone who exists in both is at least as well off with one of them, and the people who exist in only one of the two exist in that one and have lives worth living, then that world is better. MAP applies to the comparison between A and A', because everyone in A also exists in A' and has the same level of well-being, while the person added to create A' has a life worth living, if only barely. The average level of well-being is lower in A' than it was in A, but this is because there is a person who would otherwise have not existed, and that person's life is worthwhile, even if not of the same quality as those of the people who live in A.

World A' does, however, have an unequal distribution of well-being, since one person in it has a life barely worth living. Next we create world B, with the same number of people in A', and the same total well-being, but distributed equally among the population.⁵ The average level of well-being in B is necessarily the same as in A', because the total well-being and the number of people are the same in both. B is better than A, or at least no worse, by what Parfit calls the Principle of Equality.

Principle of Equality (PE): In two worlds X and Y, if both have the same number of persons and have the same total level of well-being, but well-being is more equally distributed among persons in X than in Y, then X is better than Y, or at least not worse than Y.

PE says that distributing the same amount of well-being among the same number of people in a more equitable way is desirable, or at least not undesirable. In classical utilitarianism, X and Y are equally good, since utilitarianism is indifferent to the distribution of well-being; many critics of this feature of utilitarianism have suggested that a more equal distribution of well-being is strictly better. But both sides of that debate can agree on PE. It applies to the choice between A' and B by construction. Thus, B is better, or no worse, than A'.

The third step in Parfit's argument is transitivity of betterness. This claims that if world X is better than world W, and world Y is better than world X, then world Y is nec-

⁴ Parfit (1984) refers to adding a person with a life worth living to a population as "mere addition" and to the claim that world B is better than world A as the "mere addition paradox" but does not state the "mere addition principle" as I use it here, as Ng does.

⁵ In Parfit's original exposition, world B has a greater total of well-being than world A' as well as dividing it equally. This is to ensure that B is strictly better than A even according to views in which equality of distribution is irrelevant (like classical utilitarianism). However, it means that resources have to be added to A' to increase its total well-being to produce B, in addition to whatever change in resources the redistribution of well-being requires. This makes the comparison of resources between A' and B more difficult than it is in my presentation, where only the latter change is needed. For my purposes it does not matter if B is only as good as A', rather than being strictly better; since A' is strictly better than A, B will be strictly better than A either way. However, my result can be demonstrated in Parfit's construction as well, just not as simply.

essarily better than world *W* also. If this is not true—if there exists a case where *X* is better than *W* and *Y* is better than *X*, but *W* is better than *Y*—then it is unclear how anyone could make a choice from among all three options. Consistency of choice seems to require that betterness be transitive; and if so, then world *B* is better than world *A*, since *B* is better or at least not worse than *A'* (by PE) which is strictly better than *A* (by MAP).

If we accept those steps, then we have constructed a world *B* which is better than world *A*, though it has a higher population and a lower standard of living than *A* does. We can repeat this procedure indefinitely. Starting from *B*, we can produce a world *C* that is better than *B*, with a still higher population and still lower average well-being. By transitivity, *C* is better than *A*. If we repeat long enough, we will eventually construct a world *Z*, still better than world *A*, but with an extremely large population and an average well-being so low that everyone's life is barely worth living. This is the Repugnant Conclusion.

Parfit finds the conclusion very hard to accept, and much of the literature discussing the RC agrees. But rejecting the RC requires rejecting one of the three axioms that imply it. Much literature has focused on MAP, suggesting that it is not always better to choose a world with an additional life worth living. Possible ways to justify this claim include average utilitarianism, variable-value utilitarianism, critical-level utilitarianism, non-comparability of worlds with different numbers of people, caps on the value of well-being to social welfare, and adjusting the value of a life according to its achievement of its ideal value.⁶ However, all of these alternatives create problems at least as severe as the RC. Some imply Parfit's Absurd Conclusion; once the point of decreasing value is reached, it would be wrong to add many good lives if it required adding even one life of suffering. Others imply the Sadistic Conclusion; it is better to add a few lives with negative value than many lives with positive but relatively low value, since the latter decreases the average more (Arrhenius 2000; Greaves 2017). Others imply that adding a million people with excellent lives does not make a world better. Rejecting MAP does not appear to be a successful way out of the RC.

Other authors have questioned PE, suggesting that equalizing well-being could make a world worse rather than better. Parfit (1986) proposes that it may not be worth giving up a life at a high level of well-being in order to gain a great number of lives at lower levels of well-being. There may something that is lexically prior about a life listening to Mozart that makes it more valuable than any number of lives that have only Muzak and potatoes. But this approach, aside from possibly unpleasant elitist implications, raises the questions of exactly what creates this lexically prior value, and at what point along an apparent continuum of well-being this lexical priority suddenly takes effect.⁷ So this has not led to an effective way out of the RC either.

⁶ On average utilitarianism, see Pressman (2015). On variable-value utilitarianism, see Hurka (1983), and Ng (1989). On critical-level utilitarianism, see Blackorby and Donaldson (1984), and Kavka (1982). On non-comparability, see Heyd (1988), and Broome (1993). For capped value, see Cowen (1996). For ideal-value adjustment, see Gardner and Weinberg (2013).

⁷ Qizilbash (2005) argues that if lexical priority takes place at a "satisfactory" level and this level is vaguely rather than precisely defined, this lets us reject the mere addition principle without having to specify exactly where life becomes satisfactory. Rendall (2015) makes a slightly different argument that suggests vagueness around the satisfactory level can justify rejection of transitivity, because some states are not comparable, at least in different-number cases.

The last option is to question transitivity (Temkin 1987; Rachels 2001). For instance, if the factors that govern the comparison of A and B are different than those that govern the comparison of A and C or B and C, then it could be that A is better than B, B is better than C, but for different reasons C is better than A. However, intransitivity of betterness leads to incoherence in choices among multiple options; without it, we are unable to select any option, as there is always some better one available. There are approaches to resolving these problems, such as allowing for only rough comparability, or distinguishing between differences in kind and differences in degree. However, they tend to produce situations in which more than one option from a group of three or more can be justified, or none can, or in which choice and betterness must be separated to prevent inconsistencies.⁸ We would do better to find a means of accepting the RC, so that the concept of betterness can retain transitivity.

A few authors have been willing to accept the three axioms, and hence the Repugnant Conclusion. This requires explaining away our intuition that hypothetical world Z is worse than A. World Z is very different from the world we actually live in, with a far larger population, so our intuition about the lives of the people who live in it may be unreliable. We may evaluate worlds only according to the lives we would like to live, which would bias us against worlds with many low-quality lives.⁹ However, these arguments against our intuition can be refuted; even after possible cognitive biases are explained to us, many people still find the RC repugnant.¹⁰ Our intuitions may be more reliable than critics have claimed. Or their flaws may apply to all evaluations of hypothetical worlds, in which case they may undervalue the lives in world A as well as those in world Z.

If we cannot accept the arguments against our intuition that the RC is repugnant, then we are back to the contradiction between the proof in favor of the RC and our intuition against it. In that case it would be very helpful to have an additional argument, with a different basis than these, that would explain why our intuition is incorrect. And even if we find one or more of these arguments acceptable, it would still be desirable to have another argument we could also accept, to make our conclusion stronger and perhaps to offer to others who do not agree with us about the merit of the arguments we already have. In what follows, I offer such an argument.

Alternative options and intuition about repugnance

So far the discussion has only considered the desirability of different worlds; which one is better to have. It has not considered feasibility; whether these are worlds we have enough resources to bring about. I start by showing that our intuition about the repugnance of a world does not necessarily depend only on the characteristics of that world—it can depend on what alternative worlds are feasible options. More generally, whether an option is re-

⁸ Such resolutions are offered by Rachels (1998) and Temkin (2012). Arguments against their resolutions, which I find convincing, are provided by Broome (2004).

⁹ Among the defenders of the RC are Huemer (2008a), Mackie (1985), Ryberg (2004), and Tännsjö (2002).

¹⁰ Defenders of our intuition include Pummer (2013), McMahan (1981), Arrhenius (2011), and Peterson (2006).

pugnant or not can depend on whether there are alternative options available that are obviously superior to it. If so, then to determine whether an option is repugnant or not, we need think about what alternatives are available to make it repugnant by comparison. An option that is repugnant because a superior alternative exists may nonetheless be the best available option when that superior alternative is not an option in the given choice problem.

I do not claim that this is the only way that an option could seem repugnant. Some options might be repugnant because of the way they are brought about, rather than because of their end properties. For example, it might be repugnant to kill an innocent person in order to prevent the deaths of five other innocent people, even though it would be better if fewer innocent people died. But that is not the kind of repugnance we are dealing with in the RC. In the RC we have no information about how world Z came about; our repugnance is based solely on the fact that it contains an extremely large number of people with lives barely worth living.

What I claim is that when we have several options available to us, and one of them is obviously greatly superior to another, then the obviously inferior option may be repugnant. How could we ever choose that option when a vastly better option was possible? However, its repugnance depends on the existence of the obviously superior alternative. An option that is repugnant by comparison to a superior option may be the best remaining option if the superior option is not available. In that case we might want to choose it, even though we would greatly prefer the superior alternative, if only it were available—but it is not. (If a repugnant option is repugnant for additional reasons besides the availability of the superior alternative, we might not choose it even if it was, by characteristics, the best option remaining. But in the case of the RC, the repugnance appears to come solely from the low quality of lives in Z when worlds with far higher quality lives are possible.)

I illustrate this point using another example of Parfit's, slightly modified.¹¹ Consider a situation where a stranger is in immediate need of medical assistance, which I can provide at some cost to myself. If I do nothing, the stranger will lose both of his arms. If I pay that personal cost and take two minutes to give assistance, I can save both of his arms. If I pay the same cost, but take only one minute, then I can save one of his arms, but he will lose the other. I will, however, be able to use that minute to trim my nails, or for some other trivial purpose. In this example, it would be repugnant to use only one minute to save one of his arms, and then trim my nails with the other minute. That would be a horrible choice to make when the option of saving both arms is available. But suppose that for some reason, the option of saving both arms is not available to me. Perhaps saving an arm requires some medical supplies as well as my cost and my time, and there are only enough supplies to save one arm. Then the choice is between saving one arm and doing nothing. Saving only one arm, though repugnant compared to saving both, is plausibly the best option in this choice if saving both is not an option.

Consider a second example; I live in a small town with two restaurants, one serving Indian food, and one serving Chinese food. I like the food at the Indian restaurant a great

¹¹ The example is from Parfit (1982), page 131. Parfit uses it to examine moral permissibility, rather than moral value as I am doing. I thank an anonymous reviewer for suggesting that I consider both this example and the one that follows.

deal and am happy to pay to go there. I do not much like the food at the Chinese restaurant and I never go there; I have other ways to spend my time and money that I like better. Now a friend, who does not know my tastes very well, gives me a gift certificate for a free meal at the Chinese restaurant. Should I use it? If I fail to consider that the meal will be free, I would choose not to use it. If I think in terms of not having to expend resources (for example, if I mistakenly think I have a gift certificate that I could use at any restaurant) then I would rather eat at the Indian restaurant. And if I think in terms of having to expend resources (for example, I mistakenly think that even with the gift certificate I will have to pay the bill), then I would rather eat at home. Failing to think about the gift certificate as an addition to my resources makes the Chinese restaurant feel like a bad option – maybe a repugnant one if I feel strongly enough about it. However, once I realize that I can use my gift certificate only at the Chinese restaurant, then I might decide that I would like to go there after all. It gives me a free meal in a restaurant, though on the condition that I can only use it at one particular restaurant, not at the restaurant where I would want to go. If I really like free meals in restaurants, I might accept that condition in order to get the gift—even though, if I had my choice about where to use it, I would choose the other restaurant instead.

I do not mean to claim that any option which is inferior is necessarily repugnant. Maybe I don't dislike the Chinese restaurant so much as to describe it that way. It is certainly not the case that *any* option which is not the preferred option in a choice is therefore repugnant. But if an option I don't want is extremely inferior to one I do, then it would qualify as repugnant, as does the option of saving only one of the stranger's arms in the first example. I would have to get a large quantity of resources in order to accept an option I find so inferior, and prevented from using those resources on the option I would prefer. But as long as resources have increasing value, there will be some quantity of resources which will make it worthwhile for me to accept the inferior option, if that is the only way I can get those resources.

More generally; if we must choose between two options with different resource requirements, option 2 which uses more resources may be preferable to option 1 which uses fewer, even though option 2 might be greatly inferior to option 3 that isn't available though it uses no more resources than option 2 does. Compared to that unavailable option 3, option 2 is repugnant. If we do not take into account the fact that option 3 is unavailable, and only think about how terrible option 2 is compared to option 3, then we might come to an incorrect intuition about the relative value of options 1 and 2. We will conclude that option 1 is better than option 2, when in fact it is not. Option 2 is better because it gives us access to additional resources which option 1 does not; if option 3 was available we would choose that, but it is not, and so option 2 is the correct choice.

Resources and the Repugnant Conclusion

Next I show that the options of the Repugnant Conclusion are like the examples of the previous section. The essential point is that world Z must have many more resources to support its population than world A does. However, it uses them to support too large a population. It would be much better to have a world with a smaller population than Z's, and a higher standard of living for each person. Our intuition correctly senses that Z is

bad—its resources should be concentrated on a smaller population. A is not vulnerable to that criticism, so we do not feel that it is repugnant, and thus we have an incorrect intuition that A is better than Z. But in reality A offers us far fewer welfare-generating resources. If we overlook that fact, then the fact that Z clearly misuses its resources (to support a too-large population) while A is not bad in that way, suggests that A is better, just as we might think we prefer to eat at home instead of go out to the Chinese restaurant if we forget that we have a gift certificate. But A is actually worse than Z, because with far fewer welfare-producing resources, it cannot be as good as Z no matter how efficiently it uses its resources. Z is better because its much greater resources allow it to produce more total well-being, even though it uses those resources very poorly. Our intuition that Z is worse than A is incorrect, and we should discard it.

This intuition meets the four criteria that Huemer (2008b) offers to justify discarding an intuition. First, it does not fit well with other intuitions we hold; it conflicts with mere addition, equality, and transitivity. Second, it positively favors our society's culturally materialistic practices of seeking high average levels of well-being and reducing population growth. Third, it favors forms of behavior that promote reproductive fitness, since we may desire living standards for ourselves high enough to produce offspring who will survive to adulthood. Fourth, it differentially favors us, as existing persons with high living standards, over possible persons to whom it denies lives worth living.

To demonstrate these points, I need to show what the total well-being in each world implies about the resources it must have available. I start by explaining what I mean by resources that can produce well-being. There are many theories of what well-being is, but all of them require that some kind of material resources are necessary to produce it. If well-being is desirable mental states, then having a minimally acceptable level will require avoiding too many negative mental states like hunger, cold, and sickness. These will require that food, clothing, shelter, and medicine be available, and all of those will have to be produced using land and other natural resources, as well as tools that will themselves have to be produced. If well-being is instead some kind of desire fulfillment, then we will need whatever material goods are desired. We may not need many such goods to achieve a minimally acceptable level of well-being, particularly if our desires are not very materialistic. But again there will have to be food and clothing and other things that will enable us to stay alive to fulfill whatever additional desires have to be fulfilled to make life worth living. If instead well-being is defined by a list of objective criteria, then whatever material goods those require will be needed, and any plausible list will again need food and clothing and so forth to satisfy basic human needs. Lists such as those provided by OECD (2013) in its analyses of human well-being include material living conditions, and also include quality of life measures such as health status, education, and environmental quality which will require the use of resources. Conceptions of well-being that include elements of more than one of these, such as Griffin's (1986) account of prudential value, will include the same requirements for material resources that the basic versions require. There might be other requirements for a life barely worth living that are not material, such as a certain amount of freedom, or creative self-expression, or human companionship. But some material resources will be required, and the more people there are whose basic needs must be met, the more resources will be required.

Resources, for this purpose, means naturally occurring, freestanding resources—ones that do not require any human effort to create them. This is because creating goods re-

quires human labor, and using human labor to produce things might reduce human well-being, if effort is undesirable. So if we are thinking about how much human well-being can be supported with a given level of resources, we will need to take into account the cost, in terms of lost well-being, of producing food, clothing, shelter, and other consumable goods from those resources. For example, if people want to heat their dwellings in winter, using fuels that have to be extracted from the earth, then someone will have to mine the coal or drill the oil or do whatever is required to transform the resource of energy deposits into the goods that create human well-being. The net well-being created by these activities is equal to the value that their use creates, less the lost well-being from having to do the work of producing them. I assume that resources are used to create as much well-being as possible. Inefficient uses, such as requiring many people to work long hours in coal mines so that a privileged class can heat greenhouses to have fresh tomatoes in winter, do not occur. Instead, starting from what occurs naturally in the world without any human intervention—natural materials, and human time and capabilities—the world operates to create as much well-being as it can. Thus, when we compare the amount of resources required to support different levels of well being, we are talking about the amount required when those resources are used optimally.¹²

This does not mean that all of the world's material resources have to be used to create human well-being. If there is value to having natural resources that are left unused because they have intrinsic value, then that can be included in the worlds we are comparing. Or if some are used to create value besides human well-being (for example, well-being of animals), that can be included as well. All that is needed is that the value generated by those resources be the same in both A and Z, so that the comparison between the two worlds is determined by the difference in the amount of human well-being those worlds contain; other sources of value besides human well-being are the same in both. We do not gain the additional resources to support human well-being in Z by sacrificing the intrinsic value of resources left unused, nor by reducing the amount of natural resources available to animals or other means of creating moral value. All the increase in resources in Z is coming from pure addition – anything else that was getting resources in A gets the same resources in Z as well.

My argument depends on there being some connection, under some conditions, between the level of resources a person has, and his or her well-being. There is considerable controversy over the extent of that connection. Critics of materialism argue that giving people more material resources will not necessarily make them better off. Indeed, more resources might well make people less well off than they would be without those resources, if managing those resources is burdensome, or if having too many resources makes it difficult to identify or appreciate ways of living that produce well-being in non-material ways. And there may be ways to make people better off that do not require giving them additional resources at all.

The relationship between well-being and resources that my argument requires is compatible with those claims, because those claims cannot plausibly apply to people with very

¹² This assumption could be weakened by allowing each world to use its resources equally inefficiently, so that Z would still require more than A. All that is really required is that there is no difference in efficiency between A and Z. A difference in resource efficiency would be another factor affecting the choice between them, complicating the argument without altering the central conclusion.

low levels of well-being. A life with zero resources is not worth living; it implies immediate starvation. A life just barely worth living requires a person to have some strictly positive and non-trivial quantity of resources. At such a level of well-being, people are often hungry, have inadequate shelter and medical care, and in other ways are leading lives that clearly could be improved if they had more resources. Although there might be some ways to increase their well-being that do not require resources, as long as they are materially deprived, it will be impossible to bring them up to any level of well-being other than a very low one. Thus in this range, there is a positive relationship between a person's level of well-being and the resources available to them. People at those levels of well-being will have higher well-being if they get more resources. The well-being one gains from having more resources will decline as a person gets more and more resources; that is, the marginal value of additional resources is decreasing. It will drop to zero if there eventually comes a point at which a person can no longer get more well-being from additional resources. If so, a person with that amount of resources, who is therefore already rather well off, might not be able to enjoy more well-being by having more resources. That person's path to still greater well-being may well lie in non-material directions. But this cannot be said of people whose lives are barely worth living. Thus, when we add a new person with a life barely worth living to the world, we must either add new resources to support that person, or take resources from other people already in the world.

With that assumption in mind, consider the resource requirements of worlds A and B. To simplify the argument, I assume that in A, everyone has the same level of well-being. This is not a limitation; if we want to start from an A in which different people have different levels of well-being, then start by constructing a new world Equalized-A in which total well-being is the same and each person has the same level of well-being. By PE, Equalized-A is better than A, and as the argument to follow will show, it requires fewer resources. Then construct A' from Equalized-A, and follow Parfit's argument the rest of the way.

A contains some number of people who have lives well worth living, so it must include some positive level of resources that support their well-being. To produce A', we have to add one new person without lowering anyone else's well-being. The new person will require some resources to sustain their life barely worth living. If some people in A can give away resources without losing any well-being, then this may not require additional resources; but if the level of well-being in A is below the level at which giving up resources lowers well-being, then A' will need more resources than A did. Next, to produce B from A', we equalize well-being among the people in A' so the total well-being remains the same. This requires taking resources away from the people who have higher well-being in A' and giving them to the new person whose life is barely just worth living. Because resources have diminishing marginal value, this will reduce the total number of resources required; B requires fewer resources than A'. But it may require more than A did. Under what conditions does B require more resources than A?

The answer is that there is a critical population; when A has exactly the critical population, A and B will require the same amount of resources. If A's population is below that level, A requires more resources, and if A's population is above that level, then B requires more. The critical population is just the population at which total well-being is maximized, given a fixed supply of resources. (I do not assume or claim that there is anything morally desirable about this population; it just happens to be the critical point for the comparison

of resources in A and B.) Once the population of A is above this level, B will always require more resources than A did.

The reason for this is as follows. B has a greater well-being than A has, and one more person. If A has a small population, then it is possible to add a person and produce a world with greater well-being, using the same level of resources. This is possible because A's population has high resources per capita, and their marginal value for additional resources is low. Taking a small quantity of resources away from each one does less harm, in total, than the gain from using those resources to support the life of the additional person in B. But if A's population is already larger than the population that maximizes total well-being, then resources per capita are lower, marginal value of resources are higher, and each existing person loses more well-being when some resources are taken away to support the additional person in B. Then adding one more person to the world will reduce total well-being if resources are held constant. In this case, since B has a higher total well-being than A, and one more person, it must necessarily have more resources than A does.

Depending on the starting population and resources available in A, B may require fewer resources than A. Similarly, C may require fewer resources than B. But as we iterate to produce world Z, we will always increase population; and thus we will eventually exceed the critical population. At that point, the next-lettered world, with one more person than the previous one, requires more resources than its predecessor. If we iterate enough times, we will reach world Z, with an extremely large population with lives barely worth living, and requiring more resources to sustain the population than A requires (as Parfit noted originally).

Parfit's argument shows that Z is better than A. That seems incorrect to him, because with resources not in consideration, Z's only apparent merit is that it has an extremely large population. It does not seem to Parfit that this should overcome the fact that the entire population has lives barely worth living. At some point, the value of having additional population should not justify a further decrease in the standard of living. However, Z also contains more resources that produce well-being. It is better than A because it contains those additional resources and uses them to create more well-being, not because of its additional population. The choice between A and Z imposes that, as a condition of getting those additional resources, they have to be used to support Z's extremely large population. But the large population is really a drawback, not a desirable feature. As long as resources that can produce more well-being have value, there is some amount of additional resources that justifies accepting a larger population as the price of getting them. Parfit's construction ensures that, at each step of the iteration, we are adding enough resources to justify accepting the additional population, so that the tradeoff between more resources in total and fewer resources per person always works out in favor of more resources in total.

One might still argue that there must be some kind of diminishing marginal value of resources, so that at some point more resources do not have enough additional value to justify a lower standard of living. But that is not the case in Parfit's construction, because more people are being added to the population. Diminishing marginal value of resources is a function of having more resources per person; as I get more potatoes or Muzak, or caviar, my desire to have additional potatoes or Muzak or caviar decreases. But that is not the case when the population is variable. Each new person added to the population is a new person starting out with a minimal quantity of resources, just enough to make life worth living, and so the marginal value of resources for that person is high. Our intuition that additional

resources have decreasing value is true when the population is fixed, but is not true in different-number problems. That is another reason why our intuition that the RC is false is incorrect, and also a reason why variable-value approaches to solving the RC problem create more difficulties than they solve. They assume that the value of more people, rather than the value of resources per person, is what has diminishing marginal value; and this assumption makes it possible to construct cases that lead to absurd or sadistic conclusions.

Distinguishing additional resources and additional population

The key feature of Parfit's construction that makes it counterintuitive is that, by only allowing us the choice between world A and world Z, it conflates the value of additional economic resources with the value of having additional people; world Z has more of both. If we allow more than two options, we can look at the desirability of worlds that have additional people but not additional resources, or worlds that have additional resources but not additional people. Consider, in addition to worlds A and Z, a third world, to which we add people but no additional resources. This world, call it A-, has the same level of resources as A, but the much larger population of Z. In this world, the average level of resources per person is much lower than it is in Z. In Z lives are barely worth living; in A-, they are not worth living. A- is obviously worse than A, which shows that adding population—without adding resources to support the well-being of that population – is indeed undesirable, once the population is large. In this comparison our intuition is correct; there is a point at which adding more people, with resources kept constant, does not justify the decreasing standard of living that having more people requires.¹³

Alternatively, consider a fourth world, Z+. We construct Z+ by starting with A and adding the resources needed to create Z, but keeping the population the same. Z+ has the same population as A, but with a much higher standard of living, because there are more resources per person. Clearly, Z+ is better than A. Adding resources (without people) always makes a world more desirable. Adding people (without resources) will make it less desirable once the population is above the level that maximizes total well-being for the existing resources, so that the additional person doesn't gain as much well-being as is lost by existing people who give up resources to the new person. Adding both people and resources can go either way, depending on which effect is larger, which depends on how many resources and how many people we add.

But all of these binary choices are artificial. We should instead ask, when we add some amount of resources that produce well-being, and then can add whatever number of people we thought best, how many people would we want to add? If we can add resources to A, we might want to keep the population the same and only increase the level of well-being. It is also conceivable that we might want to reduce the population and have a still greater well-

¹³ Huemer (2008a), p. 929, makes a similar observation in the context of thinking about actual population growth, rather than the hypothetical population growth that the RC considers. He makes the assumption, much stronger than my assumptions, that we should maximize total utility. In practice, increasing the population size will reduce average well-being. He asserts that there is some population size that maximizes total welfare, and there is no reason to think that the level of average welfare at this population size will give a life that is barely worth living.

being than if we kept population the same. But it seems more likely that if we could add resources, we would probably want to increase both the population and the level of well-being, by increasing the population, but not in proportion to the increase in resources. If so, then both population and level of well-being per person are what economists call normal goods; we choose to have more of both of them when we get more resources that can support them.

Unfortunately, without very strong assumptions, we cannot say exactly how we should increase population and living standards as we get more resources. I have, however, a strong intuition—call it the More of Both intuition—that as a world gains more resources that can promote well-being, it is best to choose both a higher population (or at least no lower) and a higher well-being for each person (until well-being is so high that more resources cannot increase it further). This intuition is similar to the intuition that says the RC is wrong, but has a quite different implication. More of Both says that when you get additional resources, you should use them to increase both population and living standards, instead of increasing population a great deal and lowering living standards. The RC can be true, and the More of Both intuition can still be true, since some world with the same resources as Z but a smaller population is better than Z. Because of that world, it doesn't matter that Z is better than A. We will still never choose Z over A, because if we can use resources freely, and Z is an option, then world Z+, in which people have excellent lives, is an option also, and we will choose that instead of Z. Our intuition that Z is repugnant comes from the fact that it is a world we would never choose when other options were available, because those other options offer a much higher standard of living for the same resources. But it can nonetheless be better than A, because Z has so many more resources than A, which do produce additional well-being for the people in Z. Once we recognize this, we can reject the intuition that opposes the RC. Our intuition that Z is a repugnant option is correct, but because it is worse than Z+, not because it is worse than A. And then we can accept the RC.

Conclusion

One of the challenges of creating a satisfactory theory of population ethics is that many otherwise acceptable theories imply the Repugnant Conclusion. The proof of the RC is easy to accept, but the conclusion itself is not, because it conflicts with our intuition that world Z is a bad world and hence cannot be better than world A. In this paper I have argued that the intuition is wrong, because Z can be a repugnant world and still be better than A. The argument comes from considering how many resources that support well-being each world has. From the way it is constructed, Z must have many more resources than A has. Because those resources generate additional well-being, a world that has them, like Z, can be better than a world like A without them. However, in world Z they are distributed very inefficiently; they are shared among far too many people, which produces the repugnance of Z. World Z+, which used the same resources to support fewer people, would be better than Z, and better than A also.

The original presentation of the RC, which did not raise the question of resources, focused exclusively on the question of population and well-being. The resulting intuition that Z is worse than A does not take into account the extra resources that Z has. Once we realize that Z has more resources that generate well-being, it is not counter-intuitive

to think that we would always be willing to accept a low standard of living, if we got enough additional resources to compensate. And indeed Parfit's construction guarantees that at each step of the iteration between A and Z, we add enough resources to make the next world better than its predecessor. Thus we can explain why our initial intuition is incorrect, and hence can accept the RC without conflict with that intuition.

Having a good reason to accept the RC makes it possible to accept those theories of population ethics whose major flaw is that they imply the RC. Many theories do so, including classical utilitarianism and many forms of prioritarianism. Resolving the RC will not tell us which of those theories is correct. But it does give us reason to prefer one or more of them over other theories of population ethics which have different flaws we cannot readily resolve.

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