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ARTICLE

# On environmental justice, Part I: an intuitive conservation dilemma

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**Abstract**

This article introduces an intuitive conservation dilemma called the Canyon Dilemma: Is it possible to condemn the mining of the Grand Canyon, even by a poor generation, while also permitting this generation's mining of an unremarkable small canyon? It then argues that not one of several prominent theories of environmental justice, including various forms of egalitarianism, welfarism, deep-ecological theories, communitarianism and free-market environmentalism, can navigate this dilemma. The article concludes by highlighting the dilemma-navigating potential of the equal-claims idea – the idea that the natural world is something to which every human being, present and future, has an equal, substantive claim.

**Keywords:** Environmental justice; utilitarianism; free-market environmentalism; egalitarianism; deep ecology

Around the turn of the 20th century, valuable metals were discovered in the Grand Canyon, and the government of the Arizona Territory had to decide whether to permit their mining or not. I take it that, despite the poverty of early 20th century Americans, mining this awe-inspiring part of the natural world would have been impermissible. However, had similarly valuable metals been discovered in a far less majestic and ecologically unremarkable small canyon, I take it that the canyon's mining would have been permissible.

These two cases present theories of *environmental justice* – the area of justice concerned with the natural world – with an intuitive challenge that I call the Canyon Dilemma. A compelling theory of environmental justice should presumably both condemn the Grand Canyon's mining and condone the small canyon's mining (in the real-world cases and in several 'nearby' variations). Yet I shall argue that not one of several prominent theories of environmental justice – including various egalitarian, welfarist, deep-ecological, communitarian and free-market environmentalist theories – can meet this challenge.

In the final section, I will suggest that the solution to the Canyon Dilemma can be found in some version of the idea that the natural world is something to which all people, present and future, have equal, substantive claims. In doing so, I set the stage for a companion article (Part II; Mazor 2022) in which I shall defend a novel, pluralist theory of environmental justice that grants each person, present and future, strong but non-absolute claims to an *equal share of property rights in the natural world*. As I will demonstrate in Part II, this pluralist theory of environmental justice can navigate the intuitive conservation dilemma introduced in this article.

## 1. The Canyon Dilemma

Consider the following case, based loosely on a quandary faced by the government of the Arizona Territory (Brinkley 2010: sec. 2.2):

> **Mining the Grand Canyon**: In 1900, Americans discover that the Grand Canyon holds large quantities of easily accessible metals worth $1 billion (in 2015 dollars).
>
> These Americans – the 1900ers[1] – have a GDP-per-capita (in 2015 dollars) of $4,000 (Jones 2015: 3). It is impossible for them to borrow from future Americans nor can they transform the existing physical capital stock into consumption.
>
> Mining the Grand Canyon would destroy its majestic scenic beauty, which would otherwise last for 1,000 years. Despite the welfare that the 1900ers obtain from a pristine Grand Canyon,[2] the wealth obtained from the Grand Canyon's mining would moderately increase the 1900ers welfare.
>
> Whether or not the Grand Canyon is mined, the United States will enjoy a 1.5% growth rate in median GDP-per-capita and a substantial positive growth rate in median welfare for the next 1,000 years.

To avoid issues extraneous to my core concerns, I will make several additional assumptions:

(1) There have never been Native Americans living in the area of the Grand Canyon.[3]
(2) The Grand Canyon has no scientific value.
(3) The United States is the only nation-state.

[1]I treat generations as monoliths merely as a simplification. I am not committed to the idea that generations as such are worthy of moral consideration independently from the individuals that comprise them.

[2]The welfare the 1900ers obtain from the Grand Canyon includes their welfare from visiting the Grand Canyon, the welfare they obtain from knowing the pristine Grand Canyon exists, and the 1900ers' altruistic preferences for future people's welfare relating to the pristine Grand Canyon.

[3]In fact, Native Americans have strong connections to the Grand Canyon (Stoffle *et al.* 1997: 239–241).

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(4) Future people appear independently of the actions of current people.[4]
(5) There are an identical number of individuals in every generation.
(6) Unless stated otherwise, all individuals within a generation have identical welfare.
(7) Unless stated otherwise, the United States' natural wealth (besides the Grand Canyon) is constant over time.[5]
(8) The welfare that each generation obtains from scenic canyons is constant over time (i.e. is independent of that generation's level of wealth).

Even setting aside important considerations such as the moral claims of Native Americans, I submit that the 1900ers' mining of the Grand Canyon would have been impermissible. And indeed, many argued as much at the time. As President Teddy Roosevelt implored:

> In the Grand Canyon, Arizona has a natural wonder which, so far as I know, is in kind absolutely unparalleled throughout the rest of the world. I want to ask you to do one thing … Leave it as it is … [K]eep it for your children, your children's children, and for all who come after you … We have gotten past the stage, my fellow citizens, when we are to be pardoned if we treat any part of our country as something to be skinned for two or three years for the use of the present generation, whether it is the forest, the water, the scenery. (Roosevelt 1906)[6]

I take it that Roosevelt was right to oppose the Grand Canyon's mining. However, Roosevelt's rejection of the destructive use of *any part* of America's natural heritage for short-term benefit is far less convincing. Consider, for example, the following case:

> **Mining the Small Canyon**: The situation is identical to Mining the Grand Canyon except that the $1 billion of easily accessible metallurgical wealth is discovered in a far less majestic and ecologically unremarkable small canyon. The small canyon's modest scenic beauty would be destroyed by the mining and would otherwise have lasted for 1,000 years.

Given the 1900ers' poverty and the predicted greater wealth and welfare of future people, I submit that the small canyon's mining would have been permissible.

Taken together, these cases present theories of environmental justice with the following intuitive conservation dilemma:

[4]This assumption sets aside the special obligations that parents may have to their children as well as the non-identity problem (Woodward 1986) – the problem that current people's destruction of the natural world can affect who is born and thus cannot be said to harm future people.

[5]By 'natural wealth', I simply mean the overall stock of available natural resources. By 'natural resources', I mean objects of value not created by human beings.

[6]The unattractiveness of the Grand Canyon's mining seems even stronger in the example considered above in which America's natural wealth is constant over time.

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**The Canyon Dilemma**: A compelling theory of environmental justice should be able to:

(a) Condemn the Grand Canyon's mining (in the case described above and in variations in which the mining is impermissible), and
(b) Condone the small canyon's mining (in the case described above and in variations in which the mining is permissible).

I will argue that several prominent theories of environmental justice are incapable of navigating this intuitive conservation dilemma.

Before developing this argument, three methodological points are worth emphasizing. First, a key aim of this article is to motivate consideration of the novel theory of environmental justice introduced in Part II. To do so, it highlights an important problem with existing theories. But since it is impossible to consider all theories of environmental justice (or even a fully representative sample) in one article, it is impossible to definitively establish the need for a new theory. Nevertheless, since the theories considered here are both prominent and diverse, my hope is that this article will provide some motivation for considering the novel theory proposed in Part II.[7]

Second, the objections to existing theories highlighted here appeal to *intuitive* judgements about the permissibility of certain types of destructive uses of the natural world. I recognize that this approach is not universally accepted. Some readers may reject the claim that intuitive judgements about particular cases should guide our moral reasoning (e.g. Singer 2005). Others may find the cases introduced too complex or hypothetical to elicit reliable judgements.[8] Still others may have judgements about these cases that are at odds with the judgements I appeal to.

Let me offer a few responses to such concerns. First, there is a fairly broad (though not universal) consensus among moral and political philosophers that intuitive judgements about particular cases are indeed important for moral reasoning (Daniels 2020). Second, cases that constitute the Canyon Dilemma, while admittedly complex and hypothetical, are no more so than many cases that have been used in other areas of moral philosophy (e.g. Kamm 1993). Third, my aim in this article is not to definitively refute theories of environmental justice that fail to navigate the Canyon Dilemma. Rather, it is to motivate proponents of these theories to be open to considering alternatives. The intuitive judgements that I will appeal to are, I hope, sufficiently robust to play this circumscribed role.

A final methodological point is this. When philosophers highlight some intuitively implausible implication of a theory, they often try to *immediately* explain where the theory went wrong while offering an alternative theory that avoids the implausible implication. However, in this article, I will only provide a

[7]Moreover, if a theory not considered in this article can navigate the Canyon Dilemma, then this article's arguments provide an important consideration in that theory's favour.

[8]For a discussion and defence of hypothetical thought experiments, see Brownlee and Stemplowska (2017).

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tentative, partial explanation of the source of the problem, and, even then, only in this article's final section. A full solution to the Canyon Dilemma will have to wait until Part II.

## 2. Exclusive focus on the least advantaged

With these methodological points in mind, I now turn to considering the capacity of existing environmental justice theories to navigate the Canyon Dilemma, beginning with theories that focus *exclusively* on the plight of the least well-off. These theories include:

(i) Strict maximin theories committed to maximizing the welfare of the least well-off (e.g. Gosseries 2002),[9]
(ii) Strict sufficientarian theories committed to ensuring some minimum level of welfare for every individual,[10] and
(iii) Strict egalitarian theories committed to achieving equality of welfare across individuals.[11]

Of all the theories of environmental justice considered in this article, the theories above are most vulnerable to the intuitive objection posed by the Grand Canyon case. Since the Grand Canyon's mining increases the welfare of the least well-off generation (the 1900ers), its mining would clearly be permitted by strict maximin. And assuming that the impoverished 1900ers (but not future people) fall below the relevant minimum, the Grand Canyon's mining would also be permitted by strict sufficientarianism. Finally, since the Grand Canyon's destruction brings the least well-off generation's welfare closer to the welfare of better-off future people, mining the Grand Canyon would be permitted by strict egalitarianism.

This intuitive problem posed by the Grand Canyon case is not easy for these theories to avoid. Strict sufficientarians cannot avoid the problem by holding that the 1900ers do not fall below the relevant minimum. After all, we can easily imagine that the basic needs of a few individuals (e.g. several unemployed miners) can *only* be met if the Grand Canyon is mined (e.g. given existing political constraints that make redistributive schemes impossible). In this case, strict sufficientarianism would permit the Grand Canyon's mining. Yet I take it that the destruction of this awe-inspiring part of the natural world is impermissible, even if a few destitute miners' basic needs are on the line.

The problem also cannot be avoided by abandoning welfare in favour of other notions of advantage, where advantage can be understood as a positive attribute or combination of attributes of a person or her circumstances that is relevant to distributive justice.[12] Other well-known conceptions of advantage include *access*

[9]Though Gosseries does not commit specifically to *welfare* maximin, as I shall discuss shortly, the intuitive objection posed by the Canyon Dilemma also applies to non-welfarist forms of maximin.

[10]This type of approach is suggested by certain definitions of sustainable development that focus on the ability of all generations, present and future, to meet their needs. See for example WCED (1987: sec. 3.27). For a more detailed elaboration of this type of framework, see Wolf (2009) and Kyllönen and Basso (2017).

[11]For an indirect defence of intergenerational welfare egalitarianism, see Lippert-Rasmussen (2012).

[12]Here, the usage of advantage here follows Cohen (1989: 916–917).

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*to* welfare, where 'access to welfare' is judged by the means a person has to realize welfare (Armstrong 2017: 82–83), capabilities (Sen 1980: 218), general opportunities (for education, health, etc.) (Caney 2001) and opportunity for welfare.[13] Since mining the Grand Canyon would presumably increase the 1900ers' advantage on all of these conceptions of advantage,[14] it is unclear how any theory that focuses exclusively on the plight of the least advantaged could condemn the Grand Canyon's mining.

## 3. Vague egalitarianism

An obvious way to avoid this problem is to abandon an exclusive concern with the plight of the least advantaged. And, indeed, many theories of environmental justice take a more pluralistic approach. For example, though Caney (2001: 117) defends equality of opportunity as the guiding principle of environmental justice, he recognizes that other moral considerations matter. Similarly, while Armstrong (2017: 40–41) defends a principle of equality of access to welfare as his primary principle of environmental justice, he recognizes that other moral considerations have weight. Both Armstrong and Caney can condemn the 1900ers' mining of the Grand Canyon by insisting that this is one of the cases in which non-egalitarian considerations should be given priority.

I do not deny that this type of (what I shall call) *vague egalitarianism* – a theory that combines a primary egalitarian principle with other, unspecified principles of justice – may be able to navigate the Canyon Dilemma.[15] However, leaving the other principles and the ways in which they should be balanced against egalitarian considerations unspecified is deeply problematic. First, it makes Caney and Armstrong's theories impossible to challenge intuitively (since any implausible implication of their theories can always be explained in terms of some hitherto unspecified competing principle). Second, it makes any concrete recommendation of these theories unreliable. Since the full set of environmental justice principles is never spelled out, we can never confidently determine when egalitarian principles should prevail and when they should be overridden.

The Canyon Dilemma brings this second problem with vague egalitarianism into sharp relief. Assuming that non-egalitarian considerations dominate in the Grand Canyon case, Caney and Armstrong's theories give us no way of rejecting the dominance of non-egalitarian considerations in the small canyon case. Thus, egalitarian theories that do not specify what the competing non-egalitarian considerations are and (at least roughly) how they should be weighed against egalitarian considerations cannot compellingly navigate the Canyon Dilemma, either.

[13]For a defence of a choice-sensitive notion of advantage, see Arneson (1989). For an application of this notion of advantage to environmental justice problems, see Barry (2003). For a choice-sensitive type of intergenerational maximin, see Roemer (2005).

[14]Mining the Grand Canyon would increase equality of opportunity for advantage because the 1900ers are worst off through no fault or choice of their own.

[15]Indeed, one version of the pluralist theory I shall ultimately defend as a solution to the Canyon Dilemma in Part II combines egalitarian principles with a certain conception of respect for the separateness of persons. See Part II, section 7.

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## 4. Welfarism

One way to avoid the problems raised thus far is to endorse theories of environmental justice that do not focus exclusively on the plight of the least advantaged and that also specify the weight that should be given to competing, non-egalitarian considerations. One particularly prominent set of theories of this sort are *welfarist* theories of environmental justice. Welfarism holds that the just outcome is the one that maximizes some function of individual welfares and nothing else (Sen 1979: 471–472).[16] Welfarist theories that focus *only* on equality of welfare, achieving a minimum level of welfare for everyone, or improving the welfare of the least well-off were considered in section 2. In this section, I wish to consider welfarist theories that grant at least some weight to *aggregate welfare* (i.e. the weighted sum of individual welfares, where each person's welfare is given a strictly positive weight). The most well-known of these welfarist theories is utilitarianism, which gives the welfare of all contemporaries the same weight. However, there are also other welfarist theories in this category, such as *prioritarianism*, which places greater weight on the welfare of the less well off (e.g. Adler 2009: sec. I).

In intergenerational contexts, theories that admit aggregate welfare as a consideration must answer the following question: How should future people's welfare compare with current people's welfare? In the case of the Canyon Dilemma in which the relevant goods (canyons) cannot be bought on the market,[17] in which canyons are assumed to generate the same welfare over time, and in which future people are assumed to be increasingly better off than current people, there are three justifications for *discounting* (giving less weight to) future people's welfare:

1. **Time discounting**: Justifications related to the fact that the welfare occurs in the future (e.g. Beckerman and Hepburn 2007).
2. **Prioritarian/egalitarian discounting**: Justifications related to the fact that future people will have greater welfare than current people (e.g. Adler 2009), and
3. **Risk/uncertainty-based discounting**: Justifications related to risk or uncertainty about the ability of humans to obtain welfare from canyons in the future (e.g. Gollier 2013).

For simplicity, *I will assume away risk/uncertainty* in this article. There are therefore four types of welfarist theories to consider (listed in the order in which I will consider them):

(i) Theories with neither time discounting nor prioritarian/egalitarian discounting,
(ii) Theories with time discounting but no prioritarian/egalitarian discounting,

[16]Examples of welfarist frameworks of environmental justice include Beckerman and Pasek (2001) and Stern *et al.* (2006).

[17]For a discussion of the importance of this point, see Broome (1994: 147–151).

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(iii) Theories with both time discounting and prioritarian/egalitarian discounting, and
(iv) Theories with prioritarian/egalitarian discounting but no time discounting.

To make my analysis tractable, I will limit my consideration of welfarist theories with no prioritarian/egalitarian discounting to utilitarianism. I will also assume that time-discounting factors grow strictly positively and non-asymptotically with time and that prioritarian/egalitarian discounting factors grow strictly positively and non-asymptotically with welfare. I will relax these final two assumptions in section 4.5.

### 4.1. No discounting

Consider first welfarist theories that do not discount future people's welfare for either time-based or prioritarian/egalitarian reasons. Given the assumptions above, the only welfarist theory that falls into this category is non-time-discounting utilitarianism. This theory grants each person's welfare the same weight, regardless of when the person exists and regardless of how well-off the person is. Non-time-discounting utilitarianism can easily condemn Mining the Grand Canyon by appealing to the mining's effects on future people's welfare. After all, the non-discounted welfare that all future people would obtain from the unmined Grand Canyon for 1,000 years can straightforwardly be assumed to outweigh welfare that the 1900ers could obtain from the Grand Canyon's metallurgical wealth, poor though they might be.

However, non-time-discounting utilitarianism cannot avoid the small canyon horn of the Canyon Dilemma. To see why not, assume now that the *yearly* welfare future people would obtain from the unmined small canyon's modest scenic beauty is non-negligible. In fact, it is just barely over 1/1,000th of the welfare the poor 1900ers could obtain from destructively mining the small canyon. I submit that Mining the Small Canyon is nevertheless permissible in this case. Insisting that the impoverished 1900ers forbear from accessing the considerable metallurgical wealth of one fairly unremarkable small canyon merely because a very large succession of increasingly well-off and wealthy future people will each derive a small amount of welfare from the canyon's modest scenic beauty seems to fail to take the plight of the 1900ers seriously enough. Yet non-time-discounting utilitarianism would forbid the 1900ers from mining the small canyon in this case.

Non-time-discounting utilitarians might be tempted to simply bite this bullet. However, the intuitive problem that the small canyon horn poses for this type of welfarism can be strengthened in two ways. The first is by increasing what is at stake for the 1900ers. Consider, for example, the following variation of the small canyon case.

**Life-Saving Mining the Small Canyon**: The situation is identical to Mining the Small Canyon with the following two exceptions:

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- 100 destitute miners will predictably die of poverty-related reasons unless the small canyon is mined (i.e. it is impossible to help them in any other way).
- The predicted number of future people visiting the small canyon is somewhat higher than in the original Mining the Small Canyon such that the yearly welfare future people would obtain from the unmined small canyon is still just barely over 1/1,000th of the welfare the poor 1900ers could obtain from the mining (including the welfare benefits of saving the 100 destitute miners).

In this case in which a substantial number of lives are at stake, it seems particularly difficult to countenance a prohibition on the small canyon's mining. Yet given that we are imagining a somewhat larger number of small canyon visitors, non-time-discounting utilitarianism would be committed to forbidding the 1900ers from mining the small canyon in this case.

A second way of strengthening the intuitive problem posed by the small canyon horn is by considering a case in which natural wealth is growing over time. Consider, for example, the following case:

> **Life-Saving Mining the Small Canyon Assuming Growing Natural Wealth**: This case is similar to Life-Saving Mining the Small Canyon, with the following exception:
>
> Even if the small canyon is mined, America's natural wealth will grow substantially over time due to discoveries of natural resources, including both mineral wealth and newly discovered scenic areas (e.g. beautiful underwater coral reefs). However, these new discoveries do not reduce the welfare that future people would obtain from an unmined small canyon.[18]

I submit that prohibiting the small canyon's mining is particularly unattractive in this case in which future people will have, not only greater human-made wealth and welfare, but also greater overall natural wealth than the 1900ers can enjoy. Yet non-time-discounting utilitarianism would nevertheless condemn the small canyon's mining, even in this case.

### 4.2. Time discounting but no prioritarian/egalitarian discounting

One response to these problems is to endorse time-discounting utilitarianism instead. If we discount welfare that occurs in the future, then the small amount of welfare that future people (especially increasingly distant ones) would obtain from the small canyon's scenic beauty would no longer outweigh the welfare the 1900ers can obtain from mining the small canyon.

However, time-discounting utilitarianism is subject to a familiar intuitive objection that can be illustrated via the following variation of the Grand Canyon case:

[18]We might imagine that the enjoyment of the natural world is a luxury good that is consumed at greater rates with growing wealth.

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**Pollution-Time-Bomb Mining the Grand Canyon**: The case is similar to Mining the Grand Canyon with the following exception:

- The 1900ers have a way of extracting wealth from the Grand Canyon without causing any damage to it. However, the process produces harmful pollution that will have devastating effects in the very distant future. This pollution will have no consequences for X years but thereafter will cause massive environmental devastation along with enormous reduction in human welfare (e.g. large-scale starvation).

Pollution-Time-Bomb Mining the Grand Canyon seems patently impermissible. However, given the assumptions above, time-discounting utilitarianism is committed to permitting the Grand Canyon's mining in this case, at least as X becomes sufficiently large. The propensity of time-discounting utilitarianism to permit such *environmental-time-bomb policies* – policies that have relatively small benefits today but that will cause catastrophic damage to the environment in the very distant future – is a familiar objection against this type of welfarism (e.g. de-Shalit 1995: 6–9).

### 4.3. Time discounting and prioritarian/egalitarian discounting

However, as several theorists have pointed out, time-discounting welfarists can avoid endorsing such environmental-time-bomb policies by combining time-discounting with prioritarian/egalitarian discounting (e.g. Fleurbaey and Zuber 2012). After all, the environmental time bomb will make future people *much worse off* than current people. And so a *negative* prioritarian/egalitarian discount factor (which magnifies rather than shrinks the moral weight of the environmental time bomb's consequences) would be appropriate in this case. Thus, by discounting future people's welfare for *both* prioritarian/egalitarian and time-based reasons, it is possible to simultaneously condone Mining the Small Canyon and condemn Pollution-Time-Bomb Mining the Grand Canyon.[19]

Yet this type of welfarism still cannot avoid the Grand Canyon horn of the Canyon Dilemma. To see why, consider following variation of the original Grand Canyon case:

**Delayed-Destruction Mining the Grand Canyon Assuming Constant Welfare**: This case is similar to Mining the Grand Canyon with two exceptions:

- The 1900ers have a mining technique that allows them to extract metals from the Grand Canyon without causing any *immediate* damage to it and without causing any pollution. However, this mining technique will unavoidably cause the Grand Canyon to collapse in T years. The Grand Canyon would have otherwise lasted for another (T+1,000) years.
- The welfare of the future people affected by the collapse is predicted to be *the same* as the 1900ers' welfare if the Grand Canyon is mined and only modestly

[19]Put precisely, for any time X until the pollution time bomb goes off, there exists a sufficiently high prioritarian/egalitarian weighting of the welfare of future people that would make Pollution-Time-Bomb Mining the Grand Canyon impermissible.

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higher if it is not. (We might imagine a tiny annual growth in welfare that stops after T years and that ensures that future people will be exactly as well-off as the 1900ers are if the Grand Canyon is mined.)

I submit that Delayed-Destruction Mining the Grand Canyon Assuming Constant Welfare is impermissible. The mere delay between the Grand Canyon's mining and its destruction does not seem sufficient to justify permitting the 1900ers to mine this awe-inspiring part of the natural world, especially when the affected future people will be no better off than the 1900ers. Yet any form of welfarism with time discounting will be committed to allowing the Grand Canyon's destruction in this case, at least as T becomes sufficiently large (since there is no negative prioritarian/egalitarian discount to counteract the effects of time discounting in this case due to the constant welfare assumption).

### 4.4. Prioritarian/egalitarian discounting and no time discounting

Perhaps, then, the solution to the Canyon Dilemma lies in a form of welfarism that eschews time discounting but still endorses prioritarian/egalitarian discounting (e.g. Adler 2009). The lack of time discounting would enable this form of welfarism to condemn Delayed-Destruction Mining the Grand Canyon Assuming Constant Welfare. And the prioritarian/egalitarian discounting might grant the welfare that increasingly well-off future people obtain from the small canyon a sufficiently low weight to justify permitting its mining.

However, it is unclear whether this form of welfarism can avoid the Grand Canyon horn of the Canyon Dilemma. To see why, consider the following variation:

**Delayed-Destruction Mining the Grand Canyon:** This case is similar to Delayed-Destruction Mining the Grand Canyon Assuming Constant Welfare except that Americans' welfare grows substantially over time.

Since future people's welfare is growing, the prioritarian/egalitarian discount factor will also grow over time. There will therefore be a T (i.e. a delay between the Grand Canyon's mining and its destruction) such that the Grand Canyon's mining will be permissible. Yet it is not obvious that the Grand Canyon should be mined in this case.

Welfarists who endorse prioritarian/egalitarian discounting might insist that the Grand Canyon should be mined in this case. If the future people who lose the ability to enjoy the Grand Canyon really are *fabulously* well-off (as they would be in this case when T is very large), then perhaps the loss of their ability to enjoy the Grand Canyon can be justified by all the good that the Grand Canyon's metallurgical wealth could do for the badly off 1900ers.

However, consider the following variation of the case:

**Delayed-Destruction Mining the Grand Canyon for a Pittance**: This case is similar to Delayed-Destruction Mining the Grand Canyon with the following exception:

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- Rather than $1 billion (in 2015 dollars) of wealth, only $1,000-worth of net welfare benefits can be obtained from mining the Grand Canyon.

Note that, for some sufficiently large delay (T) between the Grand Canyon's mining and its destruction, even the very small amount of welfare that can be obtained from $1,000 will justify the Grand Canyon's destruction. Yet the destruction of this awe-inspiring part of the natural world *for a pittance* seems very difficult to countenance, even when the distant future people affected by the Grand Canyon's destruction are assumed to be *incredibly, fabulously* well-off. Thus, welfarism that endorses prioritarian/egalitarian discounting but no time discounting seems unable to navigate the Grand Canyon horn of the Canyon Dilemma.

Moreover, this form of welfarism has difficulty avoiding the small canyon horn of the dilemma. To see why, consider one final variation of the small canyon case:

**Life-Saving Mining the Small Canyon Assuming Growing Natural Wealth and a Welfare Plateau:** This case is similar to Life-Saving Mining the Small Canyon Assuming Growing Natural Wealth with the following exception:

- After reaching high levels, future people's welfare plateaus (i.e. stops growing) in 2100. (To make this consistent with the assumption of growing natural wealth, we might imagine that greater human-made wealth beyond 2100-levels increasingly fosters a materialistic ennui.)
- If left unmined, the small canyon will last for Y years (rather than only a thousand).

Since future people's welfare plateaus in 2100, no further egalitarian/prioritarian discounting of future people's welfare from the small canyon beyond this point in time is warranted. Thus, for a sufficiently large lifespan of the small canyon (Y), any form of welfarism with prioritarian/egalitarian discounting but no time discounting would be committed to forbidding the 1900ers from mining the small canyon. Yet I submit that the small canyon's mining is permissible in this case.

To be clear, I am not claiming that the 1900ers' plight must always take precedence over future people's enjoyment of the small canyon. Rather, my claim is that the small canyon's mining is permissible in the case at hand in which future people are predicted to have, not only far greater welfare and human-made wealth than the 1900ers enjoy, but also access to far greater (and growing) natural wealth. It is this final aspect of the case that seems intuitively to most severely undermine the moral force of future people's demand that the 1900ers keep the small canyon intact, especially given the plight of the 100 destitute miners. Thus, welfarism with egalitarian/prioritarian discounting and no time-discounting has difficulty navigating both horns of the Canyon Dilemma.

### 4.5. Asymptotic discounting?

Welfarists might try to avoid these problems by endorsing limits on time discounting and/or prioritarian/egalitarian discounting. That is, they might hold that the time discount factor no longer increases past a certain point in the

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distant future and/or that past a certain very high level of well-being, no further discounting of well-off people's welfare is warranted.

However, such discounting limits do not enable welfarism to navigate the Canyon Dilemma, either. Consider first a form of welfarism with a limit on prioritarian/egalitarian discounting but no limit on time discounting. This form of welfarism will be unable to avoid the Grand Canyon horn because it cannot condemn Delayed-Destruction Mining the Grand Canyon Assuming Constant Welfare. After all, the prioritarian/egalitarian discount rate is irrelevant in this example (since welfare is constant). Thus, for a sufficiently long delay between the mining and the destruction, time discounting will eventually lead this type of welfarism to permit the Grand Canyon's destruction.

Consider next a form of welfarism that places a limit on time-discounting. This form of welfarism cannot navigate the small canyon horn because it forbids Life-Saving Mining the Small Canyon Assuming a Growing Natural Wealth and a Welfare Plateau. Remember that, in this case, no further discounting on prioritarian/egalitarian grounds is justified past the year 2100. Thus, regardless of whether the prioritarian/egalitarian discounting is limited, unlimited, or non-existent, as long as the time-discounting factor eventually hits a limit, the weight given to the welfare provided by the small canyon will be non-zero and non-diminishing. Therefore, there will be some lifespan of the unmined small canyon (Y) that will justify insisting that the small canyon be kept intact. Yet given the 1900ers' plight (including the predicted deaths of the destitute miners) and future people's substantially greater welfare, human-made wealth *and natural wealth* (including a wide variety of other scenic resources), this conclusion seems difficult to accept. Thus, asymptotic discounting does not enable welfarism to navigate the Canyon Dilemma, either.

## 5. Green welfarism

The problems considered in the previous section suggest that the difficulties with welfarist approaches to intergenerational environmental justice might lie, not in a failure to find the right way of trading off current people and future people's welfare, but rather in the way in which welfarism weighs competing claims to the natural world. One theory of environmental justice that offers a different way of weighing these claims is (what I call) *green welfarism*. Green welfarists hold that the natural world has a welfarist value for human beings that is *non-negotiable* in some way relative to welfare from other goods. Michael Jacobs (1995: 64) articulates green welfarism's key commitment when he writes, '[The natural world] ... provides humankind with goods (social and cultural as well as individual) which are necessary for wellbeing; without them both individual lives and societies are impoverished, an impoverishment for which no substitution of human-made benefits can make up'. For green welfarists, the natural world has this special welfarist value, not only because it provides the physical essentials of human life, but also because certain types of natural functions and/or interactions with the natural world are crucial for human flourishing (Jacobs 1995: 64).[20]

[20]For another version of green welfarism, see Goodin (1992).

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Since green welfarists see the value of the pristine natural world as non-negotiable, their theories have obvious potential to avoid the Grand Canyon horn of the Canyon Dilemma. The key challenge for green welfarism is avoiding the small canyon horn. I will argue in this section that, while there are some versions of green welfarism that can avoid the small canyon horn, *these* versions of green welfarism are unable to avoid the Grand Canyon horn. Thus, no form of green welfarism can navigate the Canyon Dilemma.

At first glance, it is difficult to see how any form of green welfarism can avoid the small canyon horn. After all, if the pristine natural world has a non-negotiable welfarist value, then we seem implausibly committed to condemning the small canyon's mining, regardless of how much wealth its mining would produce and regardless of how impoverished the 1900ers' are.[21]

However, most green welfarists reject the extreme claim that *every part* of the natural world has a non-negotiable welfarist value. They hold instead that *classes* of natural functions have a non-negotiable welfarist value (Jacobs 1995: 62). This type of *non-extreme* green welfarism can potentially avoid the small canyon horn of the Canyon Dilemma.

Yet non-extremeness is insufficient to avoid the small canyon horn. As I argued above, standard (i.e. non-green) welfarism is unable to navigate the small canyon horn of the Canyon Dilemma unless it endorses unlimited time discounting.[22] Otherwise, it would be committed to condemning the small canyon's mining in the case of growing natural wealth and a welfare plateau. A fortiori, then, non-extreme green welfarism (which generally assigns an even higher welfarist value to scenic resources) will only be able to avoid the small canyon horn if it endorses unlimited time discounting.

However, while non-extreme, time-discounting green welfarism can avoid the small canyon horn, it cannot avoid the Grand Canyon horn of the Canyon Dilemma. Consider again Delayed-Destruction Mining the Grand Canyon Assuming Constant Welfare. As long as the Grand Canyon's welfarist value is not viewed as non-negotiable, there will be a delay (T) between the Grand Canyon's mining and its destruction that will commit non-extreme, time-discounting green welfarism to condoning the Grand Canyon's destruction. This is so even if the Grand Canyon's welfarist value is assumed to be substantially higher than non-green welfarists recognize. Thus, any version of green welfarism that can avoid the small canyon horn of the Canyon Dilemma seems incapable of avoiding the Grand Canyon horn.

Green welfarists might respond to this problem by insisting that the unmined small canyon has a negotiable welfarist value while the unmined Grand Canyon has a non-negotiable welfarist value. After all, although the small canyon is scenic, it certainly does not provide an experience of nature's majesty in the same way that the Grand Canyon does. And it is this experience that might be viewed by green welfarists as crucial to human flourishing.[23] A version of green welfarism that compellingly

[21]For this type of criticism of a particular type of green welfarism, see Beckerman (1994: 194–195).

[22]See sections 4.1 and 4.4 above.

[23]For example, Robert Goodin (1992: 37–41) argues that the natural world provides a special context that enables individuals to see a certain sense and pattern in their lives. The awe-inspiring Grand Canyon produced via millennia of natural processes might be particularly conducive to this type of purpose.

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established that the Grand Canyon but not the small canyon has a non-negotiable welfarist value would admittedly be able to navigate the Canyon Dilemma.

However, the claim that the Grand Canyon has a non-negotiable welfarist value is implausible. Even if we accept the controversial claim that experiencing nature's majesty is crucial to a flourishing human life, this would not establish that *the pristine Grand Canyon* is crucial to human flourishing. There are, after all, other ways to experience nature's majesty besides visiting the Grand Canyon. Natural wonders such as Bryce Canyon or the Sunset Cliffs can enable human beings to experience nature's majesty in broadly similar ways. Moreover, if the Grand Canyon really were *crucial* to human flourishing, then not one of the billions of human beings who has never experienced the Grand Canyon scenic majesty could be said to have led a flourishing human life, even if they interacted in deep and meaningful ways with the natural world in other ways. Finally, on this view, even if destructive mining of the Grand Canyon could eliminate all human poverty, it would still be impermissible. Such implications are very difficult to accept.

Green welfarists might alternatively respond to the challenge posed by the Canyon Dilemma by adjusting their theory in the following way: They might hold that the value of the natural world should indeed be non-negotiable relative to human-made wealth in most cases. But they might argue that *human life* has a non-negotiable value that trumps the value of nature. By constructing a lexicographic hierarchy of welfarist values, with human life at the top, welfare from the natural world second, and the kind of general economic flourishing that mining wealth enables third, green welfarists would be able to condone the small canyon's mining in the cases in which the destitute miners' lives are at stake (i.e. the case in which the small canyon's mining seems most attractive) while still rejecting the Grand Canyon's mining.

However, this type of hierarchical green welfarism cannot avoid the Grand Canyon horn of the Canyon Dilemma. To see why, consider the following case:

> **Life-Saving Mining the Grand Canyon**: This case is similar to Mining the Grand Canyon except that 100 destitute miners will unavoidably die of poverty-related reasons unless the Grand Canyon is mined.

The intuitive judgement in this case is admittedly not as clear as in Mining the Grand Canyon. The prevention of the destitute miners' death weighs powerfully in favour of permitting the Grand Canyon's mining. Yet I nevertheless submit that Life-Saving Mining the Grand Canyon is impermissible. If so, then the hierarchical green welfarism proposed above is also incapable of navigating the Canyon Dilemma. It seems, then, that while there are forms of green welfarism that can avoid the small canyon horn and forms that can avoid the Grand Canyon horn of the Canyon Dilemma, no form of green welfarism can avoid both horns.

## 6. Deep-green welfarism

Theorists of environmental justice sympathetic to welfarism might respond to these intuitive challenges by endorsing a theory that combines welfarism (either standard

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or green) with a concern with the *deep-ecological* (i.e. non-anthropocentric) value of the natural world – the value of the natural world *for its own sake*. I call this type of theory of environmental justice *deep-green welfarism*.[24]

There are a variety of possible forms of deep-green welfarism that vary according to their welfarist commitments and their axiological foundations for the non-anthropocentric value of the natural world. Prominent possibilities for such axiological foundations include appeals to the interests of non-human biotic entities (Callicott 1984: 301), the value of our communal relationship with other living beings (Callicott 1984: 305–306), and the value of having a certain type of rich diversity among the entities (biotic and non-biotic) in the universe (Callicott 1984: 303).

Any of these forms of deep-green welfarism appear to have significant potential to navigate the Canyon Dilemma. After all, they imply that the Grand Canyon may well have substantially greater deep-ecological value than the ecologically unremarkable small canyon. This makes it possible to condemn the Grand Canyon's mining while condoning the small canyon's mining.

However, deep-green welfarism cannot navigate the Canyon Dilemma, either. The key reason is that deep-ecological considerations are simply not central to this particular dilemma. To see why, imagine now (and for the rest of this article) that the Grand Canyon is wholly barren of plant and animal life. To appease deep ecologists who value the uniqueness or variety of non-biotic entities, imagine also that it becomes known that a very large number of canyons identical to the Grand Canyon exist in the universe (though these other canyons will never become accessible to human beings). Given these assumptions, mining the Grand Canyon would have negligible effects on deep-ecological value. Yet I submit that these assumptions would not make the Grand Canyon's mining permissible in any of the cases considered above.

On reflection, this is not particularly surprising. Unlike the Great Barrier Reef or the Arctic National Wildlife Refuge, what seems most valuable about the Grand Canyon is not its plant and animal life. Instead, its value fundamentally lies in its scenic majesty *for human beings* and the way in which it enables human beings to reflect on our place in the world. This is why mining even a wholly barren Grand Canyon would be impermissible.

To be clear, this example does not challenge the plausibility of deep-ecological principles. Just because these principles do not fundamentally explain the impermissibility of mining the Grand Canyon does not mean that they cannot explain the impermissibility of other acts of environmental destruction.[25] However, this example does suggest that the addition of deep-ecological principles *cannot rescue welfarism* from the intuitive problems highlighted above.

[24]For an example of this type of theory, see Jacobs (1995: 66).

[25]I also do not mean to suggest that dilemmas in which deep-ecological considerations are marginal are typical. Indeed, many (if not most) dilemmas in environmental justice have concerns about non-human entities (e.g. endangered species) at their core. However, dilemmas whose concerns are fundamentally anthropocentric are methodologically useful, since they enable focus on the plausibility of different anthropocentric environmental justice principles without having to consider how these might be combined with different deep-ecological principles.

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## 7. Green communitarianism

Perhaps, then, a solution to the Canyon Dilemma can be found by abandoning welfarism as our anthropocentric principle of environmental justice. In this section, I turn to considering the Canyon-Dilemma-navigating potential of *green communitarianism*. Communitarians ground obligations of justice, not in what maximizes some function of individual welfare, but rather in shared communal conceptions of the good life. *Green* communitarians (as I used the term) focus on the implications of communitarianism for the human relationship with the natural world and aim to ground strong conservation obligations.

Though there are many versions of green communitarianism,[26] my focus here will be on one of the most well-developed – the green communitarianism defended by Avner de-Shalit in *Why Posterity Matters: Environmental Policies and Future Generations*. De-Shalit's communitarianism has three broad commitments:

(1) Current people should make conservation decisions based on a shared societal conception of the good life (de-Shalit 1995: 24, 28–29).
(2) Current people have special obligations of justice to members of their own community, including contemporaries and immediate descendants, based on this shared conception of the good life, though not to distant future people (de-Shalit 1995: 58–62).
(3) Current people have humanitarian obligations to distant future people that preclude policies that threaten their basic human needs (de-Shalit 1995: 63–64).

De-Shalit's green communitarianism appears to have substantial potential for navigating the Canyon Dilemma. It can easily avoid the small canyon horn of the dilemma because it does not require taking distant future people's welfare into account in environmental policy (as long as future people's basic needs are not threatened). And it can reject Pollution-Time-Bomb Mining the Grand Canyon, since this type of mining *would* threaten distant future people's capacity to meet their basic needs.

However, de-Shalit's green communitarianism cannot avoid the Grand Canyon horn of the dilemma.[27] Consider first a variation of Mining the Grand Canyon in which the 1900ers and their near descendants value material prosperity much more highly than conservation but believe that future Americans will value pristine natural beauty much more highly than they do. I submit that it is impermissible for the 1900ers to mine the Grand Canyon in this case. Yet according to de-Shalit's theory, the material-prosperity-focused 1900ers would have no obligations of justice to forbear from mining the Grand Canyon. After all, insofar as future American will have different values, they are, on de-Shalit's view, no longer members of the same community and they are thus not owed obligations of justice. And since mining the Grand Canyon does not threaten

[26]For another example, see Barns (1995).

[27]De-Shalit (1995: 13) claims that his theory enjoins current people from 'spoiling beautiful landscapes'. My argument here suggests that, at least in certain situations, this is not the case.

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future people's capacity to meet their basic needs, de-Shalit's theory implies that the 1900ers have no humanitarian obligations to forbear from mining the Grand Canyon, either.

In fact, de-Shalit's theory would allow the 1900ers to mine the Grand Canyon even if they value its scenic majesty, as long as the Grand Canyon's destruction occurs in the sufficiently distant future. Consider again Delayed-Destruction Mining the Grand Canyon Assuming Constant Welfare. Assume now that T (the delay between the mining and the Grand Canyon's destruction) is 300 years. Even if we assume that the 1900ers appreciate the Grand Canyon's majestic beauty, de-Shalit's theory would permit them to mine the Grand Canyon in this case. After all, the 1900ers and their immediate, nature-loving descendants will still be able to enjoy the Grand Canyon (as will all people for the next 300 years). People living more than 300 years in the future will be unable to enjoy the Grand Canyon. But they are presumably sufficiently distant so as to not be part of the same community as the 1900ers. They are therefore not owed obligations of justice. And since future people's basic needs are not threatened by the Grand Canyon's destruction, the 1900ers do not have humanitarian obligations to forbear from this delayed-destruction mining, either. Thus, de-Shalit's green communitarianism cannot avoid the Grand Canyon horn of the dilemma.

Although I will not consider other green communitarian theories here, the problem raised above seems likely to apply to other forms of green communitarianism. Setting aside deep ecological considerations and assuming that the 1900ers themselves value material prosperity more highly than conservation, the delayed-destruction variations of mining the Grand Canyon can only be condemned if the 1900ers have *robust* obligations to distant future people – obligations that are sufficiently strong to justify allowing some 1900ers to die and many others to forgo considerable poverty alleviation for the sake of distant future people's enjoyment of the unmined Grand Canyon. Yet communitarians generally see strong obligations as grounded in certain types of shared communal relations or conceptions of the good life. It is therefore difficult to see how the Grand Canyon's mining could be condemned by green communitarianism in the delayed-destruction variations of the case, especially if the 1900ers themselves are primarily committed to advancing their material prosperity.

## 8. Free-market environmentalism

A feature shared by all of the theories of environmental justice considered thus far is a lack of focus on individual rights (besides rights to the natural resources necessary to meet basic needs). Perhaps, then, the solution to the Canyon Dilemma lies in some type of *green liberalism* that attempts to protect nature by granting primacy to individual rights to the natural world.

There are many types of green liberalism, and I cannot consider all of them here.[28] Instead, I wish to evaluate the Canyon-Dilemma-navigating potential of

[28]Examples of green liberalism not considered here include Wissenburg (2013) and Hailwood (2014).

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one of the most prominent contemporary forms of green liberalism: *free-market environmentalism* (FME).

The core idea of FME is that a regime of strong, well-defined, transferable private property rights is generally sufficient to offer compelling levels of protection to the natural world. Private property rights give actors incentives to appropriately care for natural resources, since they bear the cost and benefits associated with their use or misuse (Stroup 2008).

Though free-market environmentalists agree on the importance of property rights, they disagree regarding how *initial* property rights to the natural world should be allocated. Narveson (1995: 148) argues that initial rights should be assigned to first-comers. Baden and Stroup (1981) advocate assigning rights to valuable parts of the pristine natural world to environmental groups. Anderson and Leal (2001: 179–183) argue that rights should be assigned to the entity with the highest willingness-to-pay (WTP) for them. I argue that none of these ways of assigning initial rights to the natural world enables FME to navigate the Canyon Dilemma.

Narveson's proposal is the most intuitively problematic. On Narveson's view, the first person to come across the small canyon can insist it be kept in its unmined state, even if the available wealth is the only way to prevent mass starvation among her fellow citizens. And the first person to come across the Grand Canyon could blow it up for his own amusement. I take it that these outcomes are unjust.

Baden and Stroup's proposal to grant environmental groups rights to valuable parts of the natural world would admittedly secure strong protections for the Grand Canyon. But their proposal cannot avoid the small canyon horn of the Canyon Dilemma. After all, it is not difficult to imagine environmental groups refusing to permit the small canyon's mining, even when the canyon is neither particularly scenic nor ecologically valuable and even when this mining would substantially alleviate poverty among fellow citizens.

Baden and Stroup (1981: 34–35) doubt that environmental groups will be so intransigent because the wealth these groups could obtain from selling rights to mine the small canyon would enable them to accomplish greater environmental good elsewhere. But there is no guarantee that environmental groups will endorse this consequentialist reasoning. These groups may grow attached in certain ways to the particular small canyon in their care. Or they may be unwilling to have their agency so closely implicated in its destruction, even if the result is greater environmental good. Moreover, even if the environmental groups agree to sell mining rights to the small canyon, it is far from obvious that the most morally attractive use of the resulting wealth is for other conservation projects rather than for poverty alleviation.

Anderson and Leal's proposal to auction off the natural world to the highest bidder seems more promising. While mining companies would almost surely win the auction rights for the small canyon, conservationists might well win the auction for the Grand Canyon. After all, the unmined Grand Canyon's total economic value as measured by individuals' aggregate willingness-to-pay (WTP) for its preservation, discounted by the time value of money, seems greater than $1 billion (Pearce 1993: 21–22).

However, a commitment to selling the natural world to the highest bidder cannot reliably protect the Grand Canyon from destruction. One obvious problem is market failure. Much of the Grand Canyon's economic value is *existence value* – individuals' willingness-to-pay for the unmined Grand Canyon's continued existence independently of any benefit they obtain from visiting it (Pearce 1993: 21–22). This existence value is a non-excludable good – it cannot be provided to some but not others. Thus, conservationists would face great difficulties in fully tapping into their contemporaries' existence value for the Grand Canyon due to the temptation of some to free-ride on others' conservation efforts.

Moreover, even if environmental groups could overcome the free-rider problem among their contemporaries, it is very difficult to see how they could realistically tap into even a substantial portion of the existence value that *future people* will place on an unmined Grand Canyon. To do so, a conservation group bidding for the Grand Canyon would have to rely on future people voluntarily contributing *retrospectively* – even decades after the fact – to the Grand Canyon's successful preservation. Such requests for ex-post conservation funds would have to compete, not only with future individuals' private consumption desires, but also with campaigns to protect parts of the natural world whose fate still hangs in the balance. Thus, the idea that a market auction would ensure the Grand Canyon is used in the most economically valuable way seems far-fetched.

Yet even if we assume away market failures, a commitment to selling the natural world to the highest bidder cannot avoid the Grand Canyon horn of the Canyon Dilemma. To see why, consider a final variation of Mining the Grand Canyon:

**Mining the Grand Canyon Assuming Ascetic Future People**: The case is similar to Mining the Grand Canyon with the following exceptions:

- It is known that future people will be poor because they are predicted to adopt an ascetic lifestyle.
- Despite their poverty, future people are no worse off than the 1900ers.
- Future people will predictably have very strong preferences for an unmined Grand Canyon.

I take it that the Grand Canyon's destruction would be impermissible in this case. Yet the ascetic future people's willingness-to-pay to protect the Grand Canyon could well be insufficiently high to outweigh $1 billion in mining wealth for the 1900ers, even if there are no market failures. This suggests that using aggregate WTP as the criterion for determining what is to be done with the natural world is unattractive.

Admittedly, examples demonstrating the problems with an exclusive focus on WTP in environmental justice are commonplace. However, Mining the Grand Canyon Assuming Ascetic Future People is interesting because several of the traditional explanations for why a sole focus on WTP is inappropriate are inapplicable in this case. Critics of free-market environmentalism typically argue that selling the natural world to the highest bidder is inappropriate because:

(i) It fails to capture the deep-ecological value of the natural world (Sagoff 1992: 214–215),

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(ii) It denies certain individuals (e.g. the poor) access to those parts of the natural world necessary for satisfying their basic needs (Smith 1995: 138), or
(iii) It fails to grant sufficient weight to the welfare of the less well off (Blumm 1992: 376).

However, in the case of Mining the Grand Canyon Assuming Ascetic Future People, these traditional objections cannot explain the problem with Anderson and Leal's approach. Since we are assuming a wholly barren Grand Canyon, deep ecological considerations are irrelevant. Moreover, future people's basic needs are not at stake. And, though future people are poor, they are ex hypothesi no worse off than the 1900ers.[29] This case thus suggests that there may be a hitherto unrecognized problem with free-market environmentalism – a problem that might also explain why the other environmental justice theories considered in this article are unable to navigate the Canyon Dilemma. I turn now to considering this possibility.

## 9. The equal-claims idea: a promising direction

My aim in this final section is, not to solve the Canyon Dilemma (a task I leave for Part II), but rather to suggest where a solution might be found. I argue that we should give serious consideration to the *equal-claims idea* – the idea that the natural world is something to which every human being, present and future, advantaged and disadvantaged, has an equal, substantive claim.

By a 'substantive claim', I mean some set of valuable rights that go beyond the rights to the natural resources necessary for meeting basic needs. There are many theories of justice that grant individuals substantive claims to the natural world in this sense. These include theories that grant each individual an equal share of the natural world,[30] theories that grant each individual some type of collective ownership stake in the natural world (e.g. Grunebaum 2000), and theories that grant individuals opportunities to appropriate natural resources as long as the appropriation does not harm others (e.g. Locke 1980 [1690]). I will not endorse any particular interpretation of the equal-claims idea here. I wish instead to explore the promise of this idea in its abstract form.

There are several reasons for thinking that a solution to the Canyon Dilemma might be found in some interpretation of the equal-claims idea. First (and most obviously), the frameworks of environmental justice considered in this article, all of which fail to navigate the Canyon Dilemma, also universally reject the equal-claims idea. Granting rights to the natural world to first-comers (Narveson 1995: 148), to environmental groups (Baden and Stroup 1981), or to the highest bidder (Anderson and Leal 2001) does not distribute claims to the natural world in an egalitarian way.

[29]Anderson and Leal might argue that the problem in Mining the Grand Canyon Assuming Ascetic Future People is that the impoverished future people's WTP understates their welfare. See for example Anderson and Leal (2001: 24–25). However, if free-market environmentalists fall back on welfarism to justify giving greater weight to the ascetic future people's WTP, they become vulnerable to the intuitive objections raised in section 4.

[30]For a discussion of the different theorists who support this view, see Part II, section 1.

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De-Shalit's communitarianism grants distant future people rights to no more than essential natural resources, thus failing to grant them substantive claims to the natural world. Welfarist and egalitarian theories also fail to respect equal claims because they can easily deny certain individuals (e.g. the advantaged) rights to non-essential natural resources. Although the confluence between the failure to navigate the Canyon Dilemma and the rejection of the equal-claims idea could be a coincidence, it suggests that this idea is worthy of further attention.

A second reason for considering the equal-claims idea is its support among a variety of thinkers. The equal-claims idea is supported by several left-libertarians (e.g. Tideman and Vallentyne 2011).[31] It is also supported by some contemporary liberal egalitarians (e.g. Dworkin 2000: Ch. 2). Moreover, this idea was taken as a starting point for thinking about natural resource rights in several historical works.[32] For example, Locke (1980 [1690]: 18) begins the fifth chapter of his famous Second Treatise of Government with the claim that all human beings have equal God-given claims to the natural world. And in one of the most well-known passages from Henry George's *Progress and Poverty*, George (1935: 338–339) writes:

> If all existing men were to unite to grant away their equal rights [to the earth], they could not grant away the right of those who follow them. For what are we but tenants for a day? Have we made the earth, that we should determine the rights of those who after us shall tenant it in their turn?

The wide-ranging support for the equal-claims idea is another reason for taking it seriously.

A third reason why the equal-claims idea is worth considering is its capacity to explain the *special* wrong associated with the destruction of the natural world compared with the destruction of similar types of human-made wealth. Consider, for example, the following case:

> **Dismantling the Grand Monument**: Imagine the Grand Canyon never existed. In 1899, *the 1900ers build* a Grand Monument, with the same aesthetic value as the Grand Canyon (according to the reader's preferred aesthetic theory). Assume also that the welfarist value of the Grand Canyon and the Grand Monument are identical for the 1900ers and for all future generations.
>
> At the end of 1899, a disaster causes the knowledge of the arts used to build the Grand Monument to be lost forever.
>
> Moreover, in 1900, the prices of Grand Monument's materials increase. The 1900ers decide to dismantle the Grand Monument to fund an increase in welfare identical to the one enjoyed in Mining the Grand Canyon (as well as sufficient wealth to compensate them for the monument's costs).

[31]For a survey of other contemporary thinkers who endorse the equal-claims idea, see Vallentyne and Steiner (2000*a*).

[32]For a survey, see Vallentyne and Steiner (2000*b*).

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I do not wish to take a position on whether the 1900ers act permissibly in Dismantling the Grand Monument. I am interested instead in comparing the wrong done in Dismantling the Grand Monument to the wrong done in Mining the Grand Canyon. I submit that Mining the Grand Canyon constitutes a considerably graver wrong. Yet many theories of environmental justice cannot explain why this is so. An appeal to standard welfarist considerations, for example, cannot explain the difference in the two cases (since the welfare effects of the two types of destruction are ex hypothesi the same). The difference also cannot be explained by appeal to aesthetic value, irreversibility, or deep-ecological considerations (given the assumption of a wholly barren Grand Canyon).

The equal-claims idea, by contrast, can straightforwardly explain the difference between the two cases. Since the *1900ers built* the Grand Monument, they presumably have special labour-based claims to it – claims that future people do not have.[33] The 1900ers might still be acting impermissibly (or at least with insufficient benevolence) when they dismantle the Grand Monument. But accepting the idea that all individuals have equal claims to the natural world can explain why the wrong the 1900ers perpetrate in destructively mining the Grand Canyon is substantially graver than the wrong they commit in dismantling the Grand Monument.

A fourth reason why the equal-claims idea has promise as a solution to the Canyon Dilemma is its capacity to explain why growing natural wealth makes the small canyon's mining more palatable. As I suggested in section 4.1, the assumption of increasing natural wealth attenuates the force of future people's demand that the 1900ers forbear from mining the small canyon. Yet many of the theories considered in this article view future people's greater natural wealth as irrelevant (as long as it does not affect the welfare that future people obtain from the small canyon). The equal-claims idea, by contrast, can explain why future people's greater natural wealth matters. If future people can be predicted to have far greater natural wealth than the 1900ers enjoy, then the 1900ers can plausibly argue that the destructive use of the small canyon is consistent with respecting future people's equal claims to the natural world (at least on some interpretations of what equal claims entail).

A final reason why the equal-claims idea merits careful consideration in our search for a Canyon Dilemma solution is its prima facie potential for explaining why the Grand Canyon's mining is impermissible. If the Grand Canyon is something to which all people, present and future, have equal claims, then *it is not the 1900ers' alone to destroy*. Future people's claims to the Grand Canyon might justify its protection, whether future people are highly advantaged and live in the distant future (e.g. in Delayed-Destruction Mining the Grand Canyon for a Pittance) or too poor to afford to 'bribe' the 1900ers to keep the Grand Canyon intact (e.g. in Mining the Grand Canyon Assuming Ascetic Future People).

Admittedly, many questions remain unanswered about the equal-claims idea. What precisely does it mean to grant individuals equal claims to the natural world? Can any interpretation of the equal-claims idea navigate the Canyon

[33]However, if the Grand Monument had been created by long-past generations, the differences between these two cases might well be far less stark (though I shall not explore this issue further here).

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Dilemma? If so, why is granting individuals this type of equal claim justified? My aim in this section has been to argue that the equal-claims idea has substantial potential for navigating the Canyon Dilemma, thus motivating Part II's consideration of these questions.

## 10. Conclusion

When Teddy Roosevelt implored his fellow Americans to leave the Grand Canyon as it is, he faced a formidable justificatory challenge. Roosevelt was asking his compatriots, many of whom were poor, to forego substantial economic benefits for the sake of individuals (future people) who would likely be far more advantaged. Yet justice typically asks the more advantaged to bear costs for the sake of the less advantaged rather than the other way around. Roosevelt attempted to meet this challenge by appealing to the protection due to all parts of America's natural heritage. But this position, had it been taken seriously, would have unattractively denied his contemporaries permission to destructively mine even one ecologically and aesthetically unremarkable small canyon to alleviate their poverty.

Many contemporary theories of environmental justice, including the various egalitarian, welfarist, deep-ecological, communitarian and free-market environmentalist theories considered in this article, seem incapable of providing a way out of this dilemma. Some theories cannot justify the Grand Canyon's protection while others cannot justify the small canyon's mining, at least once certain variations of these cases are considered. This dilemma therefore poses an important intuitive challenge to a diverse set of theories of environmental justice.

Although I have not yet offered a solution to this dilemma, I have highlighted the promise of the equal-claims idea – the idea that all individuals, present and future, have equal, substantive claims to the natural world. Thus, before either dismissing the Canyon Dilemma as unresolvable or re-evaluating our judgements in the cases that constitute its horns, the equal-claims idea is worthy of careful examination. This is the task I take up in Part II.

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