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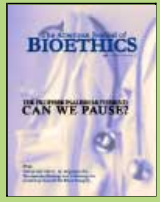
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### The Genetic Difference Principle

by Colin Farrelly  
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In the newly emerging debates about genetics and justice three distinct principles have begun to emerge concerning what the distributive aim of genetic interventions should be. These principles are: genetic equality, a genetic decent minimum, and the genetic difference principle. In this paper, I examine the rationale of each of these principles and argue that genetic equality and a genetic decent minimum are ill-equipped to tackle what I call the currency problem and the problem of weight. The genetic difference principle is the most promising of the three principles and I develop this principle so that it takes seriously the concerns of just health care and distributive justice in general. Given the strains on public funds for other important social programmes, the costs of pursuing genetic interventions and the nature of genetic interventions, I conclude that a more lax interpretation of the genetic difference principle is appropriate. This interpretation stipulates that genetic inequalities should be arranged so that they are to the greatest reasonable benefit of the least advantaged. Such a proposal is consistent with prioritarianism and provides some practical guidance for non-ideal societies—that is, societies that do not have the endless amount of resources needed to satisfy every requirement of justice.

**Key words:** genetic equality, a genetic decent minimum, the genetic difference principle, sufficitarianism, prioritarianism, reproductive freedom

#### Introduction

A diverse myriad of questions immediately come to mind when one raises the issue of genetic intervention. Should we even permit such interventions in the first place? Who should have access to these technologies? Should we pursue gene therapies but not enhancements? Can we encourage, or even require, people to obtain and make use of genetic information and interventions to prevent harm to their children? Society faces a diverse range of policy options as it begins to grapple with the regulation of new human genetic technologies. From the issues of gene patenting to genetic discrimination and reproductive freedom, coping with the distinct challenges raised by the genetic revolution will “tax our wisdom to the utmost” (Buchanan et al. 2000).

The genetic revolution raises many fundamental questions of distributive justice. *Distributive justice* concerns the fair distribution of the benefits and burdens of social cooperation. Advances in genetic and biological knowledge bring us closer to a world where we might have the ability, or at least a much greater ability than we currently have, to manipulate our genetic make-up. With this new ability will come new questions concerning the nature of the demands of distributive justice. At the present time the genes we have are the result of the “natural lottery” of life. No one has the ability to manipulate the genes we are born with and thus the different advantages and disadvantages that our genes confer on us are the result of brute luck. No one is responsible for this unfair division of the advantages and disadvantages that our genes confer on us. There is nothing we could, collectively as a society, do about it. But as our knowledge of how genes work increases, and with it the prospects of being able to directly intervene in the natural lottery of life through gene therapies and possibly even enhancements, this may no longer be the case. The decisions we make regarding the regulation of biotechnology will determine who receives the greatest share of the benefits these technologies confer.

This article aims to help clarify how we should begin to start thinking about what the demands of justice will be in the post-genetic revolutionary society. In particular, I tackle the following abstract question: *What distributive principle should regulate the distribution of our genes in the post-genetic revolutionary society where the successful utilisation of gene therapies and enhancements is more of a reality than it is today?* I do not intend to put forth a conclusive answer to this question but rather examine three distinct principles which have begun to emerge in recent discussions of genetics and justice. These are: “genetic equality” (GE), a “genetic decent minimum” (GDM) and the “genetic difference principle” (GDP). These three principles are grounded in three distinct moral/political doctrines—egalitarianism, sufficitarianism and prioritarianism. I argue that the viability of all three principles will depend, in part (1), on their ability to resolve two related issues—what I call *the currency problem* and *the problem of weight*. The currency problem concerns the list of genetic advantages/disadvantages that are to be included in an account of the demands of distributive justice. The problem of weight concerns the appropriate weight a theory of justice should place on the genetically disadvantaged as oppose to both other disadvantaged persons (e.g. the poor, victims of accidents, etc.) and the non-disadvantaged. While I do not attempt, in this paper, to conclusively reject either GE or a GDM, I utilise the analysis of those two principles to help set the stage for the GDP. One of the main attractions of the GDP is that it is better able to resolve both the currency problem and the problem of weight than either GE or a GDM. The attraction and viability of the GDP, I argue, will ultimately depend on its place in a more general account of both the demands of just health care and distributive justice in general and I develop the GDP so that it can serve such a role. Given the strains on public funds for other important social programmes, the costs of pursuing genetic interventions and the nature of genetic interventions, a more lax interpretation of

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the GDP is appropriate. This interpretation stipulates that genetic inequalities should be arranged so that they are to the greatest *reasonable* benefit of the least advantaged. Such a proposal is consistent with prioritarianism and provides some practical guidance for non-ideal societies—that is, societies that do not have the endless amount of resources needed to satisfy every requirement of justice.

### The Complexities of Distributive Justice

Before turning to the three principles considered in this article, I wish to say a few comments about distributive justice in general as they are necessary for the analysis that follows. Many competing conceptions of distributive justice have been defended in recent years by theorists on both the left and the right. To even briefly canvass these debates would take us too far afield so let me limit my discussion to a few general remarks which should prove sufficient for showing that debates about genetics and justice must be informed by considerations about societal fairness in general. Citizens of even affluent, unequal capitalist societies (like America) face many vulnerabilities and one of the primary functions of government is to protect us, as far as is reasonable, from such vulnerabilities. These vulnerabilities range from being at risk of terrorist attack and theft to falling ill or being unemployed. No government can protect its citizens from every conceivable vulnerability and thus difficult decisions must be made about how we prioritise the efforts to mitigate such vulnerabilities. How much should we invest in domestic security versus national security, education, unemployment and health care? How do we raise enough public funds for such programmes and yet create an economic climate conducive to the economic growth needed to continue to fund such programmes in the future? The fact that the interests of future generations, as well as the current generation, must be taken into consideration exacerbates the complexities of an already Herculean task. The government may spend millions, even billions, of tax-payer dollars attempting to reduce certain vulnerabilities whilst ignoring other vulnerabilities. How vulnerable we are to foreign invasion, death by malnutrition, injury at the workplace and illiteracy will be determined, in part, by the decisions our government makes about how best to spend the country's budget. And budgetary constraints themselves will, for numerous reasons, fluctuate from year to year. The complexities of the demands of justice in *non-ideal theory* are often bracketed (or simply ignored) in mainstream political philosophy and this severely limits the practical guidance of such philosophical analyses (Rawls 1971; Daniels 1985). (2)

The issue of genetic intervention introduces new complications to the already Herculean task of trying to clarify what the fair terms of social cooperation might be. Our genetic endowments have a great impact on our life prospects. Our genes affect our chance of developing disease, our longevity as well as physical and behavioural characteristics that influence things from career prospects and income potential to magnetism and height. If it becomes possible to alter our genetic constitutions, through gene therapies and enhancements, then we must begin to take seriously the idea that charges of "fairness" and "unfairness" can apply to the distribution of genetic endowments. These concerns have already begun to surface in recent literature. Concerns about unequal access to genetic interventions has led some to make specific policy recommendations. Walter Glannon, in *Genes and Future People*, argues that genetic enhancements should be impermissible because unequal access to such interventions could undermine our belief in the importance of the fundamental equality of all people. Glannon claims that "allowing inequalities in access to and possession of competitive goods at any level of functioning or welfare might erode this basis and the ideas of harmony and stability that rest on it" (Glannon 2001). But the leap from abstract distributive principles to particular policy recommendations is one that should not be made easily. Any discussion of genetics and justice should not be insulated from the broader issues of just health care and distributive justice in general. To argue, for example, that justice requires that we make genetic therapies available to all who need them is to argue that we should give a priority to mitigating certain vulnerabilities (i.e., those that stem from our genetic constitutions) over other vulnerabilities (e.g., illiteracy, malnutrition, unemployment, etc.). Should we give a priority to the genetically disadvantaged over other disadvantaged individuals (e.g., the poor, victims of accidents, etc.)? Where do the needs of the genetically disadvantaged figure in the larger picture of distributive justice? Can we violate the procreate liberty of parents in the interests of benefiting the genetic endowments of their offspring? Whilst I do not intend to answer all of these questions here, the aim of this paper is to show that these concerns must inform debates about genetics and justice. Theoretical examinations of genetics and justice will only yield any practical real world application if they take seriously the kind of non-ideal considerations that arise in non-ideal societies. Societies that face the difficult decisions the fact of scarcity imposes on them.

### Genetic Equality and a Genetic Decent Minimum

One can identify three distinct theoretical positions in recent debates about distributive justice. These are—egalitarianism, sufficitarianism and prioritarianism. Let us define these three positions as follows:

**Egalitarianism:** Equality has considerable moral value in itself.

**Sufficitarianism:** What is morally important is for everyone to have enough.

**Prioritarianism:** It is morally more important to benefit the people who are worse off.

In the context of debates about genetic endowments, these three positions yield different prescriptions about what the ideal distribution would be. Egalitarians argue that efforts should be taken to realise an equal distribution of our genetic potentials, provided such efforts do not significantly impair the realisation of other important values (e.g. freedom or utility). Sufficitarians do not care about achieving equality; they are only concerned that everyone has a genetic constitution that passes a certain minimum threshold. For example, that all should have a genetic constitution that gives them a good chance of living a life within the normal range of functioning. If we all pass this minimum threshold then the fact that some people have better genetic constitutions than others is morally irrelevant. A sufficitarian would not object, in principle, to a policy that permits only the rich to purchase certain genetic enhancements. If such a regulatory framework did not impede the effort to bring all pass the minimum threshold then there would be no reason for a sufficitarian to object to such inequalities. (3)



The third position, prioritarianism, states that we should be more concerned with benefiting those who are worse off. "The root idea of prioritarianism is that one ought as a matter of justice to aid the unfortunate, and the more badly off someone is, the more urgent is the moral imperative to aid" (Arneson 2000). Unlike egalitarianism and sufficitarianism, prioritarianism does not prescribe a particular pattern (e.g. all are equal, all pass a minimum threshold) and thus it is the least determinate of the three positions. It is this indeterminacy that makes prioritarianism the position best suited for advancing debates about genetics and justice. To see why this is so let us consider three distinct principles which these theoretical positions yield.

Egalitarians do not object to *all* inequalities. Responsibility-catering egalitarians only object to those inequalities that are the result of brute luck (Dworkin 2000). These "luck egalitarians" (Anderson 1999) maintain that inequalities in the advantages that people enjoy are just if they derive from the choices people have voluntarily made, but that inequalities deriving from unchosen features of people's circumstances are unjust. Our genetic endowments are unchosen features of our circumstances and thus egalitarians will maintain that efforts should be taken to realise an equal distribution of our genetic potentials in certain conditions. Assuming it was possible for us to directly influence our genetic constitutions via gene therapies and enhancements then egalitarians would maintain that the ideal distributive arrangement would be "genetic equality."

I do not intend to argue, at length, against the principle of genetic equality here (Farrelly n.d.), but let me briefly summarise some of the difficulties facing such a principle. Firstly, the principle of genetic equality needs to address *the currency problem*. The currency problem requires us to answer the question—what should be equalised? Should we try to equalise our genetic potentials for health, height, being physically attractive, etc.? All of these advantages are morally arbitrary and thus, to be consistent with the logic of luck egalitarianism, egalitarians should endorse the view that any genetic potential that has a significant impact on our life prospects should, ideally, be equalised. Let us call this the *broad interpretation* of GE. Of course there may be reasons why egalitarians would reject the broad interpretation of GE. They may recognise that such a proposal presupposes fantastical knowledge of how genes work and unrealistic assumptions about what our capabilities for genetic manipulation could ever be. Furthermore, this broad interpretation of GE, as Buchanan et al. (2000) point out, is susceptible to two other problems. Firstly, what counts as an asset is at least partly defined by the dominant cooperative framework. This means that the traits we view as valuable will inevitably change with time. If we intervene in the natural lottery of life to ensure that future generations have the same genetic potential to develop valuable traits it may turn out that by the time they reach adulthood those traits will no longer be valued. The traits valued in an agrarian society, for example, are vastly different from those valued in highly advanced industrial societies, where computer literacy is a prerequisite for a constantly growing number of occupations. We just do not have the foresight to be able to predict what traits will or will not be valued in the future. Thus, intervening in the natural lottery in the name of equality is bound to fail to achieve what egalitarians hope it will achieve (i.e. make everyone equally advantaged).

A second problem with genetic equality, argue Buchanan et al., is that "any thought of equalizing [natural] assets would almost certainly betray a failure to appreciate what might be called the fact of value pluralism (or diversity of the good)" (Buchanan et al. 2000). There is no "objective list" of physical or behavioural characteristics that all reasonable people would agree are valuable, let alone the most valuable.

To avoid these difficulties an egalitarian might endorse a more *narrow interpretation* of GE—one that does not apply to contentious traits. The narrow interpretation of GE maintains that all should be equal in terms of their genetic potentials for goods like health and longevity. Of course the narrow interpretation need not be limited to just these two goods, there may be other traits an egalitarian would like to include as part of the more narrow interpretation of GE. But this list would not include goods that would make the principle of GE vulnerable to the two objections raised by Buchanan et al. The narrow interpretation of GE is attractive not only because it guards against those two particular objections, but because it is also sensitive to the fact that these technologies will be very costly. The more we include within the range of genetic potentials that should be equalised the more public funds we need to invest in such technologies. But investing such funds may not be wise given that there are other factors (i.e. environment) that play an important, and sometimes a more important, part in our life prospects. The more public funds we invest in equalising our genetic endowments the less we have for pursuing equality in other important dimensions of society; such as equal opportunity for education, health care in general or socio-economic equality.

The issue of the *costs* of pursuing genetic interventions leads us to the second main problem that debates about genetics and justice need to take seriously—what I call *the problem of weight*. For egalitarians this problem means balancing the desire for achieving genetic equality with the desire for achieving other kinds of equality (e.g., wealth and income) and other values (e.g., utility and freedom). (4) The more expansive the interpretation of GE one defends, the greater the difficulty of resolving the problem of weight. This is so because the more expansive the interpretation of GE the more costly pursuing that principle is and thus the more difficult it will be for society to pursue other forms of equality. The more society spends on pursuing a programme of genetic manipulation to achieve GE the less public funds available for pursuing equality of opportunity in education or healthcare in general. The viability of the broad interpretation of GE is thus undermined once one takes the fact of scarcity seriously. Given the fact that environment plays such an important factor in influencing physical and behavioural characteristics egalitarians will not be able to justify investing the amount of public funds needed to pursue GE when inequality in environment will mean that people will still end up unequal in terms of their education, income, attractiveness, etc. Rather than trying to equalise our genetic potentials for physical and behavioural characteristics egalitarians might decide that it is better to permit this inequality and pursue other forms of equality which will bring about more utility. Whilst egalitarians believe that equality has considerable moral value in itself, it is not the only thing they value. Thus concerns for achieving GE must be informed by considerations of utility and this will lead egalitarians in the direction of endorsing a more narrow interpretation of GE.



The narrow interpretation of GE is better suited to taking scarcity seriously than the broad interpretation and thus it can combine concerns of equality with those of utility. However, both the narrow and broad interpretations are ill-suited for shedding light on the weight we should place on the value of freedom. This is particularly important given the nature of genetic interventions. Egalitarians believe that some form of state coercion (e.g. taxation) is justified for achieving economic equality. But, given the nature of genetic interventions, egalitarians must take very seriously the issue of how we can *justly pursue* GE. Whilst egalitarians will (rightly) dismiss the libertarian charge that taxation of income is a violation of self-ownership (Nozick 1974), (5) such concerns are much more pressing when it comes to the issue of pursuing genetic equality. GE cannot be achieved by taxing people's wealth, it requires genetic manipulation and this could possibly conflict with procreative liberty. The fact that such interventions might violate self-ownership does not necessarily mean they are unjust, as shall become evident in section IV. But given the atrocities of past eugenic movements, egalitarians must take seriously the value of freedom and ensure that it figures prominently into their account of genetics and justice. The principle of genetic equality does not provide any help in this regard and this further limits the principle's appeal.

Unlike egalitarians, sufficitarians do not care about equality itself, rather they maintain that it is important for everyone to have a decent genetic constitution. Thus sufficitarians would endorse the principle of a *genetic decent minimum*. Like GE, the principle of a GDM must tackle the currency problem. Given that a GDM demands that all must only pass a minimum threshold in terms of their genetic constitutions (rather than be equal) the principle may appear better suited to resolving the currency problem than GE. But much of course depends on what one takes to constitute a *decent* genetic minimum. Like egalitarians, sufficitarians could adopt a more broad or narrow strategy for identifying which genetic potentials they believe should be included within the domain of distributive justice. The broad interpretation would cover our genetic potentials for all those capabilities which we take to be essential to living a decent life. Martha Nussbaum (1999), for example, endorses a capabilities approach to distributive justice and, developing a perfectionist stance inspired by Aristotle, puts forth the following comprehensive list of the central human functional capabilities:

- Life.
- Bodily health.
- Bodily integrity.
- Senses, imagination, thought.
- Emotions.
- Practical reason.
- Affiliation.
- Other species.
- Play.
- Control over one's environment (political and material). (Nussbaum 1999)

Not all of these capabilities are affected by our genes. But a broad interpretation of a GDM could utilise Nussbaum's list to identify a specific list of genetic potentials that are central to our functioning. These would include our genetic potentials for health, developing our senses, imagination, thought and emotions as well as our practical reason. Because the broad interpretation of a GDM is perfectionist it will face the difficulties Buchanan et al. raise against GE. In particular it will violate the fact of value pluralism. Which emotions, for example, are essential to functioning as a human being? People will disagree on such contentious issues and such disagreement is a fact of life in modern societies.

The most pressing objection to the broad interpretation of a GDM is that it is *cost-blind* and thus it is ill-equipped to tackle the problem of weight. Saying that everyone should pass a minimum threshold for their genetic potentials for the basic human capabilities is of little, if any, use when the fact is that bringing genetic technologies that will improve just our health into existence (let alone making them available to all who need them) will itself be very costly. In order to be of any use in non-ideal societies a GDM would need to prioritise the list of human capabilities it identifies so that it recognises the fact that some genetic potentials are more important to living a decent life than other genetic potentials. It also needs to recognise that factors beyond our genes affect our capabilities and thus we must determine whether it is better to invest public resources into pursuing genetic manipulation or into providing decent housing, education, etc.

Faced with these kinds of considerations sufficitarians may pursue a more minimalist interpretation of a GDM, perhaps advocating, as the authors of *From Chance to Choice: Genetics and Justice* do, that genetic intervention to prevent or ameliorate serious limitations due to disease is a requirement of justice. But even this more modest proposal does not take scarcity seriously enough. What if the costs of pursuing the genetic therapy of an extremely rare but debilitating disease was so high that the only way society could fund pursuing such a therapy was by reducing (or even eliminating) the healthy meal options it provides to young children at public schools? In other words, how greatly should we value bringing everyone past a genetic minimum threshold? Like egalitarians, sufficitarians must balance concerns of utility against their sufficitarian intuitions. Advocating a right to a genetic decent minimum is a non-starter because rights cost money and "nothing that costs money can be absolute" (Holmes and Sunstein 1999). Taking scarcity seriously means taking seriously the fact that we must make tradeoffs in rights protection. A GDM, like GE, does not do this. Thus the practical import of a GDM is very limited. Such a principle might be of use in a society that already satisfied a decent minimum of other goods (e.g., housing, education, nutrition, wealth, etc.) and already possessed a vast supply of genetic therapies. But no society in this world is like that.

A GDM, like GE, also fails to take concerns of freedom seriously. To say that all should have a decent genetic constitution tells us nothing about how we should *pursue* this aim when, for example, the procreative liberty of a parent impedes our actualising such a goal. Current societies could already implement a GDM by adopting eugenic policies that regulate whom we can procreate with. I assume sufficitarians would reject such a proposal as it is a gross violation of freedom but this example reinforces the point that fundamental distributive principles should be sensitive to the diverse pressing concerns that arise in the real world. A GDM, like GE, ignores many of these issues and thus it is of limited practical import.



This brings me to the third distributive principle under consideration in this paper - the *genetic difference principle*. Stated in its most stringent form, this principle maintains that "inequalities in the distribution of genes important to the natural primary goods are to be arranged so that they are to the greatest benefit of the least advantaged" (Farrelly 2002). As shall become evident in the next section, the GDP faces many of the same problems that GE and a GDM face. However, unlike GE and a GDM, I shall argue that the GDP is flexible enough to take seriously many of the issues that arise in non-ideal theory and thus it is a principle that can help ensure that debates about genetics and justice are linked to the more general issues of just health care and distributive justice in general.

### The Genetic Difference Principle

The genetic difference principle extends the prioritarian logic of John Rawls's theory of "justice as fairness" to genetic endowments. Prioritarians maintain that it is more important to benefit the people who are worse off. Rawls's difference principle, which governs the distribution of socio-economic inequalities, ascribes *absolute* priority to the interests of the least advantaged. The difference principle states that inequalities are to be arranged so that they are to the greatest benefit of the least advantaged members of society (Rawls 1971). The GDP extends the prioritarian logic of Rawls's difference principle to genetic constitutions. Let us now consider how this principle fares with respect to both the currency problem and the problem of weight.

The first formulation of the GDP is, as noted above, a stringent interpretation. It is stringent because it gives an absolute priority to the interests of the genetically least advantaged. This stringency creates difficulties for the principle as it cannot address the problem of weight. Thus it will be necessary to modify the principle. Before doing this I wish to briefly consider how the GDP fares with respect to the currency problem.

Unlike GE and a GDM, the GDP addresses a fixed list of genetic potentials; the potentials for realising the goods of health and vigour, intelligence and imagination. Following John Rawls's (1971) account of interpersonal comparisons of advantage, the GDP focuses on our genetic potentials for what Rawls calls the "natural primary goods." These are goods that every rational person has an interest in. The GDP does not conflict with the fact of value pluralism in the way that the broad interpretation of GE or a GDM does. Nor are the natural primary goods going to change with time. This is not to suggest that the GDP will not face any problems in this regard. The goods of imagination and intelligence, for example, are contentious goods and thus the GDP will still be subject to controversy and disagreement. The inclusion of these goods also creates problems once we take seriously the fact of scarcity. If we cannot afford to pursue genetic interventions that influence all of the natural primary goods, should we give some goods a priority over others? Is it more important to improve people's potential for health rather than their potential for imagination? The stringent GDP provides no guidance in terms of how we can address the kinds of tradeoffs that are necessary in a society characterised by scarcity. I will now endorse a modified version of the GDP which takes scarcity more seriously. Whilst this principle does not instruct us how to resolve all such issues it does recognise that tradeoffs in healthcare (and other) provisions are an inescapable part of implementing justice in non-ideal theory. It thus helps bring to the fore the diverse issues at stake in debates about genetics and justice.

The stringent interpretation of the GDP is problematic because it gives an *absolute priority* to the genetically least advantaged. This creates a number of problems. The most pressing of these is that it makes the GDP, like GE and a GDM, *cost-blind*. What are we to do if it is simply too costly to provide genetic therapies and enhancements to everyone who is genetically disadvantaged? Because the GDP is cost-blind it is ill-suited for resolving the kinds of problems that arise once we begin to consider the problem of weight. The GDP says that we should maximise the genetic endowments of the least advantaged but pursuing that aim could result in the unfair treatment of other disadvantaged persons. For example, imagine that providing genetic enhancements for intelligence to the least advantaged is more expensive than providing quality public education for everyone. Assuming that the current government subscribes to a prioritarian conception of distributive justice, they thus face a difficult decision. Given budget constraints they can only pursue one of two options - either invest more in public education or invest in pursuing genetic enhancements for the least endowed. Suppose that both policies would bring benefits to the genetically disadvantaged, but pursuing genetic enhancements brought *slightly better* results for this group. What should the prioritarian government do? According to the GDP they should pursue genetic enhancements for the least advantaged instead of improving public education. But giving absolute priority to the interests of the least advantaged is unfair. If the government had pursued improving education they would have improved the life prospects of many other people who are not genetically disadvantaged. Those who are born with favourable genetic endowments but are born into disadvantaged social positions would greatly benefit from an investment in public education. But the GDP does not take their interests into consideration. Even those who have both favourable genes and social environment could benefit from quality public education and yet the GDP does not give any weight to their interests either. A small gain to the genetically disadvantaged is more important than a great loss to both the socially disadvantaged and advantaged.

A myriad of other issues come to the fore once one extends the considerations to include the interests of those who need medical treatment that has nothing to do with genetic intervention. Why should we be so concerned with the genetically disadvantaged when there are also people who need other forms of medical treatment (e.g. life-saving surgery, vaccinations, etc.). The GDP ignores the fact that many people who are disadvantaged in terms of their natural primary goods will need other forms of medical treatment and that providing access to these treatments will mean that such treatments will have to compete with genetic interventions for scarce public funds. The GDP is thus unreasonably stringent because it gives an absolute priority to the genetically disadvantaged over other disadvantaged persons. This yields counterintuitive results and thus prioritarians will need to revise the principle.

I propose revising the GDP so that it does not afford absolute priority to the genetically least advantaged. Exactly how much priority should be given to the genetically disadvantaged can not be answered in the abstract. What I now propose to do is to formulate a revised version of the GDP that helps clarify what



issues need to be addressed in order to determine how much priority we should give to the genetically disadvantaged. The revised version of the GDP is called the *lax GDP* and it states that inequalities in the distribution of genes important to the natural primary goods are to be arranged so that they are to the greatest *reasonable* benefit of the least advantaged. Inserting the clause "reasonable" permits a number of diverse considerations to come to the fore—considerations which arise in non-ideal societies. Before considering these points let me note how the way I propose developing the *lax GDP* differs from the way Rawls develops his difference principle.

There are of course obvious differences between Rawls's difference principle and my proposed *lax GDP*. The goods the former addresses are social primary goods whilst the latter addresses our genetic potentials for the natural primary goods. As the currency of the two principles is different, so will the categories of people they identify as the *least advantaged*. Besides these obvious differences, the *lax GDP* is different from Rawls's difference principle in at least three other important respects. Firstly, as I noted above, the *lax GDP* does not give an absolute priority to the interests of the least advantaged and thus it is not as stringent as Rawls's difference principle. The *lax GDP* allows other pressing concerns, such as the concern to mitigate other forms of disadvantage, to be given due consideration. Secondly, the *lax GDP* is not a *serially* ordered principle of justice. Rawls serially orders his principles of justice so that the equal basic liberties principle must be satisfied before moving on to the demands of the fair equality of opportunity principle, and then finally to the difference principle. But the *lax GDP* does not place itself in a hierarchy of such serially ordered principles of justice. Rather, the principle itself is designed so that it can be balanced against the demands of other principles of justice. We shall address this below when I consider what I call the *Reasonable Genetic Intervention Model*, a model that seeks to balance the demands of the duty to prevent harm with respect for reproductive freedom.

Finally, a third important difference between Rawls's difference principle and the *lax GDP* is that, by including a reasonableness constraint, the *lax GDP* incorporates the intuition that the extra weight we ought to place on the least advantaged diminishes as their situation improves. This contrasts with Rawls's requirement that we always *maximin*. On one definition of the least advantaged, Rawls (1971) defines the least advantaged as all persons with less than half of the median income and wealth. *Maximin* thus requires that we continue to give the same level of priority to the least advantaged regardless of how they fare in *absolute* terms (as the least advantaged are defined in relative terms). I believe this rigid feature of the difference principle is unreasonable. The *lax GDP* does not *necessarily* define the least advantaged in such relative terms. Rather, as a principle designed to apply to non-ideal theory, it will focus, at least for the foreseeable future, on those who are worst off in *absolute* terms (e.g. those with disease or at a high risk of developing disease). The closer the genetically least advantaged come to having genetic constitutions that allow them to maintain "species-typical normal functioning" (Daniels 1985; Buchanan et al. 2000), the less demanding is the requirement that we give more weight to their interests. This does not mean that concerns relating to relativities are irrelevant or are necessarily ruled out by the *lax GDP*. But to make these our initial concern would be to revert to concerns of justice in ideal theory and thus rob the *GDP* of its ability to tackle the pressing issues we currently face in non-ideal societies.

Critics might charge that inserting the clause "reasonable" into the *GDP* robs it of any real use as it leaves things indeterminate. But I think the real strength of the *lax GDP* is its indeterminacy. Whilst it is difficult to stipulate what counts as reasonable perhaps the best way forward is to consider instead what would constitute an *unreasonable* benefit to the genetically disadvantaged. The education example above is such an example. It would be unreasonable for the genetically disadvantaged to expect society to forfeit quality education for a slight increase in their genetic potential for intelligence. Likewise, it would be unreasonable for the genetically disadvantaged to expect society to forfeit important healthcare provisions (e.g. life-saving surgery, vaccinations, etc.) for those who need them for a less comparable gain to the genetically disadvantaged.

We could alter the stakes so that things shift in favour of the genetically disadvantaged. If, for example, the stakes are providing genetic therapies to prevent cancer versus giving the wealthiest citizens a tax cut we begin to see more clearly what a reasonable benefit to the genetically disadvantaged looks like. But of course the decisions in real life are not as clear-cut as any of these examples. One cannot determine, in the abstract, what the particular stakes are as they will depend on the society in question. But the *GDP* is attractive because it forces us to begin to take seriously these kinds of considerations. It forces us to take scarcity seriously and thus we must grapple with the difficult issue of tradeoffs. The *GDP* incorporates the concern for providing a just distribution of genetic endowments with a concern for just health care and distributive justice in general. Debates about genetics and justice can only usefully progress forward when they take place within the confines of the complexities of non-ideal theory.

By inserting the "reasonableness" clause into the *GDP* this principle also requires us to consider the interests of those who are not members of the least advantaged group. This point can be illustrated by considering the issue of procreative liberty. The stringent *GDP* is problematic because it does not provide any guidance as to how we balance concerns of liberty with our prioritarian commitments. Suppose, for example, we could maximise the genetic endowments of the least advantaged in the next generation by legislating *mandatory* genetic screening of foetuses and, where necessary, compulsory use of prenatal genetic therapies and enhancements. Such a proposal might be consistent with the *GDP* but it will come into conflict with the value of freedom. What if a parent does not wish to undergo such a procedure? Can we violate the self-ownership of a parent for the sake of benefiting their offspring? If we can compel people to undergo involuntary prenatal genetic therapy or enhancement why not legislate who can and cannot procreate? (6) Why not just sterilise those who will not maximise the genetic endowments of the next generation? The stringent *GDP* gives an absolute priority to the interests of the genetically disadvantaged and thus it seems that the reproductive freedom of the parent must always be secondary to the aim of benefiting the genetically disadvantaged. But such a principle overlooks the more general demands of justice. A distributive principle should be sensitive to concerns of freedom.



The lax GDP is open to exactly these kinds of considerations. By stipulating that justice requires us to pursue the greatest *reasonable* benefits to the genetically least advantaged we must balance their interests against the interests their parents have in reproductive freedom. Can we ever override the reproductive freedom of the parent for the purpose of benefiting the genetic endowments of their offspring? To answer this question we would need to know much more than we currently do about the success and intrusiveness of such interventions. Elsewhere (Farrelly 2002) (7) I have argued for what I call the *Reasonable Genetic Intervention Model*, which helps to illustrate the diverse issues that must be considered in order to find a reasonable balance between respecting reproductive freedom and benefiting the least advantaged. This model states that:

With respect to genetic interventions, the reproductive freedom of a parent can be limited if:

1. The objective behind the measure which requires limiting this freedom relates to concerns which are pressing and substantial in a free and democratic society.  
AND
2. (a) The means chosen to restrict reproductive freedom are rationally connected to the objective.  
(b) The measure impairs as little as possible reproductive freedom.  
(c) There must be a proportionality between the effects of the measure which are responsible for limiting reproductive freedom and the objective which has been identified as of sufficient importance.

The Reasonable Genetic Intervention Model incorporates some common sense rules of thumb that ought to inform our decisions about limiting fundamental rights. For instance, that such rights should only be limited if the aim of the measure is sufficiently pressing and substantial (e.g., preventing harm). The model also ensures that the *means* invoked in pursuit of these aims must also be reasonable. There must be good reason to believe that the harm in question will occur if there is no intervention and there must be good reason to believe that intervention will bring about the desired consequence. Furthermore, the measure must not be unnecessarily restrictive of reproductive freedom. And finally, even if restricting reproductive freedom will provide benefits to the least advantaged there must be a proportionality between the costs to procreative liberty and the benefits the genetically least advantaged gain. The Reasonable Genetic Intervention Model coheres with the suggestion that, "other things being equal, the more serious and probable the harm that might be prevented, the less serious and probable the risks or harmful effects on the foetus and/or others of doing so, and the less weighty the aspect of the mother's reproductive freedom that is at stake, the stronger the moral case for intervening to prevent the harm" (Buchanan et al. 2000).

#### Conclusion

Taken together, I believe the lax GDP and the Reasonable Genetic Intervention Model provide some useful starting points for progressing debates about genetics and justice. While neither principle yields specific policy prescriptions (e.g. justice demands that all should have access to genetic therapies or that reproductive freedom is inviolable) they are useful in helping to balance our prioritarian commitments with the other demands of justice. Debates about genetics and justice should take seriously the fact of scarcity and thus recognise that tradeoffs in promoting the interests of different disadvantaged groups, be they the genetically disadvantaged or the socially disadvantaged, are inevitable. Given the nature of genetic interventions theorists should also take seriously the conflict between respecting reproductive freedom and promoting the interests of the genetically disadvantaged. Theorising about the relation between genetics and justice ought to begin at the level of non-ideal theory. This will help ensure that the fundamental principles yielded by such analyses will be equipped to take seriously the diverse and complex considerations which we face in the real world. The lax GDP helps clarify the distinct issues which prioritaricians face and equips them with a principle that is better suited to non-ideal theory than either the principle of genetic equality or a genetic decent minimum.

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#### Notes

- Of course many other issues also need to be addressed besides the two considered in this paper but I believe these two issues are important ones that should figure prominently in the newly emerging debates about genetics and justice.
- The best example of this is John Rawls's account of "justice as fairness". In *A Theory of Justice* Rawls makes a number of simplifying assumptions. For example, he assumes that society is a closed system and that members of society are normal, fully cooperating members. Some have sought to remedy this deficiency of Rawlsian justice by taking more seriously the issue of just health care. See Norman Daniels (1985).
- Assuming of course that everyone in the society in question also passes the minimum threshold of other goods (e.g. income and wealth) as well.
- I assume throughout this paper that egalitarians are pluralist egalitarians. That is, they recognise that equality is just one of many important values.
- The libertarian Robert Nozick argues that redistributive taxation is unjust because it violates self-ownership.
- But considerations of personal identity complicate the story more than I portray here. The case of utilising prenatal genetic therapies is one that actually benefits the least advantaged as it satisfies the requirement of preserving personal identity. The same is not true of measures that result in different persons being conceived, as in the case of controlling who procreates.
- The Reasonable Genetic Intervention Model is premised on the model adopted in Canadian Charter Jurisprudence with respect to Section 1 of the Canadian Charter of Rights and Freedoms.

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