

# Reduction of the Global Human Population

– A Rectificatory Argument based on Environmental  
Considerations

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**Abstract**

Contrary to what many scholars hold, a case can be made for human population reduction (the practice of artificially decreasing the number of human beings on the Earth). Robin Attfield's, Paul Taylor's, Arne Næss's and J. Baird Callicott's theories are considered for justifying human population reduction; however, only Næss's actually justifies reduction. Another argument for human population reduction is developed, based on rectification: humans have unjustly harmed other living entities and themselves, and they should provide rectification for the harm done. Human population reduction is a way in which this rectification can be given.

**Keywords:** human population reduction, rectification, environmental ethics, inter-species justice, harm

# Table of contents

<b>I Introduction.....</b>	<b>1</b>
<b>II Forms of human population reduction .....</b>	<b>3</b>
<b>III Theories which might justify human population reduction .....</b>	<b>5</b>
III.I Biocentric accounts: Attfield and Taylor .....	5
III.II Næss's Deep Ecology .....	9
III.III Callicott's ecocentric holism.....	12
<b>IV Rectification as a ground for justifying population reduction .....</b>	<b>16</b>
IV.I What is rectification? .....	16
IV.II Harm.....	17
IV.III The harm done .....	18
IV.IV Rectification and population reduction .....	20
<b>V Problems with practical implementation .....</b>	<b>23</b>
V.I Some methods of population reduction and their problems .....	23
V.II Where and when ought we to stop? .....	27
<b>VI Conclusion .....</b>	<b>28</b>
<b>References .....</b>	<b>31</b>

## I Introduction

Population issues have played a role in politics and society for many years (cf. Malthus, 1998 [1798]), but it was in the 1960s that they became prominent in the field of environmental ethics. One work which put the topic on the political and philosophical agenda was *The Population Bomb* (1968), by Paul Ehrlich, which was very influential and one of the earliest concerning this topic. Ehrlich's position was, compared to other authors', quite radical.

Ehrlich's account can essentially be summarized in three main points: first, he asserted that in the near future mass starvation was inevitable (Ehrlich, 1968, p. 1). Here the near future meant the 1970s (Angus & Butler, 2011, pp. 40-41). Secondly, Ehrlich contended that "the progressive deterioration of our environment may cause more death and misery than any conceivable food-population gap" (Ehrlich, 1968, p. 46). This shows the connection Ehrlich saw between anthropogenic damage to the environment, food policy and human population. Finally, Ehrlich believed the environmental and food crises had a common cause: all the things which contribute to environmental deterioration, for instance high levels of carbon dioxide, too little water and too many cars, factories and pesticides, can be traced back to the size of the human population being too large (ibid., pp. 66-67).

Ehrlich argued that overpopulation is in our genes as humans inherently strive after evolutionary success (ibid., p. 28). Intervention in this process is contradictory to our evolutionary progress (ibid., p. 34). Initially, it is not problematic to abstain from interfering in this process, Ehrlich believed; but as soon as advances in medicine resulted in a decrease in death rates, birth rates became too high, in a relative sense – there were too many people being born, compared to the number of people dying (ibid., pp. 32-33). We should, Ehrlich asserted, control the world population and decrease birth rates. As human population growth is similar to a cancer, Ehrlich thought, it makes no sense to treat the symptoms (too much carbon dioxide, too little water etc.) if we can cut out the cancer itself (i.e. reduce the population size) (ibid., pp. 166-167).

A radical position such as Ehrlich's did not go uncriticised. One of his most prominent critics was Barry Commoner, author of *The Closing Circle* (1971). Whereas Ehrlich argued that the cause of population issues was biological, Commoner believed population problems stem from the global socio-economic system, devised to "conquer" nature (Commoner, 1971, pp. 299-300). The means with which humans gain wealth are "governed by requirements conflicting with those which govern nature." (ibid.) Conversely, the population problem is not irresolvable because it is part of human nature; rather, it can be overcome by restructuring or

replacing the production systems and institutions which have caused the population crisis (ibid., p. 285). Commoner saw population growth as being *caused* by poverty in many countries, which was in turn caused by colonialism. But even though Ehrlich's account has received much criticism, it was one of the first and most radical views on population issues when these issues became popular in society and academia. One could say that Ehrlich (and Commoner) set the stage for the discussion of population issues for subsequent decades.

Population reduction has remained a much-discussed issue, especially in the light of current talks about sustainability and sustainable development. No scholar argues that the Earth can sustain an infinite number of humans; because of this, many think, population growth must be decreased, or the total population of humans must even be stabilized. Here a decrease in population growth is a slower growth of the global human population size; a stabilization of the human population amounts to keeping the number of humans on Earth fixed at a certain level, for instance nine billion. One example of the latter is advocated by Attfield (2014, pp. 149-151), who argues that we should try to stabilize the human population at eight billion, or maybe lower if possible. In the context of migration, Miller (2005) makes a similar point about the need for population control and its implications for migration.

In opposition to the ideas mentioned above, I think there is a case for *decreasing* the human population on Earth, i.e. making the number of humans living on the planet smaller. I call this population reduction. Whereas a *stabilization* of the global human population size is advocated by many authors, population *reduction* is seldom argued for – although I believe it should be, as there are compelling arguments in support of it. This is why I try to develop arguments for population reduction here, using existing theories in environmental ethics as well as my own arguments. The question central to this thesis is: *how can human population reduction be justified on the basis of environmental considerations?*

First, I discuss how human population reduction can be defined (section II). Next, I look at two biocentric (Attfield's and Taylor's) and two ecocentric (Næss's and Callicott's) theories to see if population reduction can be justified (section III). Of these four, only Næss's justifies population reduction. I then present another argument in favour of population reduction (section IV). My main point is that humans unjustly harm(ed) other living beings and ecological wholes, and that humans should rectify for the harm done (as well as prevent future harm). Furthermore, I argue population reduction is a good way to rectify for the harm. Subsequently, I discuss some practical methods of population reduction and some of the problems they can give rise to (section V). I close with some reflections on my work as well as some suggestions for future research (section VI).

## II Forms of human population reduction

I define human population reduction<sup>1</sup> as the practice<sup>2</sup> of artificially decreasing the number of human beings on the Earth. Note that reducing fertility rates falls under this definition, as this causes (though somewhat indirectly) a decrease in the population by letting fewer children being born. Human population reduction can be done in an active or a passive way. *Active* population reduction amounts to decreasing the number of humans by means of devising and implementing policies and performing actions the goal of which is to reduce, directly or indirectly, the size of the human population. *Passive* reduction constitutes the refrainment from performing actions or making policy which aim(s) to, directly or indirectly, increase the human population size or stabilize fertility rates<sup>3</sup>.

Population reduction can take many forms. Some forms of active population reduction are abortion, contraception, sexual abstinence, voluntary or compulsory sterilization, policies which restrict the number of children people are allowed to have, allowing/extending possibilities for euthanasia and/or assisted suicide, (large-scale) homicide, sex education, the use of small families as societal role models and measures leading to a decrease in poverty, which in turn leads people to have fewer children. Passive population reduction could, for instance, amount to refusing to perform life-supporting treatment on (terminally ill) patients, refraining from performing IVF and other ways in which humans can artificially<sup>4</sup> create children, refraining from taking precautionary measures for natural disasters, refusing to hire new personnel in branches like the police force (which probably positively affects crime rates and crime-related deaths) and closing national borders in order to prevent foreigners from entering a country<sup>5</sup>. I am aware that some of these forms of population reduction are seen as controversial or morally impermissible, but it is not my goal to only mention forms of population reduction which are acceptable in present-day societies. My goal here is to simply give some examples of how a reduction of the number of humans on Earth might be realized.

Passive reduction can take many forms and it is hard to pinpoint precisely when a certain policy or action is a form of passive reduction or not. When does a refrainment from

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<sup>1</sup> I use “human population reduction”, “population reduction” and similar terms interchangeably.

<sup>2</sup> The way I define population reduction here does *not* presuppose that population reduction actually results in a reduction in practice. What is important is the *aim* to decrease the population size, as reduction policies/actions might fail, even though they are forms of population reduction. Moreover, as I will point out later, the *justification* of reduction policy/actions is more important than its/their practical application.

<sup>3</sup> Note that this concerns a stabilization of *current* fertility rates. Also note that actions/policy which aim(s) to increase fertility rates are included when I speak of an increase of the human population size.

<sup>4</sup> Here this includes all ways in which humans can only procreate with the help of (health-care) professionals.

<sup>5</sup> Immigration stops mainly contribute to population reduction *in a certain country* and not to global reduction.

actions lead to population reduction? It is very difficult to trace back all effects, variables and probabilities connected to this; this is why I will not consider passive population reduction further here. Thus, I focus on *active* population reduction. I will use some of the examples of active reduction mentioned above when investigating the practical application of population reduction and concurrent problems in section V. It is important to consider that the *reason* for the controversy around some of these policies and actions partially makes them controversial or not. For instance, contraception is an accepted (and sometimes even stimulated) practice in many countries, but commonly not *because* it is probable to lead to human population reduction; by contrast, it is often defended with arguments about individual autonomy or integrity, human flourishing or happiness. In fact, I believe almost any measure or action aimed at artificially decreasing the number of humans on Earth will be met with considerable controversy and protest, because people tend not only to criticize the measures, but mainly the reasons for them. Therefore, I contend it is wise to look at the justification for population reduction *before* considering ways in which population reduction can be used in practice. This is why sections III and IV focus on the *justification* of population reduction in principle, without going into methods of population reduction. Section V focuses on the more practical side of population reduction, including methods of population reduction.

I am aware that the justification and methods of population reduction are connected: some methods of population reduction (e.g. infanticide or homicide) are commonly seen as wrong, and in these cases (i.e. when considering these methods) population reduction might be unjustified precisely because of the wrongness of the methods. Thus, if population reduction is justified, it might only be justified under certain conditions, i.e. only when using ethically acceptable methods. However, even if this is the case, it does not mean that population reduction cannot be justified in principle: population reduction might be justifiable when using other methods. This is why I do not start with the *methods*, but with the *justification* of population reduction in general. Thus, I focus on a theoretical (or principled) discussion of reduction first, after which I discuss some methods of reduction in practice as well as some problems with these. Correspondingly, I investigate whether there are good reasons for artificially decreasing the human population size in sections III and IV; in section V I look at some *ways in which* this decrease can be carried out and concurrent problems.

Some of the active reduction methods mentioned above are commonly perceived as increasing human misery. However, some are not often regarded as problematic (e.g. sex education or contraception). The way these methods are regarded is for a large part influenced by cultural norms and values, and these are different around the world. Contraception, for

example, can be seen as a part of the empowerment of women in deciding about their own bodies, whilst it is commonly regarded as wrong in Roman catholic countries and some African countries. I am aware of this diversity in cultural values pertaining to means of active population reduction, but I have no space to consider this important but complex issue here.

### **III Theories which might justify human population reduction**

To begin with, I do not focus on anthropocentric theories here. I am aware that some anthropocentric theories might support population reduction, just as some of them support a *stabilization* of the human population size or a decrease of population *growth* (cf. e.g. Passmore, 1974; Norton, 1986). Nevertheless, I focus on biocentric and ecocentric theories instead of anthropocentric ones, because the former theories are all more or less connected to one main reason for supporting population reduction, which is that species, non-human living beings and/or ecological wholes might not be sufficiently protected without population reduction. This relates to a conflict of interests between humans and other living individuals as well as between humans and natural wholes (e.g. ecosystems). These views can broadly be categorized by asking two questions: (1) who or what has moral standing? (2) How should the interests of entities with moral standing be prioritized when they conflict?

Within the spectrum of nature-centred accounts, there are two strands of answers to the first question, one focusing on *individuals* and the other one focusing on *collective entities*. Theories which focus on individuals can be called *biocentric* and theories that focus on collective entities can be called *ecocentric*. I discuss two biocentric and two ecocentric accounts which could support a reduction of the global human population in turn.

#### **III.I Biocentric accounts: Attfield and Taylor**

There are two main forms of biocentrism: consequentialist and deontological. A well-known author of the former kind is Robin Attfield, one of the latter is Paul Taylor<sup>6</sup>. Attfield's biocentric consequentialism starts with the statement that all living creatures on Earth are owed moral consideration (Attfield, 2014, p. 9). Thus, all living beings have moral standing. The reason is that all living creatures have a good of their own, and that these goods ought to

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<sup>6</sup> Note that I do not discuss Attfield's view at great length here, because, compared to the other authors discussed here, his view's potential to justify population reduction is established more easily. Also note that I discuss the authors' views on population reduction *in general* here; there might be specific cases in which they have different positions on the issue, but I restrict myself to population reduction as such.

be facilitated (ibid., p. 43). Many (if not all) living creatures have value not because they are important for the flourishing of humans, Attfield asserts, but because they have independent value, value of their own (ibid., pp. 41-42). The consequentialist element of his account states that what is right is “the difference agents can make to the balance of good over bad (foreseeable) states of the world” (ibid., p. 43).

Nevertheless, not all creatures have *equal* moral relevance for Attfield: the goods of animals with autonomy, self-consciousness and long-term plans for the future, for instance, are morally more important than animals which do not possess these capacities, Attfield holds. Unsurprisingly, Attfield believes humans possess these capacities to the greatest extent of all animals, which gives them the greatest moral significance of all living beings. The interests of all living creatures are considered, but not equally, because their interests have different moral values (ibid., 2014, p. 43). Conflicts between entities with moral standing are resolved by balancing the good and bad for all these entities with their particular moral values. Note that Attfield believes human interests do not trump non-human ones by default; the good and bad of all interests are balanced, humans’ interests having more moral value than, for instance, beetles’, and the most favourable balance is used.

Attfield argues for a stabilization of the human population at about 7.5 billion, or, if this is not feasible, 8 billion (ibid., pp. 149-151). Although he does not explicitly advocate reduction of the human population in general, I think there are two broad scenarios in which Attfield might be in favour of it. The first is a situation in which it is in both humans’ and other animals’ interests, on the whole, to reduce the population – but as Attfield does not advocate this position at all, I do not think he actually finds this a plausible scenario. Therefore, I do not discuss it further here. The second scenario is a case in which population reduction goes against human interests but is preferable for many (or all) other living beings, and in which the latter’s interests outweigh the former’s. It is hard to decide whether this point has been reached; partly because Attfield does not provide clear criteria for establishing this, and partly because balancing all the interests of entities with moral standing would be extremely difficult, even if clear criteria were established. Precisely because of this difficulty, it is hard to say whether such a scenario is actually plausible or not. As Attfield is not very radical in his account and never advocates population reduction, I believe we can assume that, in practice, population reduction cannot be justified from Attfield’s perspective, because it is not in the interest of humans.

Paul Taylor, author of *Respect for Nature* (1986), is a deontological biocentrist, and there are important differences between his account and Attfield’s, the clearest being that

Taylor advocates an egalitarian form of biocentrism (in which all living creatures have moral value), whilst Attfield advocates hierarchical biocentrism (in which there are multiple “degrees” of importance for different species and animals, dependent upon capacities like autonomy)<sup>7</sup>. Taylor’s starting point is that, fundamentally, every change in natural ecosystems is strongly dependent upon the “fitness” of the individuals in that ecosystem (Taylor, 1986, pp. 6-8). This strong dependence is due to the importance of natural selection and adaptation which individuals have to undergo in order to sustain the existence of the ecosystem. All forms of both discord and stability in an ecosystem, all modes of living in it are formed by natural selection, as individual creatures compete with each other in order to survive and reproduce (ibid., p. 8). Here Taylor’s strong focus on individuals becomes apparent.

Taylor’s main argument is that humans are sometimes morally required to perform or abstain from certain actions to the extent to which this causes benefit or harm to “wild living things in the natural world.” (ibid., p. 10) This requirement is often independent of duties towards other humans, Taylor asserts. The moral duties we have vis-à-vis non-human living beings should “be weighed against certain things valued by humans.” (ibid., p. 10) This implies, similar to Attfield’s theory, that human interests do not always trump non-human ones, and signifies the biocentric element of Taylor’s theory. Non-human beings are not just resources for humans, and the natural world is not there to be exploited by humans, because all beings have inherent value as “members of the Earth’s Community of Life.” (ibid., p. 13)

This does not mean that non-human creatures have moral rights. Only humans have these, but this would not lead to exploitation, Taylor believes, if we also change our view on nature and our role in it. Taylor argues that if we adopt an outlook which does not take human beings as being superior to other forms of life, non-humans do not need moral rights in order to be considered well enough (ibid., pp. 219-226, 260-262). Moreover, it is important that all living creatures are moral *subjects*, but only humans are moral *agents*<sup>8</sup>: All living beings are considered in making moral decisions, but only humans can make these decisions.

Taylor believes the inherent worth wild living beings have generates a moral duty for humans to preserve and/or promote the goods of these beings as ends in themselves (ibid., pp. 12-14). Taylor devises four general principles which ought to guide our behaviour towards non-humans in a general sense: (1) *non-maleficence* (the duty not to harm natural entities with

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<sup>7</sup> Some say this is not the main difference between consequential and deontological biocentrism, as the point seems to be that consequentialism emphasizes the intrinsic value of things or states to be promoted, whilst deontology emphasizes respect for individual entities’ intrinsic value. See Bradley, 2006 and McShane, 2014.

<sup>8</sup> Taylor does not rule out that non-humans might have the capacity to be/become moral agents, but he does believe that, at least now, “animals and plants cannot take the role of moral agents” (Taylor, 1986, p. 267).

a good of their own); (2) *non-interference* (the duty not to restrict living beings' freedom + the duty to restrict our influence in ecosystems and biotic communities); (3) *fidelity* (the duty to be sincere, trustworthy, non-deceitful and non-manipulative towards animals which are capable of being deceived or betrayed); and (4) *restitutive justice* (the duty to compensate for moral wrongs of a moral agent [humans] towards a moral subject [animals]) (ibid., pp. 172-192). The principle of non-maleficence is most important and ultimately trumps all other principles; restitutive justice ultimately outweighs fidelity and fidelity ultimately outweighs non-interference, provided that certain conditions are met (ibid., pp. 193-198).

Now let me return to the main matter at hand, i.e. the justification of a reduction of the human population. It seems difficult to use Taylor's theory in order to justify human population reduction. First, as a deontologist, Taylor would assert that humans have a moral right to life (ibid., pp. 234-236, 265-266), which might be violated if the human population is reduced. This right to life consists of so-called subsistence and security rights, through which humans should have at least the minimum level of security (against assault, torture etc.) and means to live. More specifically, the right to subsistence is "the right to the physical necessities of biological survival" (ibid., p. 235), which include life as such, food, clothing, shelter and a minimum level of health care. The right to life, for Taylor, secures that persons possess everything they need for their personhood and that they not be constrained in making decisions that they, as "rational, enlightened and autonomous beings", should have absolute authority over (ibid., p. 234). The decision to procreate or not can be seen as such a decision, but Taylor is not clear about this. As the right to life may never be violated for Taylor, population reduction could be problematic because it might violate the right to life if this right includes the right to decide for oneself whether one procreates or not. Still, for this problem to arise, the right to procreate would have to be a part of the right to life Taylor advocates – and he is not clear about this. Moreover, the right to procreate is not violated if individuals voluntarily waive this right in order to contribute to population reduction.

Nevertheless, even if the decision to procreate is not covered by Taylor's right to life, population reduction cannot be justified with his account. Recall that one reason why population reduction could be justified is a conflict of interest between humans and other creatures. I believe Taylor has a clear opinion about the way in which these conflicts are to be resolved – namely commonly favouring human beings. Granted that Taylor has devised the four principles mentioned above and granted that he would have liked human to change the way in which they perceive nature towards a more respectful one, he also solves issues of priority-setting by favouring humans (cf. Taylor, 1986, pp. 263-279). I think this is clearest in

his discussion of the principle of self-defence. Taylor asserts that moral agents (i.e. humans) are allowed to defend themselves against harmful, dangerous creatures if there is no other way of avoiding the harm and if they cannot prevent the creatures from “doing serious damage to the environmental conditions that make it possible for moral agents [i.e. humans] to exist and function as moral agents.” (Taylor, 1986, p. 265) It is hard to say when these conditions are met, but as humans are the only moral agents, they can decide it for themselves. Taylor argues that if we do not defend ourselves in this situation, we would attribute more inherent value to non-humans than to humans, which would mean we sacrifice our existence to them (ibid., p. 268). This is unacceptable for Taylor, and therefore human life will be favoured over non-human life in cases of life and death. Taylor believes his account is not speciesist, mainly because it does not use the words “humans and non-humans” but rather “moral agents and moral subjects”; in the end, however, the words are interchangeable and human life is favoured more than non-human life. Thus, I think Taylor’s view cannot be used to justify population reduction on the grounds of inter-species conflicts of interest.

All living creatures have moral standing for both Attfield and Taylor, and the main difference between the authors’ accounts is the way conflicts of interest amongst them are resolved. Whereas Attfield argues for balancing human and non-human interests, each according to the moral consideration it should be given, Taylor contends humans are sometimes morally required to perform or abstain from certain actions to the extent to which these benefit or harm the interests of wild living beings. Despite their disagreements, what is clear from both authors’ approaches is that they emphasize that living creatures have a good, or intrinsic value, and that this good ought to be promoted. However, it might be hard, as some critics have pointed out (cf. Williams, 1992; O’Neill, 1993), to derive ethical duties and guidance from this observation. A second similarity is that both authors believe population reduction in general is not in the interest of humans.

### **III.II Næss’s Deep Ecology**

Ecocentrists criticize the focus on individuals biocentrists advocate. They argue that some non-individual entities in the natural world have value and deserve moral consideration. Here I discuss a view which has strong ecocentric elements: Arne Næss’s deep ecology.

In Næss’s view all living things have value by their own right and are, therefore, alike (Næss, 1973). Moreover, Næss argued we should not see individual creatures as “atoms”, separated from each other. All creatures are related to each other, and we should not regard humans as either separate from or superior to the natural world (ibid.). Because everything in

the natural world is connected, Næss argued, a creature's identity is determined through its relations to other things: all living creatures in the natural world are mutually interdependent.

These observations are quite similar to the ones made in the section on biocentrism above. However, Næss's view differs on some points. First, Næss argued, in a way similar to but graver than Taylor's view, that human beings ought to change the way in which they regard nature and their place in it (Næss, 1973; 1989, pp. 8-9, 27-29). Næss called this "Self-realization"<sup>9</sup>, which refers to the connection of individuals to principles of interdependence and inter-relatedness in the natural world. Striving after individual needs and desires without paying due attention to the inter-relatedness of nature and oneself eventually makes oneself isolated, egocentric and unhappy (Næss, 1989, p. 9). Moreover, as we simply cannot reach a state of full Self-realization, we should not see it as a goal which can be reached, but, rather, as something worth to strive after (ibid.). Despite criticism, Næss never provided a precise definition of Self-realization, but did not deem it necessary to do so either. He thought this abstract term could not instil inspiration or create more meaning for it. In his own words: "if you hear a phrase like 'all life is fundamentally one!' you must be open to *tasting* this, before asking immediately 'what does this mean?'" (Rothenberg, 1993, p. 151, original emphasis)

Næss did not believe human flourishing was more important than the flourishing of other life forms. In his words: "[n]o single species of living being has more of [the] right to live and unfold than any other species." (Næss, 1989, p. 166) What Næss exactly meant with a "right" is not clear, but, similar to the way he used "Self-realization", he did not believe it is necessary to have a precise definition of the term. Furthermore, Næss opined that humans are in many ways different from other animals, but he stressed that humans' special capacities should not be a ground for human domination over nature; rather, they should be used "for a universal care that other species can neither understand nor afford." (ibid., p. 171)

Næss explicitly advocated human population reduction. One of the eight points of his "Deep Ecology movement" platform is that "[t]he flourishing of human life and cultures is compatible with a substantial decrease of the human population. The flourishing of non-human life requires such a decrease." (ibid., p. 29) A decrease is needed since humans interfere too much for non-human life to flourish and since non-human flourishing is valuable in itself (ibid., pp. 29-31). Moreover, "[r]ichness and diversity of life forms [...] contribute to the flourishing of human and non-human life" and "[h]umans have no right to reduce this richness and diversity except to satisfy vital needs."<sup>10</sup> (ibid.)

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<sup>9</sup> The capital "s" in "Self-realization" refers to a higher state of being, i.e. being in connection with nature.

<sup>10</sup> As Næss realized himself, it is hard to determine what vital needs are exactly. Cf. e.g. Næss, 1989, p. 30.

If we consider Næss's argument that humans should be in more contact with nature, we could say that we do not need population reduction; rather, humans must change their views about nature and their lifestyles. His response to this objection is that such a change cannot take place in the short term, and that population reduction is an important way in which we can alleviate short-term problems (Glasser & Drengson, 2005, pp. 275-276). Still, humans should try to see and respect their interconnectedness with nature ("Self-realize").

So Næss argued that population reduction is not only necessary for non-human flourishing, but also for *human* flourishing. For Næss human flourishing comprises reaching (or striving after) the ultimate goals for humankind (ibid., pp. 276-277). Næss thought cultural plurality is one of the ultimate goals. Furthermore, he argued that a large population is not required for a culture to exist or be sustained; on the contrary, cultural plurality thrives on small populations (ibid., p. 277). Næss went on to argue that ultimate goals can always be reached in different ways. What derives from this is that striving after ultimate goals never *inevitably requires* the destruction of ecological systems and wholes (ibid., pp. 277-278). Moreover, realizing ultimate human goals would be easier with a global human population substantially smaller than the current one<sup>11</sup> (ibid., p. 278).

In sum, Næss advocated a reduction of the human population because it would increase both human and non-human flourishing. There are some objections which can be raised against his account. First, it has been argued that Næss's view is elitist because it expects things of humans which only socially and financially well-off people can actually do (Guha, 1989; Witoszek & Brennan, 1999, pp. 473-479). For instance, reducing the human population can be regarded as easier in rich countries, because people can still sustain their individual lives if they have fewer children, whilst this is often difficult in poor countries. Næss's attempt to push poor countries into a paradigm of reducing the population size and protecting and preserving the environment might therefore be seen as a form of cultural imperialism. Næss has always refuted these accusations of cultural imperialism (cf. Witoszek & Brennan, 1999, chs. 36, 37, 41). I believe this criticism is important to consider, but I do not think it can hold. For one, Næss argued that rich countries should *at the least* contribute as much to population reduction as poor countries (Glasser & Drengson, 2005, p. 279). This contribution can take many forms; reducing the population size of countries is only one of them. Another form of contribution by rich countries could be to offer money, resources and knowledge to poor countries to enable them to devise a policy for population reduction.

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<sup>11</sup> At the time Næss argued for this, the human population size was just over five billion; as the current size is about 1.5 times larger, Næss's argument would probably be even more forceful had he written now.

Another criticism is formulated by Attfield. He believes Næss's equal right to live for all living things is problematic because some forms of life are more valuable than others (Attfield, 2014, pp. 39-40). At the top of Attfield's hierarchy of creatures is the human being, and human interests are weightier than other creatures'. Attfield would argue that population reduction is not justifiable as it violates the interests of the most valuable creature. However, Næss implicitly responded to this objection by arguing that population reduction is not only in the interest of non-human creatures, but also in humans'. The issue between them seems to be a matter of differing definitions of "flourishment", because both make their different arguments for the sake of flourishing. I will not go into definition questions here.

### **III.III Callicott's ecocentric holism**

Although Næss's account is situated in the ecocentric area of the spectrum of environmental ethics, Næss ultimately agrees with Taylor and Attfield that individual living creatures are morally important. Also on the ecocentric side of the spectrum, there is J. Baird Callicott's account. Callicott's view is a form of holism, which does not focus on individual beings, but on ecological wholes. A political variant of holism is communitarianism, which prioritizes the good of communities over the good of individuals (cf. Sandel, 1981; Walzer, 1983; Kymlicka, 2002, ch. 6). Callicott's view is influenced by Aldo Leopold and builds upon Leopold's famous land-ethical statement "[a] thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise." (Leopold, 1949, p. 262) I look at Callicott's view here since it is worthwhile to investigate if a more modern ecocentrist than Næss would come to similar thoughts about population reduction. Moreover, Callicott has a different starting point than Næss.

In his earlier works Callicott (1980) took Leopold's statement as the most important deontological principle, which places intrinsic value in the global biotic community and only instrumental value in individual life forms living in this community. This implies that individual creatures in the community should be sacrificed when this is necessary for the promotion or protection of the good of this community. Thus, moral standing is given to the biotic community as a whole; individuals also have moral standing, but only relative to their contribution to the holistic good of the community (cf. Lo, 2001, pp. 333-334). Moreover, conflicts between individual goods are resolved by looking at what is good for the biotic community. This also holds for humans: whenever the sacrifice of a human's life for the sake of the community is necessary for the latter's preservation/flourishment, it is morally required to make this sacrifice. This implication in particular has received much criticism (cf. e.g.

Aiken, 1984; Kheel, 1985; Ferré 1996); some even call this position “eco-fascist” (cf. Regan, 1983, p. 362). The main reason is that Callicott’s initial view seems to be misanthropic and seems to give no room to individual interests or goods.

Because of these points of critique, Callicott revised his view later (cf. Callicott, 1999; 2013). One change is that he introduced a stronger version of moral worth for individuals (Callicott, 1987, pp. 93-94). In Lo’s (2001, pp. 338-339) interpretation of Callicott’s revised view, individuals have moral value, but their exact moral worth depends upon whether we are concerned with environmental concerns or not. If we are, the good of the biotic community is more important than individual goods; if we are not, individual goods have more worth than the biotic community. This means that Callicott’s emphasis on the holistic good of the biotic community does not override individual goods whenever non-environmental issues are at stake. It also implies that there is “*a fortiori* no absolute moral duty to protect the good of the biotic community”, in contrast to Callicott’s earlier view (Lo, 2001, p. 339, original emphasis). This way, Callicott resolved the accusations of being misanthropic and eco-fascist.

Callicott also devised rules for the prioritization of moral duties: the “general rule [is that] the duties correlative to the inner social circles to which we belong eclipse those correlative to the rings further from the heartwood when conflicts arise.” (Callicott, 1987, pp. 93-94) A specification of this rule is that “[f]amily obligations in general come before nationalistic duties and humanitarian obligations in general come before environmental duties.” (Callicott, 1987, pp. 93-94). Callicott later developed principles which tell us what to do more precisely when duties towards fellow humans conflict with duties towards the holistic environment. These are (1) “obligations generated by membership in more venerable<sup>12</sup> and intimate communities take precedence over those generated in more recently emerged and impersonal communities” and (2) “stronger interests (for lack of a better word) generate duties that take precedence over duties generated by weaker interests.” (Callicott, 1999, pp. 72-73) Moreover, individual human-centred duties take *a priori* priority over holistic environment-centred duties, unless the latter are “significantly stronger” than the former – in this case the latter take priority over the former (ibid., p. 76).

Now I turn to Callicott’s view on population reduction. As he has not written any texts explicitly about this issue, I interpret his broad view on environmental ethics specifically applied to population reduction. In my interpretation Callicott may have been open to population reduction in earlier work, but not anymore. I focus on his more recent work here.

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<sup>12</sup> Following Lo (2001, pp. 16-18), I believe the best interpretation of “venerable” is “older and more intimate”.

Accepting Callicott's present ethical position, humans are members of different communities (family, state etc.), and "more venerable and intimate" communities take precedence over "more recently emerged and impersonal" ones. This relational-ethical view implies that one ought to morally prefer care and consideration for our "kith and kin" to consideration for humans further away (Callicott, 2013, pp. 300-302). Moreover, it implies that, humans having been a community for some thousands of years, we owe – *a priori* – more moral consideration to fellow humans than to non-humans, because humans have shared civilizations for millennia and because non-human animals are generally no part of these civilizations. The "*a priori*" is important here, because, in reality, principle (2) *always* countermands principle (1) if they are in conflict, as Lo has shown (Lo, 2001, pp. 350-354). Thus, individual human-centred duties always take priority over holistic environment-centred duties *whenever these conflict*.

I think population reduction *solely* for the sake of the environment – i.e. *solely* based on holistic environment-centred duties – would generally conflict with our duties towards neighbours, fellow citizens, fellow humans etc. For instance, Callicott argues that one of the human-centred duties is to "Respect the Rights of All Human Beings" (Callicott, 1999, p. 72). The right to life is often seen as one of the most important human rights. Population reduction can violate this right in several ways; killing, infanticide and perhaps also euthanasia and assisted suicide, for example, involve somebody's deprivation of his/her life. Another generally accepted moral human rights is "the right to decide whether, with whom, when and how often to procreate" (Gheaus, 2012, p. 432), sometimes seen as a part of the right to life. Population reduction might also violate this right, if it forces some, many or all humans to have fewer children or no children at all without their consent. Thus, they may not have the full freedom to decide whether or how often they procreate. Although there may be other rights that are (sometimes) violated by population reduction, I think the two rights mentioned above provide the strongest support for saying that population reduction based solely on holistic environment-centred duties generally conflicts (or might conflict) with the duties humans have towards each other. And, as was mentioned, human-centred duties take priority over environment-centred ones whenever they conflict. In this case, environment-centred duties will be trumped by human-centred ones, and population reduction is not justified.

Consequently, the only way in which population reduction may be justified using Callicott's theory is when the reduction is at least in the interest of humans, and preferably also good for the environment. In the first case, human-centred duties trump environment-centred ones; in the second case, there is no conflict and both obligations can theoretically be

met. Population reduction could be in the interest of two broad groups of humans: currently living (generations of) humans and future (generations of) humans. As for future generations, Callicott (2013, pp. 301-302) maintains that there are no moral obligations towards humans not yet living, because we have no relational connection with them.

I believe Callicott would not think population reduction is in the interest of currently living (generations of) humans. The reason for this is his focus on human civilization. He argues there are two supra-individual entities which are threatened by global warming and other major environmental problems: the Earth as a whole and human *civilization* (Callicott, 2013, pp. 297-298). As for the Earth, he believes that it is “too big and [...] too long-lived for us humans to be able to adversely affect it.” (ibid, p. 301) Concerning humans, Callicott does not believe humans will go extinct due to environmental problems – at least not in the “near” future – but he does believe that human *civilization* will cease to exist as we know it. Thus, as a real communitarian, Callicott’s concern is not focused on individuals, but on civilization. Moreover, he believes that “global human civilization is the perfect candidate for the supra-individual anthropocentric object of concern for the Unknown Future.” (ibid., p. 299) So in issues of climate change, sustaining human civilization is the most important concern. There are two reasons why population reduction probably conflicts with this: (1) one can ask what kind of “civilization” we have if we sacrifice a part of the population for another part – Callicott seems sceptical (ibid., pp. 295-302); (2) human-centred duties still ultimately override other duties; and respect for human rights (e.g. the right to life) is part of these duties. Population reduction often violates these rights and is, thus, hard to justify, either by referring to Callicott’s view on civilization or with his principles.

I have discussed two biocentric and two ecocentric theories. After discussing Attfield’s biocentric consequentialism, I concluded we cannot use his view to justify human population reduction. As for Taylor’s deontological biocentrism, I have concluded his view ultimately favours humans over other forms of life, which amounts to a mild form of speciesism. Consequently, we cannot justify population reduction with his theory. Population reduction is justified in Næss’s view, but this justification depends on empirical claims (e.g. cultural imperialism) and definition questions (e.g. defining human flourishing). Surprisingly, Callicott’s ecocentrism does not justify population reduction. He has made his extreme standpoint milder to such an extent that it does not contain any elements with which population reduction can be justified. In spite of the diversity of the views I have discussed, I believe they neglect one other important argument which can be used to justify population reduction. This is the focus of the next section.

## IV Rectification as a ground for justifying population reduction

We have seen there are difficulties with justifying population reduction with some main theories in environmental ethics. In this section I suggest another justification of population reduction. My main point is that humans unjustly harm(ed) other living individuals as well as ecological wholes more than vice versa. Humans should rectify for past injustices towards individuals and ecological wholes and should try to prevent harm in the future. I start, though, with a general discussion of rectification. I choose to focus on rectification as backward-looking justice here since, at least to my knowledge, there are no justifications of population reduction based on rectification yet. I am aware that other (forward-looking) justifications are possible (as Næss does, for instance), but I focus on an argument based on rectification here.

### IV.I What is rectification?

Rectification can be traced back to Aristotle. He argued rectification is needed whenever unequal distribution leads to an unjust situation, and that rectification restores the equality that should have been initially accomplished (Aristotle, 1980, p. 115). Similarly, Robert Nozick uses rectification as a central concept in his entitlement theory when he argues that if property is unjustly acquired or transferred, the injustice must be rectified (Nozick, 1974, pp. 151-153). Both views share what Collste (2015, p. 117) calls “the simple idea that if A has harmed B, A has to somehow correct his or her act later [which is] the basic idea of rectificatory justice.”

I contend that, for there to be a case for rectification, four conditions must be met: (1) there is a duty to rectify unjust harm to individual living beings, groups of living beings and larger life-systems (e.g. ecosystems); (2) there was some kind of unjust harm done to at least some of these entities; (3) somebody can be appropriately held responsible for the harm done; (4) rectification can presently be given to someone or something in a meaningful sense. Conditions (1)-(3) relate to the *principled* side of rectification; condition (4) is more practical.

What forms of rectification are there? I wish to use De Greiff’s analysis of forms of rectification here<sup>13</sup>. These forms are *restitution* (re-establish the status quo before the harm), *compensation* (make up for harm in a quantified manner), *rehabilitation* (provide social, medical or psychological care) and *satisfaction/guarantees of non-recurrence* (which are “especially broad categories [like] the cessation of violations [...] establishing the dignity or reputation of the victim [and] sanctions for perpetrators” (De Greiff, 2006, p. 452).

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<sup>13</sup> De Greiff actually talks about “reparations”, but in this context his analysis is useful nonetheless.

## IV.II Harm

Condition (1) needs clarification. First, the word “duty” refers to a moral obligation. This means that, even though a certain act of rectification might not be legally required, it is required based on normative values which have at least some element of truth. Virtually all ethical theories aim, in many different ways, to achieve equality in the sense of treating each other as equals; this value is what connects all these theories, whatever their views on what equality amounts to in practice are (cf. Kymlicka, 2002, pp. 3-4). I contend that both distributive and rectificatory justice are concerns that follow from this central value, since they cover two essential questions which should be asked in order to achieve equality: “How do we achieve equality?” and “What should be done if equality is not (fully) achieved?” Therefore, I think it suffices to say that rectification for unjust harm is required, in some way, by virtually all ethical theories, and, thus, has at least some element of truth.

This brings me to another point: “unjust harm” should be understood as harm which undermines the general idea of equality as treating each other as equals. Harms may be acceptable or justified, for instance when they promote equality or when they are amoral. Some people (e.g. some utilitarians) would perhaps argue that all forms of harm are either moral or immoral, but I believe a lot of harms might be amoral<sup>14</sup> (think about the psychological harm members of a romantic relationship can have by breaking up with each other if none of both can be blamed for breaking up. Another example is being killed by lightning or, if no preventative measures were taken, by a tsunami; one experiences physical harm, but nobody can be blamed). It is hard to pinpoint exactly what harm is. I use J.S. Mill’s harm principle to determine this somewhat more precisely. Mill thought, first, that actions which only concern oneself and, thus, do not harm others are always allowed (Mill, 2011 [1859], pp. 17-18). Furthermore, harm must be some kind of observable damage against the interests of the harmed one; mere discomfort or offence is not enough to constitute harm (cf. Riley, 1998). Harm, in Mill’s understanding, is a significant form of injury or damage done to someone’s body, reputation, property or freedom of action (Oliveira, s.a., p. 13).

Who/what can be harmed? As I cannot go into a (very lengthy) discussion of harm here, I shall make some assumptions about the entities which can be harmed. First, I assume all sentient creatures can be harmed, as they have the ability to feel pain. Moreover, I assume that non-sentient living beings can be harmed, for their flourishing can be hindered or even made impossible by killing them, destroying the natural environments which they need to

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<sup>14</sup> Amoral here means outside of the moral realm, and therefore morally neutral.

thrive etc. I also assume that ecological wholes can be harmed. I understand this form of harm as a violation of ecosystemic integrity. Damage done to an ecosystem – through the disruption of natural life-cycles, deforestation, desertification etc. – harms the ecosystem. Finally, I assume *individual* inanimate things cannot be harmed, because they have no form of flourishing, no ability to feel pain and no form of integrity.

#### **IV.III The harm done**

Now that it is clear how condition (1) should be interpreted, I focus on actual harm done. I think that, in the context of environmental deterioration and global warming, it is clear that humans have harmed many entities which can be harmed mentioned above. The concentration of gases such as methane and carbon dioxide has increased, and is still increasing, which results in higher temperatures almost everywhere around the world (Houghton et al., 1996, pp. 1-7; Houghton, 2004). A result is that sea levels are rising, which is a major threat to humans and other beings. But these are not the only problems. I wish to quote Attfield (2014, p. 202) at length to illustrate many other problems:

Ice-caps and glaciers are beginning to melt. Coastal cities and settlements are at risk of inundation, and whole countries [...] could largely disappear. Tropical diseases are spreading, as their vectors travel to higher altitudes and latitudes. Freak weather events such as hurricanes, droughts, wildfires and famines are becoming more frequent and more intense. [Many] people [are becoming] environmental refugees. Many species are moving further away from the equator, or pole-wards, as their former habitats cease to support them, in some cases becoming stranded when potential habitats cease to be available. Even the system of ocean currents could well be at risk”

Thus, individual living beings (humans, animals etc.), groups of living beings (humanity, countries, species) and ecological wholes (ocean currents, forests, arctic areas) are harmed. There is a consensus about these harms being (at least largely) anthropogenic, i.e. caused by human activity (Houghton et al., 1996). This makes an *a priori* case of harm done by humans to other beings, ecosystems and humans themselves.

Additionally, human overpopulation is a source of harm to humans, non-humans and ecological wholes<sup>15</sup>. Increases in the human population size make it ever more difficult to

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<sup>15</sup> Note that I do not argue *all* forms of environmental harm are due to human overpopulation (although some forms of harm clearly are). My focus in this section is how the harm done should be rectified for, and I argue (in section IV.IV) that population reduction is a way in which this harm could be rectified. Furthermore, note that

provide enough resources necessary for humans to live (e.g. food), or live with dignity. Aside from resources which are largely beneficial to humans (oil, clean water, rubber etc.), there are resources which are beneficial and often necessary for both human and non-human life (mainly food, but also forests, trees and other forms of vegetation, for instance). An increase in the human population size means that more of these resources must be directed towards humans in order for them to survive, which creates an ethical dilemma: should we refrain from providing these resources to some humans in order to sustain non-human life, or should we provide these resources to humans and deprive non-humans from them? Either way, living beings are harmed. Further effects of overpopulation can be, for instance, water pollution, soil contamination, noise pollution and light pollution, which harm both human and non-human life and ecosystems (cf. e.g. Pimm et al., 1995; Wilson, 2003).

Was this harm acceptable or amoral? If so, there is no moral problem with the environmental effects stated above. I argue that the harm was (and still is) unacceptable and not amoral. To start with, humans have harmed themselves to the point that environmental change results in (regional) famine, poverty, environmental migration and so forth. When humans' very subsistence is threatened, and thence their lives, property and freedom of action, I think this is serious harm. This harm also applies to individual non-human beings and species, for anthropogenic environmental change threatens their subsistence and freedom of action (as was shown above). Ecosystemic integrity is also seriously affected, which amounts to serious harm to ecological wholes – and this harm is especially important for humans as the integrity of ecological wholes is a presupposition for their own subsistence. To put it bluntly, humans “defecate” where they eat, and also where others eat.

If my analysis above is correct, serious environmental harm has been done to individual beings, species and ecological wholes. This means condition (2) is met. However, the issue of responsibility (condition (3)) remains: who is responsible for this harm? As we have seen, there is a consensus about the cause of global warming and other environmental problems being largely anthropogenic. Furthermore, human beings are commonly seen as moral agents. Because they are moral agents, they have a moral responsibility towards fellow humans and, as biocentrists and ecocentrists argue, towards non-human individuals, species and ecological wholes. Moreover, humans are the beings fittest to take moral responsibility, since they are commonly regarded as having the highest level of conscience and moral ability of all beings. In sum, humans have largely caused global warming and other environmental

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the harm might be done partly by humanity in general and partly by individual humans or generations, but that I believe it is nevertheless the responsibility of all humans (i.e. humanity) to rectify for the harm.

problems; they are moral agents; and they are the ones who are fittest to deal with them. I believe this is enough reason to hold that humans must take responsibility for the harm done.

#### **IV.IV Rectification and population reduction**

I now connect my previous discussion about rectification to population reduction. Recall that one major reason for population reduction is the protection of non-human creatures, ecosystems and perhaps even humans themselves. When I looked at Attfield's, Taylor's and Callicott's theories before, the main conclusion was that population reduction is generally neither required nor justified for the protection of human and/or non-human entities. Contrary to this conclusion, I contend population reduction is justified, in another way than Næss has done with focusing on human and non-human flourishing. As I have argued, because humans have greatly harmed other living beings, species, ecosystems and themselves, and because humans can be held responsible for this.

Why do we not use population reduction as a form of rectification? What can we give to other creatures and ecosystems which *really* makes a difference, which *really* rectifies for harm done and prevents at least some harm? I believe an obvious option is *life*, for this is what they (and we, to a lesser extent) are losing and have lost. Why not "pay the debt" in the same currency? This would satisfy condition (4) for rectification (i.e. "rectification can presently be given to someone or something in a meaningful sense"). I believe that human population reduction is justified by referring to the need for rectification for the harm done by humans to non-human beings, species, ecological wholes and humans themselves.

Before explaining why population reduction is the right way to rectify, I need to discuss another point: rectification is not the only way humans can take responsibility for the harm done to themselves, non-humans and ecological wholes. For instance, one could argue that a forward-looking approach should be used. Humans could, for example, try to cut CO<sub>2</sub> emissions as much as possible, produce more environmentally sustainable cars, or protect forests by planting new trees or relocating existing ones. These approaches mainly focus on the *consequences* of the responsibility. This means that taking responsibility here amounts to achieving a desired change in humans and/or human behaviour. Why not choose these approaches instead of population reduction as a way to rectify for the harm done?

As was already mentioned, I focus on backward-looking arguments for population reduction here; therefore, my focus is not on forward-looking approaches to take responsibility. Nevertheless, I believe human population reduction would not only rectify for the harm done, but also probably prevent harm in the future – which makes population

reduction an option that could be argued for with forward-looking arguments as well. Let me explain. The harm mentioned above is mainly anthropogenic, as we have seen. Moreover, humans can be held responsible for the harm. *Ceteris paribus*, we can also say that every human being has a certain negative effect on the environment, due to the scarcity of resources for humans and non-humans alike, the greenhouse gas emissions they produce, the pollution they create etc. (often referred to as their “ecological footprint”). Thus, by decreasing the number of humans on the planet, the effect on the environment will be less negative (again *ceteris paribus*). This way, rectification (at least partially) results in some consequences which would be favoured in forward-looking views, like emission reduction or the protection of forests. Of course, reality is more complicated; if there are fewer humans, the humans who do live might, for instance, produce more emissions, use more resources per person etc., which would not really ameliorate the problem. Nevertheless, there is a possibility that this is not the case, and that human population reduction leads to less harm to the environment and humans themselves. This possibility is an important consideration for forward-looking arguments for population reduction. Therefore, although the *aim* of population reduction is not on consequences from a backward-looking view, the *result* of population reduction might be a good thing from a forward-looking point of view. Population reduction should therefore be considered as a way in which humans can take responsibility, in the form of rectification, for the harm they have caused.

How are humans to rectify for the harm? Recall De Greiff’s (2006, p. 452) forms of rectification: *restitution* (re-establish the status quo before the harm), *compensation* (make up for harm in a quantified manner), *rehabilitation* (provide social, medical or psychological care) and *satisfaction/guarantees of non-recurrence* (which are “especially broad categories [like] the cessation of violations [...] establishing the dignity or reputation of the victim [and] sanctions for perpetrators”). Also recall condition (4) for a case for rectification: “rectification can presently be given to someone or something in a meaningful sense”. What does this look like in practice, following De Greiff’s forms of rectification?

Humans cannot compensate animals, plants or ecosystems with money or commodities, because these are typically of no worth to the entities deserving rectification. One could think of promises or rules of good conduct between humans and other entities, and apologies for the harm done, but I am critical of this. I believe I do not have to argue why apologies or promises are meaningless to animals or other non-human entities; they do not understand them. Establishing the dignity or reputation of the victims might be a way to go, but it seems hard to do this; non-humans or ecosystems cannot speak for themselves in

matters of dignity, so humans are the only ones who can establish their dignity – and I assert humans are prone to misuse this power for their own interest. Care, especially medical care, might be a good way of making up for harm, but here I agree with Paul Ehrlich – though in a different context – that we should not treat the symptoms of the disease, but try to remove the disease itself (cf. Ehrlich, 1968, pp. 166-167). Even if humans gave extensive medical care to other entities or themselves, the harm would continue to exist and potentially be graver. Full restitution is impossible, but I think it is worthwhile to use restitution as an ideal we should strive after: try to return to a situation with the lowest possible level of harm to humans and especially other beings. There are also practical difficulties with the cessation of harm and sanctioning, but these have a similar “ideal” function worthwhile to strive after.

So how should humans rectify, acknowledging the difficulties just mentioned? My idea is to rectify with *human lives*. To begin with, life is meaningful for humans as well as other entities. Global warming and related environmental problems are largely anthropogenic. Moreover, there is a possibility that anthropogenic environmental harm decreases on the whole if fewer people live on the Earth. Correspondingly, the more humans pay the debt for historical and present environmental harm with human lives, the less environmental harm there might be, for both humans and non-human entities. Rectifying with human lives would also fulfil the more idealistic functions of aiming at partial restitution, the cessation of harm and sanctioning which De Greiff mentions: a reduction of the human population would, first, bring us closer to earlier states of being in the world, as there were fewer people who could environmentally harm themselves and others in the past. Moreover, there is a chance that environmental harm will decrease through population reduction. Finally, population reduction might even be used as a global sanctioning device; countries which contribute unevenly much to environmental harm could be expected to reduce their populations to a higher extent than countries which contribute relatively little to the harm. In sum, population reduction as a method of rectification would suit some of the functions of rectification De Greiff mentions, and would be meaningful to the entities which are harmed.

Nevertheless, one can ask whether population reduction would be a good way of rectifying for harm done if it is not so clear at all that reduction actually leads to less environmental harm (and not to fewer people doing more harm, for instance). I acknowledge that this is a serious problem, but I also believe this shows us why population reduction will never be enough. There are no clear-cut, singular solutions to such important and widespread problems like global warming and related problems. This is why, in addition to population reduction, we should try to change our view on nature and our role in nature; we should make

room in education and society for a less anthropocentric view on nature and our contact with animals etc. I do not have space to discuss these matters more elaborately here, but I am definitely aware of the fact that population reduction is not a “magic bullet”, a perfect solution by itself. It would be a good start, though, to try and start by rectifying for harm and preventing future harm, even if our awareness should be increased and our life-views should be altered.

## **V Problems with practical implementation**

In this section I discuss some problems with the practical implementation of the account of population reduction I developed above. I briefly discuss some of the examples of active population reduction mentioned in section II (sex education, one-child policies and sterilization) as well as their problems. Finally, I discuss what the goal of population reduction should be, i.e. when/where we ought to stop with population reduction.

### **V.I Some methods of population reduction and their problems**

Recall the examples of active population reduction in section II: abortion, contraception, sexual abstinence, voluntary/compulsory sterilization, policies restricting the number of children people are allowed to have, allowing/extending possibilities for euthanasia and/or assisted suicide, infanticide or (large-scale) homicide, sex education, the use of small families as societal role models and measures leading to a decrease in poverty, which in turn leads people to have fewer children. Also recall that I believe some of these would be seen as controversial, not because of what the practices imply as such, but *because* these steps are taken in the light of population reduction. As I only have space to discuss some examples, I focus on sex education, one-child policies and sterilization.

Before I discuss these examples, I must point out that I am aware it might be difficult to implement many of the methods I described above (e.g. sterilization and one-child policies) in a democratic framework. For instance, it would probably be difficult to gain democratic support for *compulsory* sterilization, because this form of sterilization leaves no opportunity for individuals to decide for themselves whether they want to be sterilized or not. Moreover, compulsory sterilization might violate individuals’ right to procreate, assuming there is such a right. One-child policies might be accepted in a democratic framework, but probably only if individuals have the possibility to choose whether they want to participate in the policy or not.

Therefore, mandatory one-child policies would probably be ethically unacceptable when assuming a democratic framework. I will not come back to these objections below. I realize that many of the methods of population reduction might be hard to justify through a democratic lens, and that my account of population reduction as a form of rectification might therefore be difficult to put into practice. Also note that I do not discuss below which measures *should* be used; I focus on some methods which *could* be used for population reduction and their problems.

As sex education, one-child policies and sterilization are all possible forms of population reduction – directly or indirectly – they could be used as a way to rectify for harms done. They rectify in the way that (1) they contribute to a decrease of the human population size to “pay the debt”; and (2) they prevent future harm by restricting the number of humans which can harm in the future. Sex education and one-child policies do not necessarily require a change in the human body, whereas sterilization does. Moreover, these forms of population reduction could be applied in combination with each other; they do not exclude each other.

Sex education can contribute to population reduction by teaching people what the effects of their sexual behaviour are, what harm they cause when they have a baby and what harm people have caused in the past. One way sex education could contribute to population reduction is to shift the default “atmosphere” of sex education towards a more negative one, with preventing pregnancy being presented as the best option, the best result. This would not prevent people from getting children, but it might nudge them towards more restriction (cf. Thaler & Sunstein, 2008). Moreover, sex education might be an appropriate forum to present the origins and meaning of a one-child policy. This way, pupils and students would learn what the one-child law expects of them, but also why this law was created in the first place. Sex education predominantly focuses on the *cessation of harm*.

It can be objected that this usage of sex education imprints people with a misanthropic conception of sexuality and sexual intercourse. However, people are always being imprinted with certain norms – through commercials, conversations with family and colleagues, state policies such as campaigns against sexual or household abuse etc. These manifestations of norms construct a certain image of how people ought to live. Thus, I do not believe imprinting people with norms is wrong – in fact, it is inevitable. The important concern here is about the norms with which people are imprinted. Just because most people have a positive view on human existence, this is not necessarily right. Moreover, I agree with Taylor that we should change our outlook on nature and other living beings to connect with nature more, be more harmonious with nature (cf. Taylor, 1986, pp. 219-226, 260-262). This seems right to me, as I

believe we ought to be humbler and more respectful to other life-forms. In my opinion, more respect for non-human life can only be achieved if humans abandon the idea that they are, by their nature, the most important form of life on Earth.

One-child policies are more drastic. They focus on the cessation of harm, but also have an element of *restitution*, because they prescribe a state of affairs in which fewer children are born and fewer people are living. One-child policies generally have more impact on countries with high birth rates than on countries with low birth rates. An objection to this use of one-child policies might be that, precisely because they have more impact on so-called developing countries than on developed ones, this is unjust. This might also diminish the possibilities for low-income countries to improve socially and economically. I can think of two responses to this problem. First, the harm that was (and is) done to non-human life can be seen as more important than this injustice between groups of humans; and therefore, the solution to the former harm is more important than the one to the latter form of harm. Humans' responsibility towards other living beings and ecological wholes is more fundamental than the one towards fellow humans, precisely because a) humans, as opposed to non-humans, are moral agents, and with this comes responsibility; and b) human existence is for a large part dependent upon the existence of other living beings and ecological wholes; although I can imagine – with counterfactual speculation – that non-human life can perfectly survive without humans – maybe even better. The second response is that one-child policies are not necessarily the only policies which can be used for population reduction; one-child policies can be combined with other methods of reduction. Whereas high-income countries might be benefited more by one-child policies than low-income countries, the high-income countries might be hit harder by other policies. Thus, one can still aim for an equal global contribution to population reduction.

Finally, sterilization can be seen as a combination of *restitution*, *cessation of harm* and *sanctioning*. Similar to one-child policies, sterilization results in fewer children being born, which can be connected to restitution and the cessation of harm. Moreover, sterilization can be used as a sanction if people do not comply with the one-child policy, for instance (although this would pose problems concerning the probable violation of individual autonomy, human rights etc.). Moreover, sterilization can be used as a procedure for everybody who has already conceived one child, as this would reinforce the prevention of harm and secure the practical feasibility of one-child policies more. Voluntary sterilization specifically could be designed as a procedure which is fully covered by the state, or even as one which people are paid for (in order to increase the incentive for undergoing the procedure).

One potential problem with sterilization is that it takes away the possibility for individuals to have children. This is, of course, the very function of sterilization, but it may be problematic when one includes temporal factors. For instance, what if individuals let themselves be sterilized, but regret their decision after a few years? Technological advances may improve the success rate of reversing sterilizations, but there is no guarantee that the sterilization will be reversed. One could argue that, for this reason, we should advise younger people to wait with taking their final decision about sterilization for a few years or by creating a mandatory “thinking period” of, for instance, six months.

Another problem with sterilization is that it is a relatively costly procedure. For example, an independent Dutch website for comparing health insurance options reports that the average costs for male sterilization in the Netherlands in 2015 were €450; the costs were around €1,500 for female sterilization (Independer, 2016). It can be argued that not everybody is able to pay such a price for sterilization. One solution I mentioned before is to either let the procedure be (partially or fully) covered by the state or to even pay individuals more than the costs for the procedure in order to stimulate sterilization procedures. One could object to this monetary solution on principled grounds, for instance by stating that it is ethically unacceptable to lure people into letting themselves be sterilized just for a certain amount of money because taking such an important individual decision should not depend on financial incentives. Nevertheless, many people have let themselves be sterilized because of financial reasons already, and might continue to do so (cf. e.g. Gold & Nestor, 1985; Kelly, 2009). Therefore, covering or paying for sterilization procedures might actually stimulate population reduction, because it incentivizes persons to undergo the procedure. One precondition for covering or paying for the procedures could be that individuals considering sterilization are sufficiently well-informed and mentally capable to make such a decision.

Let me discuss one general objection to the implementation of population reduction. It could be argued that population reduction would lead to negative birth rates, and that these would cause cities, provinces or nation-states to disappear or economically stagnate. The disappearance of these places could lead to a loss of human culture and would increase the power of more populous regions, as these would not disappear, or at least not as fast as thinly populated ones. Nevertheless, this can be regarded as an acceptable consequence. One could argue, for instance, that matters of life and death – our responsibility to rectify for harm to non-human life – are more important than the preservation of human culture. Moreover, intra-species justice for humans (e.g. power distributions) can be seen as less important than inter-species justice, as the latter harm concerns many living entities and ecological wholes,

whereas the former harm is only problematic for *humans*. Finally, Næss would argue that the costs caused by economic stagnation would probably be outweighed by the costs of raising and educating children, and that population reduction would therefore be less damaging to some countries' economies than no reduction at all (Glasser & Drengson, 2005, pp. 279-281).

I have discussed three methods of population reduction and some potential problems with these methods. As I argued above, I am aware that my account of population reduction might be difficult to put into practice when assuming a democratic setting. Especially if methods of population reduction have to be voluntary and respect individual autonomy and human rights, for instance, many people might choose not to contribute to the reduction of the human population. If many people take this decision, it can be very difficult to actually achieve a reduction of the population. Voluntariness and respect for autonomy and human rights might therefore make population reduction methods ineffective. The potential difficulty with implementing my account in a democratic setting might be problematic for some, but I still think it is important to not only focus on the *feasibility* of principles or theories, but to focus on the *desirability* of those principles and theories as well. This is why I believe my account of population reduction as a form of rectification is still valuable.

## **V.II Where and when ought we to stop?**

One matter I have not discussed yet is the end-point of population reduction; where and when should we stop with decreasing the size of the global human population? I briefly discuss this matter here. Let me start by saying that the answer to this question is partially dependent upon the political framework one assumes; arguably, population reduction would have to be quite limited in democratic countries because individuals' rights would have to be sufficiently protected, whilst reduction could be graver in non-democratic countries because individual rights or well-being might not be very important. This is why answering the above-mentioned question in a precise manner is hard; and I do not try to give a full-fledged answer here.

One of the most important facets of the end-point of reduction is that the result of the reduction process should be a proper form of rectification for the harm done. If reduction is undertaken for the sake of rectification, then its goal is to rectify for harm done. An obvious response is that it is difficult to determine when the harm is rectified for and when not. One could argue that population reduction is needed up to the point where moral subjects (animals, plants, ecological wholes) do not suffer from serious anthropogenic harm anymore, but this would focus on the *prevention* of harm. Although harm prevention can be seen as a form of

rectification (as De Greiff has shown), rectification commonly also entails a component of “making up for something bad”. So when will the “bad” be made up for?

Just like it is hard to determine the *precise* amount, level and intensity of harm humans have caused to themselves and other moral subjects, it is hard to say when this harm will be precisely rectified for. It is important to note, though, that whatever end-point for reduction we might select, we are far from it. Humans have harmed so many entities in the past few decades already – not even considering the past centuries – that it seems implausible to think that rectification might be achieved by reducing the population by, say, one billion persons. But suppose that, after difficult calculations and research, it is established that the harm done by humans to non-human moral subjects shall be rectified for with a reduction of (only!) two billion people. Even if this is the case, it will take some time to actually carry out these reduction measures – especially in democracies. Population reduction is costly, is a global (or at least national) enterprise and is an important part of political and economic decision-making. Thus, a reduction of two billion (or even two million) people cannot properly be done overnight. This can be connected to the discussion about determining the end-point of reduction: even if we do not know exactly when we should stop, we know that we will have to reduce a lot in order to reach the end-point. Therefore, at least now, we do not *need* an exact end-point yet, because we will have to reduce the population drastically anyhow, whatever end-point we take. Starting with reduction without determining an exact end-point is also a safeguard against inaction because of calculation processes, political decision-making etc.: it is important to *act now* and not lose ourselves in the precise formulation of the (very) long-term end-point of reduction. If the above is correct, reduction should start as soon as possible.

## VI Conclusion

The question formulated in section I was: *how can human population reduction be justified on the basis of environmental considerations?* I have tried to justify human population reduction with Robin Attfield’s, Paul Taylor’s, Arne Næss’s and J. Baird Callicott’s theories. I have concluded that only Næss’s account justifies population reduction, although this depends upon definitional and empirical claims. Next, I have argued that population reduction can be justified as a form of rectification for harm done by humans to other living beings, ecological wholes and humans themselves. In sum, I believe population reduction can be justified on the

basis of rectification considerations (my view) and because it promotes both human and non-human flourishing (Næss's view).

There are some (potential) problems with my account here. First, I have no space to fully discuss many important issues related to population reduction (e.g. cultural plurality and animals' potential capacity to be moral agents). Secondly, my discussion of rectification in practice has only focused on sex education, sterilization and one-child policies, although there are many more ways in which population reduction can be done. However, as I have argued, my main focus is on the justification of population reduction in principle, not on its practical implementation. Thirdly, some of the authors whose work I have used have not written about population reduction – Callicott being the best example of this. Thus, I have had to interpret their views on this particular issue as a function of their other works. I acknowledge that this added level of interpretation might differ from the views the authors really have on this issue.

Aside from objections I discussed earlier, I wish to address two potential points of critique which I have not touched upon yet. First, note that my point about the need for rectification depends on the fact that *harm* was done to non-humans and humans themselves. From a utilitarian standpoint, one might ask if it is not possible that humans have created more happiness (or pleasure) than harm. In this case, the harm done might be justified by the happiness which was generated. I disagree. The happiness humans *might* have created was predominantly for *humans* – to make up for the harm done to non-humans, humans should have generated happiness for *them*. Otherwise, the general idea of equality which most ethical theories strive after cannot be upheld. Utilitarians might only care about the happiness created and not about *whom* happiness is created for, but I believe humans, as the animals with the highest level of consciousness and fit moral agents, have a special responsibility towards other moral subjects – and this responsibility implies that humans should not only try to create happiness and prevent harm for themselves, but also for non-humans.

From an eco-feminist perspective, secondly, it could be argued that human population reduction is a consolidation of human dominion over nature, because humans conceive of themselves as independent and strong enough to decide what should be done with nature and the environment. This can be regarded as wrong because we are a part of nature and should not try to go against nature by reducing the global human population. Moreover, population reduction in the form advocated above causes fewer children to be born, which makes people less able (or unable) to satisfy the natural need for caring for somebody. In response to the latter part of the objection (about caring), I assert that human caring is important and valuable, but not as important as the basic well-being, integrity or mere subsistence of non-human

creatures and ecological wholes. Thus, the environmental harm done by humans is, for me, of a higher priority than an inability to care. As for the first part of the objection, I do believe that humans are part of nature – but also that we should alter the role we currently play in nature and the way in which we see nature. Population reduction as a form of rectification would not consolidate human dominion over nature, but actually try to rectify for the negative consequences of that dominion in the past.

It would be interesting to investigate the feasibility of (some of) the forms of population reduction mentioned above more in future research. This would tell us more clearly whether a view that might be justified is also applicable in practice. Furthermore, elaborate counter-factual reasoning might provide us with clearer information about the environmental harm humans (and possibly non-humans) have actually caused. In addition, other theories in environmental ethics could be applied to this case in order to see whether there are any arguments which could justify population reduction that were not discussed here. But maybe the best “research” we can do is, as Taylor and Næss would definitely argue for, to reflect on the way we see ourselves and other natural entities, to change our outlook towards them and to recognize the more marginal place we *ought* to have in the world.

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