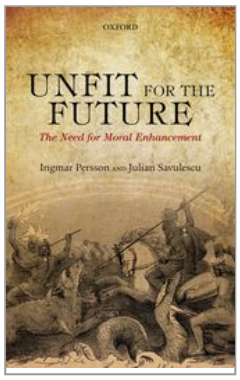

Unfit for the Future: The Need for Moral Enhancement
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The Tragedy of the Commons

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Abstract and Keywords

In the cooperation problem known as the tragedy of the commons almost all of the herdsmen will have to cut down on the grazing of their cattle of their commons in order to avoid over-grazing. However, if no one of the herdsmen knows what the others will do, it will be rational for him not to cut down, since it is unlikely that this will be necessary to avoid over-grazing. So, there is a risk that there will be over-grazing because a sufficient number of them will not cut down. This risk is even greater if the number of herdsmen is so large that the impact of the grazing of a single herdman's cattle becomes imperceptible. In this chapter it is argued that even when one's causal contribution to an outcome is imperceptible, or non-existent, one can be morally responsible for it; responsibility is not based on causation.

Keywords: causation, commons, cooperation, moral responsibility, over-grazing

The fact that contemporary societies consist of millions of citizens makes it harder to solve the problem of cooperation known as *the tragedy of the commons* (see Hardin, 1968). This problem is similar to the prisoners' dilemma considered in Chapter 2, but it gets its name from another kind of example which is akin to the ones we shall henceforth concentrate upon, namely anthropogenic climatic and environmental changes, primarily caused by the overconsumption of resources and wasteful lifestyle of modern affluent societies.

These climatic and environmental problems include a global warming which, according to most experts, is to a considerable extent a result of the human emission of greenhouse gases like carbon dioxide, methane, and nitrous oxide. Carbon dioxide is released by the burning of fossil fuels, that is, oil, coal, and natural gas. The burning of tropical forests also releases carbon dioxide. As forests absorb more carbon dioxide than they emit, deforestation reduces this absorption, which further exacerbates the greenhouse effect. Since greenhouse gases do not block sunlight, but do reflect heat that is radiated skywards from the Earth's surface, an increase of these gases in the atmosphere will cause a rise of global temperature. In turn, this will lead to a progressive melting of the huge ice sheets on Greenland and Antarctica that will make the sea level rise, so that coastal lowland, some of which is densely populated, e.g. Bangladesh and the Netherlands, threatens to be inundated. The melting of these ice sheets will reduce the albedo effect, i.e. the reflection of sunlight from these areas, and this will stoke up the temperature boost. Another effect of the temperature boost is that methane could be released from permafrost regions and from ocean bottoms. This would further spur the greenhouse effect, since methane traps heat twenty times as effectively as carbon dioxide. Also, if the global temperature rises by 4°C, around 80 per cent of the trees in tropical forests will die and release carbon dioxide, which is likely to raise the temperature even further.

(p.67) The warmer the atmosphere, the greater its water-retention capacity and water vapour in the atmosphere adds to the greenhouse effect. Because there will be less precipitation, there will be more droughts and desertification in some places, e.g. in Africa and South-east Asia, rendering agriculture more difficult for people who are already poverty-stricken. It is true that a temperature rise is also likely to open new land for agriculture, for instance on Greenland, but having people migrate from Africa and Asia to Greenland would create enormous logistic and other problems. Tropical diseases like malaria will also spread and afflict more people. However, in some parts of the world there might also be a troublesome opposite effect on temperature. The melting of the ice cover of Greenland might dilute the salty water of the North Atlantic to the extent that the Gulf Stream will flow more directly north along the North American coast, with the result that it no longer heats the Scandinavian peninsula. The temperature in these areas could drop by 5°C or more, making agriculture more difficult.

It would be bad enough if significant increases in temperatures occurred gradually, but it cannot be excluded that there is a tipping point at which the temperature will jump abruptly. The global temperature has been known to increase by as much as 8°C in a decade; to put this in perspective, it should be mentioned that the temperature difference between the present time and the last ice age is at most 5°C (and it occurred slowly, over several thousand years). The causes behind climatic changes are not sufficiently well known to rule out

that such dramatic temperature jumps will occur again if greenhouse gases continue to be emitted at their current rate. Abrupt climate changes are worse than gradual ones, since there is less time to adjust agriculture to them.

Apart from its impact upon humankind, global warming will also have drastic effects upon the habitats of a lot of the flora and fauna of the world. This is especially true of the flora and fauna that are adapted to the cold climate close to the polar caps. Flora and fauna are also put under pressure by the loss of natural habitats, which is caused by a more direct human influence on them: more than half of the original boreal and tropical forests and wetlands of this planet has been lost to cities, roads, farmlands, golf courses, and so on. Thirty per cent of the coral reefs have been severely damaged by overfishing, higher temperatures, and pollution. In the wake of this destruction of habitats, there is an accelerated extinction of species of animals and plants. It is not possible to specify precisely the rate of this **(p.68)** drainage of biodiversity—even the number of species existing on Earth is a matter of controversy (as is indeed the concept of a biological species itself). But some reputable biologists, like E. O. Wilson (2002: 98–100), take the current extinction rate to be between 10,000 to 1,000 times as fast as the natural one, which would occur if there were no human interference. It is not known what effect this loss of biodiversity will have on human welfare, aside from the frustration of those who take an interest in this biodiversity for its own sake. But to people, like the present authors, who believe that all sentient organisms have moral status, the extinction of such organisms is in itself morally bad, apart from any consequences on humankind.

A further environmental problem to take into account is a threatening depletion of the non-renewable fossil fuels, in particular oil, a shortage of water, and the loss of farming soil by wind and water erosion. The latter might not seem that serious because only about one half of the Earth’s arable land is currently used for farming. But further exploitation of this land will increase the loss of biodiversity, and it will also be relatively energy-consuming, since much of this land is less suitable for agriculture and more distant from densely populated areas. So, this exploitation will aggravate the threat of depletion of oil reserves. It is debateable how problematic this is, since the size of the oil reserves of the Earth are unknown, but many experts believe that oil production will peak in the imminent future, while consumption is likely to continue to increase steeply at least for a couple of decades.

All of these problems and others like them are ‘collateral damage’ of a technological advance, which has promoted a boost of the living standard and an explosion of the human population. In contrast to the problems considered in Chapter 4, they do not arise because of the malice or derangement of a smaller number of agents, but because of the selfish and short-sighted behaviour of masses of people. We shall be particularly concerned with these problems to the (considerable) extent that they are caused by the behaviour of the majority of

citizens of affluent liberal democracies (though in the future they might to a greater extent be caused by developing countries because of their population growth and economical growth).

The type of case from which the problem of the tragedy of the commons derives its name is an environmental problem on a smaller scale. Suppose that if the herdsmen of a village let their cattle continue to graze to the current extent the pastures that they share, there will be **(p.69)** overgrazing of them in the near future. As a consequence, the herdsmen will in the course of time be able to feed fewer cattle, and they and their families will eventually starve. Suppose further that if only a few herdsmen reduce the grazing of their cattle, and most of the other herdsmen do not do so, there will still be overgrazing, though it will occur somewhat later. Almost all of them will have to effect a reduction if overgrazing is to be avoided. Then it might not be rational for any individual herdsman to cut down on the grazing of his cattle. This will be rational only if he has good reason to believe that a sufficient number of the other herdsmen will do so as well, and especially if this number will not be sufficient without his own contribution. Thus, if trust in the willingness of fellow herdsmen to cooperate is faltering, there is a risk that each herdsman will let his cattle continue to graze as before, with the result that there is overgrazing and starvation for all in the future. There is a self-interested reason to reduce grazing only if this reduction is necessary to make up a number of reductions that is sufficient to prevent overgrazing. If there is doubt that there is a willingness to cooperate to this extent—or for that matter a belief that there is a willingness to cooperate beyond it—self-interest instead dictates defection from a cooperative endeavour.

Nonetheless, if the total number of the herdsmen is small enough, there could be a self-interested reason for each herdsman to opt for a reduction of the grazing of his cattle. If there is a chance that one herdsman's reduction is necessary for there to be a sum of reductions which is minimally sufficient to prevent overgrazing, there is an altruistic and utilitarian reason for him to cut down his grazing, since this will yield an outcome that is best for all. But as each herdsman is a member of the collective that is benefited, there is also something to be gained in terms of self-interest by cutting down.[1] Thus, as long as an individual herdsman's reduction makes a noticeable difference to the outcome, there may be a self-interested reason for him to make it because it is then possible that his reduction is necessary to produce, in conjunction with the other reductions in fact made, a set that is sufficient for the most beneficial outcome **(p.70)** for a collective which includes the herdsman himself. All the same, the self-interested reason not to reduce grazing is normally greater for each and every herdsman, since the probability that his reduction will tip the scales is likely to be slim.

However, as the number of agents involved in the tragedy of common grows, we eventually reach a stage at which the reduction of grazing of each agent to the total outcome becomes negligible or imperceptible. Then an individual agent will have no altruistic or utilitarian reason and, a fortiori, no self-interested reason to reduce his grazing. This is because there is now no *determinate* threshold of reductions which makes them sufficient to prevent overgrazing. Moreover, if the number of agents involved is large, it also becomes harder to establish the trust necessary for cooperation because the individual agents are unlikely to know each other. So, it is unlikely that they will have developed concern and liking for each other. Likewise, it will be harder for them to keep an eye on each other and check whether there is free-riding. For all these reasons, the problem of the tragedy of the commons will be even harder to solve when the number of agents is so great that the contribution of each makes no appreciable difference to the total outcome.

It seems that what could make the individual herdsmen cooperate in these circumstances is only *a feeling of justice and fairness*; that it would be unfair to those who cut down on their grazing to free-ride on their sacrifices. We found in Chapter 2 that there is a ground for thinking that human beings are equipped with such a feeling of justice. If one believes that a sufficient number of other parties might make sacrifices, it would be unfair to them to be a free-rider taking advantage of their sacrifices without making any sacrifice oneself. But this feeling will be weaker when many of the other parties are anonymous to the individual agent, and the agent is likely to have no concern for them.

Imagine that in these circumstances, a sufficient number of herdsmen fail to cut down on the grazing of their cattle, so that there is overgrazing. Is each of them then responsible for the bad outcome, though it would have been as bad had he acted differently, since the damage he has caused was negligible? Yes, but this is not because the behaviour of each is a part of the cause of the outcome, without being causally necessary for it (as is true whenever there is causal overdetermination). Rather, it is because it is not necessary for every member of a collective that causes an outcome to make *any* individual causal contribution to the outcome in order for the **(p.71)** member to be as morally responsible for the outcome as are those who do make a causal contribution.

To see that this is so, suppose there is a machine that will kill Vic if at least 51 out of a body of 100 voters vote in favour of execution. According to the procedure, all of the 100 voters must first give their votes. Then the machine starts counting them, and as soon as it has found 51 in favour of execution or release, it kills Vic or lets him go, in accordance with the vote of the majority. Now suppose that, say, 75 vote in favour of execution. This means that 24 votes in favour will not make *any* causal impact upon machine's killing; they are not even redundant parts of the cause of its killing. To ensure that this is the case, let us imagine that what votes the machine picks out is not determined by the

order in which the votes are cast because the machine mixes the votes in a random way before it starts counting them. Consequently, the pro-death voters cannot influence the probability of their vote being among the ones that make the machine kill by voting early or late.

In these circumstances, the pro-death voters whose votes remain uncounted are surely as morally responsible as are those whose votes activated the machine's killing. All of the 75 pro-death voters are equally responsible in virtue of having cast their vote in favour of execution (assuming that they cast their votes intentionally and not mistakenly). Morally speaking, it makes no difference whether or not their votes happened to be among the 51 that were counted and, so, caused the machine to the kill Vic.[2] Therefore, even if some of the pro-death voters had correctly anticipated that their votes would remain uncounted, they could still cast their votes in order to be responsible for the execution by expressing their solidarity with those voters whose votes caused the machine to kill. They would then be responsible for the execution, even though they causally contributed as little to it as did those who voted against execution, and who are therefore not responsible for this outcome.[3]

(p.72) Likewise, all of the defecting herdsmen are equally morally responsible for the resulting overgrazing even if there is not a minimally sufficient number of reductions requisite to prevent it. From a moral point of view, it does not matter whether or not their defection was necessary to tip the scales in favour of overgrazing. If an individual act of defection was not necessary to tip the scales, this may be either because each defection made only a negligible difference, or because it made a non-negligible difference, which was not decisive because there was a sufficient number of defections independently of it. If each herdsman's defection made a noticeable difference, each of them could reasonably have had the belief that their own defection would be decisive if they had believed that most of them would go for reduction to stop overgrazing. They would then have had an altruistic or utilitarian reason to go along with the policy of reducing the grazing of their cattle. To repeat, this would also have provided them with a self-interested reason to cut down, though they would presumably have had a stronger self-interested reason not to do so, since it is improbable that their individual reduction would be required to tip the scales.

However, when the impact of the behaviour of each individual is negligible, there could be no such altruistic or utilitarian reason. The only reason to opt for reduction would then be a sense of the unfairness of free-riding if one is under the impression that a sufficient number of other parties will decide to cooperate. Yet, as the ultimatum games briefly considered in Chapter 2 show, people are sometimes willing to sacrifice benefits for the sake of considerations of fairness; so, the herdsmen could choose cooperation on the basis of this consideration. But if the impact of each party is negligible, since the number of parties involved is big and, consequently, the reluctance to be unfair to other parties tends to be

weak because most of the parties will scarcely know each other, then the tragedy of the commons will be especially hard to void.

Notes:

([1]) In contrast, it is not true in the prisoners' dilemma that there is also a self-interested reason to do what is best for all participants. This is true only if the dilemma is repeated without a foreseeable end, since if one then defects, tit-for-tat should lead one to expect that other parties who have tried to cooperate will be likely to punish one by excluding one from future cooperative ventures. But obviously, this is a reason which could kick in only if one expects future opportunities of cooperation with the same parties.

([2]) To be sure, the uncounted votes in favour of execution were part of the cause of the machine's starting to count, but so were the votes against execution.

([3]) In contrast, Richard Tuck believes that even in cases in which more votes than are necessary are cast 'each vote carries the full causal responsibility for bringing about the result' (2008: 41). He argues, in opposition to counterfactual analyses of causation, that something could be (part of) a cause without being necessary for the effect. We are prepared to go along with this claim about causality—because we think it makes best sense of the phenomenon of overdetermination—but this does not imply that in the case at hand all of the pro-death voters are causally responsible for Vic's execution, since the 24 uncounted pro-death votes are not even redundant parts of the cause of the execution. Quite simply, they are not causally operative. Nevertheless, on our view all of the pro-death voters could be equally and fully morally responsible for the execution, since our view separates moral responsibility from causal responsibility and, thus, from causation, and holds that one could be fully morally responsible for something without being even a redundant part of the cause of it. It is rather the intentions and beliefs that one has, or could be expected to have, when one acts that decide one's moral responsibility, i.e. the degree to which one is morally blame- or praiseworthy.