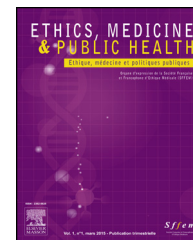




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## THOUGHTS

# The slippery slope, some remarks on the long and winding road to heaven or hell



*La pente glissante, quelques réflexions sur la route sinueuse entre paradis et enfer*

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**Summary** The slippery slope argument is often used in (bio)ethical debates. It is an intriguing argument: it confronts us with fears, gut feelings, and fundamental values; it invites us to think about the future, and it forces us not only to look at a technology or policy in isolation but at the whole picture. Rhetorically it is attractive with its often vivid images and sweeping statements, sometimes derived from fictional tales. The argument is based on two general assumptions: (1) the slope is slippery, if application of a policy or technology *X* to area *A* is permitted, it is not possible to stop, and (2) one will end up in final stage *D* which should not be allowed to happen. We do not discuss the argument in relation to a specific bioethical problem but use different examples, as we want to focus on some general issues that in our view deserve attention. We first distinguish three uses of the argument: the debate-stopper use, the disqualify-opponents use and the scenario-use, when the argument is used as an invitation to debate by using the end stage *D* as a possible scenario among other scenarios. We secondly discuss the following questions: can the slope be (made) more or less slippery? Is it possible to stop the sliding on the slope at one or more points? How robust is the evaluation of the final stage *D*? With regard to the description of initial situation *A* we point out that the choice of descriptions may not be ethically neutral and stress that it is important to consider the alternatives to allow *X* in *A*. With regard to the evaluation of end stage *D*, we argue, using the example of IVF, that after initial fear and awe people may change their minds on *D*. We state that critical examination of the

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evidence is necessary. This involves checking the tenability, the relevance and the completeness of the evidence brought forward in the slippery slope argument, both for the slipperiness of the slope as well as for the evaluation of the end stage. Claims have to be founded, albeit defenders of a slope sometimes seem to presume that this is not necessary, as it 'obvious' or 'self-evident'. We finally point out that there is also a 'road to paradise' or 'stairway to heaven' version of the slippery slope argument. This argument also needs scrutiny. We summarize our discussion in stating that the following questions should always be raised and answered when using or being confronted by a slippery slope argument: Is the argument used as an incentive to have a debate? What are the alternatives to allowing  $X$  in the current situation  $A$ , and do they not lead to a slippery slope? How strong is the moral evidence for the claim that the end stage of the slope morally wrong or bad? Is the slope really slippery or are there different measures, empirical or logical, to prevent the sliding down?

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## MOTS CLÉS

Bioéthique ;  
Futur ;  
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Technologie

**Résumé** L'argument de la pente glissante est souvent employé dans les débats de bioéthique. C'est un argument intrigant : il nous confronte aux peurs, réactions instinctives et valeurs fondamentales : il nous invite à réfléchir au futur et nous force à non seulement considérer la technologie et les politiques comme des variables isolées mais de les considérer en adoptant une vue d'ensemble. D'un point de vue rhétorique, cet argument est attrayant de par ses nombreuses images vivides et ses assertions générales basées sur des récits fictifs. L'argument est basé sur deux hypothèses générales : (1) la pente est glissante, si l'application d'une technologie ou d'une politique  $X$  à un domaine  $A$  est permise, et qu'il n'est pas possible de l'empêcher, et (2) une personne se trouvera au stade final  $D$  auquel il ne devrait pas être permis d'arriver. Nous n'abordons pas l'argument en lien avec un problème bioéthique spécifique, mais nous utilisons plutôt des exemples différents car nous désirons nous concentrer sur des problématiques générales qui, croyons-nous, méritent notre attention. Premièrement, nous distinguons les trois utilisations de cet argument : pour mettre fin à un débat, pour disqualifier les adversaires et pour créer un scénario lorsque l'argument est utilisé comme d'une invitation à débattre en utilisant le stade final  $D$  comme un scénario possible parmi d'autres scénarios. Deuxièmement, nous discutons des questions suivantes : la pente peut-elle être rendue plus ou moins glissante ? Est-il possible d'empêcher le glissement sur la pente à un ou plusieurs points ? À quel point l'évaluation du stade final  $D$  est-elle robuste ? Concernant la description de la situation initiale  $A$ , on note que le choix des descriptions n'est peut-être pas éthiquement neutre et nous insistons sur le fait qu'il est important de considérer des alternatives permettant  $X$  dans  $A$ . Concernant l'évaluation du stade  $D$ , nous avançons, en utilisant l'exemple de la FIV, qu'après leur peur et fascination initiale, les gens pourraient changer d'avis concernant  $D$ . Nous soutenons que l'étude critique de la preuve est nécessaire. Ceci nécessite l'observation de la défendabilité, de la pertinence et de l'intégralité de la preuve mise de l'avant dans l'argument de la pente glissante, tant pour l'aspect glissant de la pente ainsi que pour l'évaluation du stade final. Les arguments doivent être fondés, bien que les défenseurs de la pente semblent parfois présumer que ce n'est pas nécessaire puisqu'il est « évident » et qu'il va de soi. Enfin, nous soulignons le fait qu'il y ait également une version « route vers le paradis » ou « escalier vers les cieux » à l'argument de la pente glissante. Cet argument mérite également d'être examiné de près. Nous résumons notre discussion en précisant que les questions suivantes doivent toujours être soulevées et abordées en utilisant ou en étant confronté à l'argument de la pente glissante : L'argument est-il employé de façon à inciter un débat ? Quelles sont les alternatives permettant  $X$  dans la situation actuelle  $A$ , et ne mènent-elles pas à une pente glissante ? À quel point la preuve morale de l'argument voulant que le stade final de la pente soit moralement erroné ou mauvais est-elle convaincante ? La pente est-elle réellement glissante ou existe-t-il des mesures différentes, empiriques ou logiques, pouvant empêcher le glissement ?

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## The bitter end. Introduction

*Voi que entrate: lasciate ogni speranza, (Dante Alighieri)*

Recently a Government Committee advised the Dutch government to adopt a legal system in which it is possible for children to have four legal parents (and for parents to share legal parenthood with four) [1]. This led to newspaper headings such as: ‘polygamy soon the norm’, ‘the end of marriage/family as we know it’, ‘why stop at four and not twenty?’ It was argued that it is a very bad idea to adopt such a law.

The increase of children and adults diagnosed with Attention Deficit Disorder (ADD) and depression, as well as the widely-spread use of Ritalin and antidepressant drugs, has led to visions of societies inhabited by zombie-like persons drugged into a state of complacency without emotion or free will, pharmacologically lobotomised ‘individuals’ resembling the soma users in Orwell’s 1984. These are some examples of the slippery slope argument from different areas, an argument that has always been — and still is — quite popular in bioethical debates, particularly when new technologies are at stake. Think of permanently comatose people and human clones as organ banks, technologies from neurosciences and tinkering with the human mind, big brothers using big data not only for watching but interfering with the most intimate details of our lives, evil governments imposing lifestyles, and involuntary mental and moral enhancement. The examples are manifold.

The slippery slope argument is an intriguing argument: it confronts us with fears, gut feelings, and fundamental values; it invites us to think about the future, it confronts us with responsibility. It raises the issue what we can do to prevent something terrible from happening. The argument forces us not only to look at a technology or policy in isolation but at the whole picture. Rhetorically, it is attractive with its vivid images and sweeping statements, often derived from well-known fictional tales, which — as we will argue — is also a problem.

The slippery slope argument has been analyzed and described by several authors on whose shoulders we stand (among others [2–6]). We will not attempt to provide an overview of the whole battleground. We will not discuss the argument in relation to a specific problem such as euthanasia<sup>1</sup> [7,8] but focus on some general issues that in our view deserve more attention. both by those who want to bring the argument to the fore, and those who want to attack it. Our goal is to distinguish different uses of the argument and argue that some questions should always be raised and answered when confronted with the slippery slope argument in relation to a specific subject.

## The argument characterized

In general terms, the argument can be described as follows. You begin by applying X (a criterion, a technology, a method, a proposed policy) to a situation or problem A. This is morally

acceptable and or even praiseworthy. Then the application is extended in successive steps: X is first applied to a new area or problem B, then analogously to C, and finally to D, which is morally unacceptable. To prevent this, it is necessary to stop the application of X to or in A. As mentioned above, X can stand for scientific and non-scientific entities of several kinds, which may raise different challenges. Their consequences, in particular their safety, efficacy, and cost in the short and long term, are settled in different ways.

The slippery slope argument is based on two general assumptions:

- the slope is slippery, so that if the application of X to area A is permitted, it is not possible to stop, sooner or later you find yourself in the final stage D;
- this final stage D is wrong, terrible, or disastrous, in any way: morally unacceptable and should not be allowed to happen.

A distinction has been made between a *logical* version of the argument focussing on the logical force of the criterion, or method and an *empirical* version of the argument (among others [2–6]), which implies that despite any attempts to regulate or restrict, in the real world one will inevitably end up in the deplorable situation D as nothing can be done to prevent us from sliding down the slope.

This raises at least the following three questions:

- (a) Can the slope be (made) more or less slippery?
- (b) Is it possible to stop the sliding on the slope at one or more points?
- (c) How robust is the evaluation of the final stage D?

The distinction between (a) and (b) is easily overlooked. If the goal is to adjust or to reconsider our ideas on the end state — or to buy time to consider the evidence relevant to D — then slowing down might be useful. If, however, the end state should never be reached, which is usually the point of slippery slope arguments then completely stopping the sliding, rather than slowing down, is what is needed. We will discuss these questions in what follows. But first something about different uses of the slippery slope argument.

## Warning, scaring, disqualifying, inviting; different uses of the slippery slope argument

### Warning for potentially dangerous developments

The slippery slope argument is always about warning an audience for potentially dangerous developments of new social, biomedical or technological developments. Users of the argument all want to warn, (with exception of a use described in the final section 5 below).

The warning is, as stated above, achieved by calling attention to what the user considers to be likely or possible, and often inevitable, dangerous or morally offensive consequences of some new developments. The rhetorical force and the argumentative impact of the argument will obviously very much depend on the extent to which the user succeeds in persuading the audience to believe that the new

<sup>1</sup> There are many examples of such applications.

developments will indeed lead to the morally unacceptable consequences outlined.

Three uses of the argument will be described in this section, but no claim of completeness is made. Moreover, it needs to be underlined already at the outset that combined uses are common, and that many combinations are possible. In real life, there can be borderline cases, and one use may slide over into another. We will not go through all possible combinations, rather describe each main use separately and leave to the reader to figure out the combinations.

### The debate-stopper use: 'Don't even think about it'

The argument is frequently used in order to suggest that no further debate is necessary as only the sheer thought of D should be enough to stop developing whatever technology or policy is at stake.

Often well-known dystopic scenarios are used to sketch the end stage D. The advantage is that there is wide consensus that these well-known end stages indeed are, to put it mildly, unpleasant and to be avoided; e.g. dystopic novels depicting certain bad archetypes, narcissistic leaders stifling individual freedom, mad scientists who in the night while their unsuspecting wives are sleeping (such scientists are usually male) create monsters in their garage, or sketching terrible scenarios for countries that accept a certain policy, or for individuals who choose certain treatments, e.g. treatments aiming at eternal life and beauty, have always been widely read and are regularly used in ethical debates as well.<sup>2</sup> Such fictional stories sketch the end stage of a slippery slope. This end situation depicted is morally powerful as there probably is almost universal consensus that such situations indeed are very bad situations. Nobody in their right mind would want to end up there. Obviously, nobody wants to live in a society like the one described in *1984*. The end state is brought forward to scare people. It will scare them more if the end of the slope is a slope that the audience may be sensitive to because their society has actually lived through it (e.g. euthanasia is associated with the Nazi-regime in Germany). The argument may thrive on collective shame, guilt or fear. So, in short, the idea is to shortcut the debate on whether X should be allowed in A in order to not end up in that terrible situation.

Those who use the argument in the debate-stopper way might themselves be convinced that there really is no need for the debate or deny that they want to stop the debate.

### Disqualifying opponents

Sometimes the argument is used to ridicule and so disqualify those with different views by attempting to demonstrate that they are naïve, gullible, stupid, or very wrong (or probably all four). The suggestion is: how can you be so blind,

ignorant of the past, or ambitious. The opposite can also be brought forward: how can you be so conservative, such a moral dinosaur, or so frightened, that you don't see that allowing X in A is good and will not lead to a slippery slope.

Often the argument is quite convincing for those who already have a certain view on allowing X in A, and who don't (want to) accept that others have a different view. Opponents of a technology or policy will often find a willing audience among those who agree with them, and already agreed with them all along. This uniting of kindred spirits is very nice indeed for those concerned, but will not convince those who do *not* agree that they are heading down the slope, as for them it is not a slope.

### Invitation to debate: what if...

A very different use of the slippery slope argument is to use it as an invitation to debate. The end stage D is then presented as a possible scenario among other scenarios. In order to get a clear view on what should be done different scenarios are sketched and the advantages and disadvantages of each are discussed to throw light on the moral issue at stake. This can include an analysis of the worst, the best and some in-between scenarios.

In this case scenarios, including the terrible D, are used as tools for debate. The user is not arguing that some state of affair is necessarily or inevitably going to happen. It is an analytical or heuristic tool to help people to look at different options; it is about imagining and mental gymnastics but not a prediction or forecast of the different competing scenarios. This use is not a slippery slope argument *stricto sensu*, as the focus is not on one scenario only. However, using familiar dystopic scenarios of course thrives on evoking the same associations of fear and disgust and the suggestion that D should be prevented. As already mentioned, several uses can be combined. Many users want to predict, warn and stimulate a debate at the same time, but their descriptions of the end state D can also function as a debate stopper.

### Three critical issues

Here we will comment on the initial state A, the alleged terribleness of the end state D, and the slipperiness of the slope.

#### The description of the initial state A

The reason we have distinguished between X, the proposed use of a technology, or policy and situation A in which X is to be used is that the same X (for instance, the same proposed euthanasia law) might work very differently in different situations, A1, A2 A3... e.g. in Sweden and the Netherlands due to differences between the health care systems of these countries (such as the existence of a system of family doctors).

Technology (etc.) A can be described in different ways, and the choice of descriptions may not be ethically neutral. By emphasizing or omitting certain aspects of the initial state, the rhetorical force of the argument can be increased or decreased.

<sup>2</sup> Think of classics such as *1984* and *Animal farm* by George Orwell, *Brave New World* by Aldous Huxley, Mary Shelley's *Frankenstein*, and more recent dystopic novels such as the *Circle* by Dave Eggers, *The Handmaid's tale* by Margaret Atwood, Michael Crichton's *Prey*. Movies such as *Gattaca*, *the Island* and *Coma* or the Danish television series *Real Humans*.



In the argument, X is proposed to be allowed or applied in a certain current situation A, which can be described in several ways. For example, suppose it is proposed to allow immigrants to enter into a country only if they meet certain criteria. The situation or problem in the country where this is proposed can be described in many ways: things need to be arranged for the immigrants that cost money, they may help to meet a need for more workers in the industry, the presence of different lifestyles and value hierarchies may increase the risk of cultural clashes, teachers need to be trained in order to educate children who cannot read or speak the language of the country they have arrived in. By selecting some of this information and omitting other information, the rhetorical force of the slippery slope argument for or against opening a country for more immigrants may be affected.

Another example might be whether expanded carrier screening should be allowed in a certain situation A. A person can have a genetic mutation without getting the disease associated with the mutation. But if he or she were to meet someone with the same mutation (also without getting the disease), there is music in the air, and they were to get a child, the child may get the disease. To avoid this, expanded screening could be used. One option might then be to change partner, in case the partner turns out to have the same mutation, another — if love persists and the desire to have a child together is irresistible — to take the risk of abortion or to raise a child with some serious inherited disease.

This situation may be described in different ways, including cost, effectiveness, false positives and negatives of the screening method, as well as the experiences of living with certain inherited diseases, cultural resistance to abortion and/or to changing partners because of the outcome of the screening. There may be considerable variations within and between countries in this respect. By focusing on certain aspects of the situation, and omitting others, the force of the slippery slope argument may be affected. Certain facts about A are then neglected or omitted in order to pave the way for criticism of a proposed new policy X.

## Consider the alternatives to A

It is obviously also important to consider the alternatives to allowing X in the initial situation A. What are the likely consequences of these alternatives; and in particular: do they also lead to slippery slopes, and what are their end states in that case? The relevant comparisons in this case include the consequences of allowing X in the initial situation A and its alternatives (e.g. not permitting X, instead allowing Y and Z), and what can be done to make their consequences morally acceptable.

In other words, it is essential for those who want to assess the argument critically always to consider the alternatives. For example: if permissive abortion laws, allowing abortion up to week 18 or 24 after fertilization, are criticized because they allegedly open up step by step for infanticide, we need to consider the consequences of the alternative not to allow abortion: illegal abortions, unwanted children, harm to women by surgical amateurs, etc.

The fact that different descriptions are possible holds for not only for the end stage D but also for the intermediary steps and for the measures available to make a slope less

slippery. Often those strongly opposing allowing X in A will not be open to these arguments. For them, there is one slope and one slope only, and allowing X in A is part of that slope.

Sometimes this leads to some mutual bidding: which has the scariest end: your slope or mine? The strategy then seems to be: meeting one slope with a counter slope and one ends up holding each other in a strangle hold of horror. "Extending the 14-day limit for embryo research will lead to the extended use of embryos and fetuses for research purposes only. All respect for human life will get lost." "Not extending the 14-day limit will stifle crucial research and rob innocent ill people of the benefits of the research results sacrificing innocent persons in order to protect embryos! All respect for human persons will get lost".

## The terribleness of the end state D or the times they are a-changing?

New discoveries and technologies often inspire both awe and fear. When confronted with a new technology many people have an instinctive feeling of repulsion, also called the yuk factor<sup>3</sup> [9–11] and express that by arguing that the technology/policy should not be developed, but banned immediately. This is also what happened to the State Committee on new parenthood. How to evaluate such fear at first sight? What is important is to state that most people deeply care about moral issues, it is not a simple matter of taste, it is about deeply held views and convictions. However, such views and convictions can not only be expressed, they need to be argued for and in the process of discussing and evaluating our initial feelings, one may change one's mind. To acknowledge that is relevant to the way in which one perceives the slippery slope argument.

An example: many probably remember when the front pages of newspapers announced the birth of Louise Brown, the first 'test-tube baby'. They were amazing accomplishments but gave also rise to a shock that evoked many slippery slope visions. New technologies are sometimes launched to the public without much warning or announcement, as was indeed the case of Louise Brown. If there is little psychological, social and moral preparation bringing forward the slippery slope perspective is often the first reaction after what is experienced as a shock, a defence mechanism to fend off the blow.

When Louise Brown was born, the predictions in the beginning were that this was the end of reproductive autonomy and of natural reproduction. The association with the Orwellian Bokanovsky's Process is easy to make. Later, however, 'test-tube babies' became generally accepted, and finally, the person who developed the method, Robert Edwards, was awarded a Nobel Prize. For many IVF, albeit not without ethical quandaries attached to it, now is an opportunity to help people with fertility problems and/or with serious genetic diseases to have healthy children.

<sup>3</sup> Much discussion on the yuk factor has been inspired by Francis Fukuyama, *Our Posthuman Future: consequences of the Biotechnology Revolution* (New York, 2002). The yuk factor has been evaluated differently. However, this is not an article about the yuk factor but about the use of gut feelings in the slippery slope argument. Julian Savulescu in *Philosophy Bites* also discusses this.

The story of IVF shows that opinions may change with regard to what is the deplorable situation D. Living together without the blessing of a church, having sexual relations without being married, reproductive choices by women (and their partners), interracial marriage, are all situations that caused great moral concern and were even strongly disapproved of – remember the views on homosexuality till the fifties of the past century. But they are not regarded as bad anymore. Quite the contrary: the convictions of the past are now considered to be very wrong. Moral views are not always set in stone.

## The advantage of hindsight

Of course, this requires the nice advantage of hindsight. And those who defend the slippery slope with regard to a present technology or policy will of course argue that what they fear or feel *now* will happen is indeed what is going to happen and they may be 'immune' to evidence on people changing their minds. But people do often change their moral views, and sometimes quite fundamentally so.

When moral views do change, we need to know what the changes consist in, what causes them and what the changes prove. Do the moral views change or does the view on the relation between a certain moral view and a particular technology or policy change? Is it the values themselves or the interpretation of values in different contexts that change? The values or the economic or technological possibilities, which make new choices possible?

A problem of course is that there are people who do not change their views and e.g. still hold that homosexuality or having sex without being married is morally wrong. Their views on the end state of the slippery slope will be different from those who do not share such views. For example, it is hardly likely that the Vatican will change its views on embryonic stem cell research, abortion, or, for that matter, women priests, in the near future.

Those who oppose a certain technology or policy will hold on to the awfulness of scenario D, whereas in the meantime many others, often gradually, change their views on D. The initial gut feeling of even disgust or horror should lead to public debates to analyze whether one can actually translate such intuitions into solid ethical arguments. This may also be a reason to see whether the slope can be made less slippery, in the sense that it is more of a slope than an abyss, as sliding down slowly may allow people to see the end stage D differently. Here the distinction between stopping and slowing down the sliding down the slope is important. If there is a need for translating gut reactions and ethical intuitions into relevant and tenable arguments, then the sliding should not be stopped but it may need to be slowed down.

## The slipperiness of the slope: straight from A to D?

Is the slope really slippery or are there different measures or counterarguments, empirical or logical, to prevent the sliding down? The slope itself should be critically examined, particularly the claim that, indeed, allowing X in A will lead to D. This is often not an easy task. Again, there may be a lot of speculation and scaremongering rather than solid evidence and convincing arguments. Sometimes data are

interpreted and framed in a way to fit the alleged slippery slope, or simply misrepresented.

The questions to be raised and answered are: how strong is the argument that allowing X in A will indeed in all likelihood lead to D? Can the slope be made less slippery? Claims have to be founded, albeit defenders of a slope sometimes seem to presume that this is not necessary, as it is 'obvious' or 'self-evident', which in their logic it may be, but that does not hold for others.

A well-established approach to critical examination of arguments used to support a thesis is to (1) check the *tenability*, that is, the reliability of evidence presented in the argument in question, (2) to check the *relevance* of the reliability of evidence presented in the argument, and finally (3) to check the *completeness*, that is, if some important aspects have been overlooked. The three critical questions are then:

How strong is the evidence? What do the arguments prove? Are any important arguments missing? Here are some comments to this way to examine arguments about the slipperiness of the slope.

## Tenability

Which versions and applications of the argument are tenable in the sense that they are supported by reliable and documented evidence?

The evidence can be of different kinds, inductive and deductive, and it can be weaker or stronger. Some health technology assessment agencies have developed methods to grade the strength of the evidence, such as the GRADE system, which can be helpful in certain contexts, especially medicine. In this system, randomized clinical trials are at the top, case reports at the bottom, and factors are described which will increase or decrease the strength of the evidence. But outside medicine, the starting point must be the existing methodological canons in the relevant disciplines. The methodologies of disciplines are improved over time; sometimes by being made more precise, sometimes by adding new instruments and methods to the scientific toolbox, sometimes by modifying, restricting or abandoning older methods. So, the picture is not always black and white. But there is no other way than to apply the methodological standards of the time to criticize those who tamper with evidence. In that way, it will be possible to distinguish between good research and research that is poor, sloppy or fraudulent. It is not the case that anything goes. Correct methods must be used, and they must be used correctly.

There are reasonably clear cases, and let us begin with them. When the slippery slope argument is applied to the debate on euthanasia, it is sometimes argued that allowing euthanasia will undermine the general trust between patients and doctors. How strong is the evidence for this claim? Is it just anecdotal evidence, or more than that? There seems to be no evidence in the research literature supporting this claim.<sup>4</sup>

If the results of surveys are used to support a claim, the usual questions discussed in standard text-

<sup>4</sup> Information from Michael Löwtrup who is writing a study examining the evidence for various claim pro and con euthanasia.

books on the methodology of the social sciences about the representativeness of the sample and the interpretation of the questions need to be addressed. Besides, the results must be interpreted in the light of research showing that people tend to act differently when they are facing an actual choice and when they are replying to questions about hypothetical choices.

## Relevance

In some situations, the decision about the relevance of an argument is simple and straightforward. For instance, claims about the relevance of criteria of death to organ donation in the case of dead donors are not too difficult to assess. If a person has to be dead in order to be an organ donor, drastic changes in the criteria used to establish death will have consequences for the possibility to use organs from dead persons for transplantation. Conversely, if it is argued that surrogate motherhood should be allowed, because it will help to stabilize the world economy, the relevance of this argument is easily seen to be weak. Surrogacy has little, if any, impact on the world economy.

But it should be acknowledged that whether an argument is relevant for or against a certain statement will sometimes depend on how this statement is interpreted. If the statement is vague and value-loaded, the gates are open for disagreement about both the strength and the relevance of the evidence advanced to support that statement.

The problem may be illustrated by considering the evidence to support the already mentioned claim that at present there are over-diagnostics of Attention Deficit Disorder (ADD), particularly in children. The evidence includes statistics about the increase of the number of diagnoses and the drugs used to treat people with ADD. But persons with this diagnosis were not diagnosed earlier, which may explain part of the increase. There is also a subjective component in the diagnostic work in that the diagnosis to a considerable extent is based on interpretation of what the patient, the parents, and others tell.

## Completeness

Are any important aspects or arguments missing? Completeness is not an end in itself. The important thing is not to miss arguments that would have an impact on how the statement or perspective is evaluated. But it does happen that an important argument for or against a controversial policy, statement or perspective has been more or less deliberately 'forgotten'.

For example, in debates on euthanasia, it is sometimes mentioned as an argument against the practice in the Be-Nelux countries that the number of cases where euthanasia has been granted has increased. The intention is then to demonstrate that these countries find themselves on a slippery slope. But sometimes the critics have neglected to relate this increase of number to the increase of requests, to the increase of the population, and/or to changes in the disease panorama.

Having said that we acknowledge that there are situations when there is genuine disagreement about the evidence: what counts as evidence, how strong it is, what it proves, and whether something is missing, especially in areas where concepts are contested and value-loaded.

## What can be done to make the slope less slippery?

If there is agreement that the end stage D is indeed bad then the question arises what can be done not to end up there. In view of the difficulties mentioned above, a minimum requirement is that the evidence is presented in an open and transparent way that allows critical discussion, that the relevance of the arguments is argued for as clearly as possible, and that the question of completeness is raised. If historical end stages are used in a debate, part of the argument has to consist in pointing out relevant differences to the present situation, either in terms of available knowledge or in terms of political stability.

With regard to the *logical* versions of the argument: we can point out that distinctions, definitions, and concepts underlying A are solid and 'waterproof.' E.g. The Dutch Governmental Committee on the Reassessment of Parenthood explicitly sets a limit of four parents [1]. There is a worldwide ban on cloning human embryos for reproductive purposes. Sheep, cats, and dogs are not humans. Logically, a clear line is drawn.

Clear distinctions, conditions, and limits counter the logical version of the argument. But as stated above, sometimes there is no agreement on the concepts, the criteria or the distinctions (often purposely) are general and allow for some interpretation in concrete situations. Concepts such as illness and disease, responsibility, maturity, unbearable suffering etc. need to be interpreted. It probably is an illusion to think that such notions can always be translated into 'black and white' distinctions. That would not do justice to the complexity of life and morality.

The *empirical* version of the argument thrives on the slope being slippery despite our clever distinctions and logical barriers, as real life will overtake our good intentions and solid distinctions and we will be swept off our feet by a tsunami and there is nothing we can do to prevent the sliding down. For instance, it may be argued that despite precise criteria, in real life in a country that has a euthanasia law people will be killed against their will by malevolent doctors probably in conjunction with equally malevolent family members.

Cosmetic surgery, developed to help the victims of the Crimean war, now is a huge industry to embellish people. A general moral erosion will occur. Ergo: the slope cannot be made less slippery.

## Powerless?

The question then is: are we indeed so powerless? The argument feeds on having to watch the world (or some part) go to pieces, while not being able to do anything about it. It aims at making people feel guilty and responsible ('If only you would have stopped the proposed X in situation A, or helped to stop X, then D would not have happened'). The argument may also aim at making us feel powerless: if we cannot stop allowing X in A, there will be no way to prevent D. Unless the argument is purposely structured to come up with good ideas to prevent D from happening (e.g. as in the scenario approach), the suggestion is that once the first step is taken we are condemned to paralyzing powerlessness.



How can this appeal to our powerlessness be countered? Of course, we have political principles and instruments, legal instruments, and there are mechanisms of social control and checks and balances. But that does not hold for all countries and all situations. If scientists in a country that does not accept international regulations would clone human embryos for reproductive purposes, there are no such checks and balances. The ‘splendid isolation’ in which scientists could work in the past, however, seems to have changed. When it comes to fundamental choices and values international cooperation and control is of the highest importance.

Professional organizations sometimes explicitly state their goals and conditions. The guidelines of the ISSCR, the International Society for Stem Cell research [12], or the ALLEA Code of Conduct for Research Integrity [13] are two successful examples. It will certainly help, if there is a consensus in the profession and the members see the advantages for them: if they think that it is better with self-imposed restrictions than laws imposed from the outside by politicians.

If psychiatrists in a totalitarian regime use state of the art technologies for compulsory treatment of political dissidents or to mentally paralyze opponents of the regime, cooperation between scientists and members of the profession in different parts of the world may be essential to change the situation. Historical examples of such cooperation exist. An important reason for the Hawaii declaration was the abuse of psychiatry in the Soviet Union.

To sum up this section so far: there are measures to apply to make the slope less slippery or to stop us from sliding down the slope. But they will not always convince all proponents of the slippery slope argument.

## The direction: hell, or heaven?

We want to point out that there is also a ‘road to paradise’ or ‘stairway to heaven’ version of the ‘slippery’ slope argument. Often those who defend or support a technology or policy will come up with heaven and paradise views: this will cure cancer, that will save the world from infectious diseases; there will be no more death, no more misery, no more poverty. With these pills, people will never suffer from depression or anxiety, they will be very happy.

Those who have qualms about the first step, allowing X in A, should ask themselves what they are going to be missing or what wonderful opportunities they will spoil for others. This is in many ways similar to the slippery slope argument but the slope goes in the opposite direction. The idea is simply: if you agree with this technology or policy, then the next steps that will follow will open up wonderful possibilities. So, if you don’t: you are to blame.

We want to emphasize that there quite often is less suspicion about such an optimistic and sunny argument thriving on hope and beautiful ideals than on the gloomy views. Of course, we all prefer a paradise situation to apocalyptic misery and therefore we may be inclined to be optimistic or hopeful. It is also often a clever rhetorical strategy to win people over and make them provide support. All that sunshine may cloud our critical capacities. There is a distinction between hype and providing well-founded hope.

The same questions and healthy distrust that hold for downward slippery slopes will have to be applied to the promises and visions brought forward to defend the ‘stairway to heaven’ version of the slippery slope argument.

Sometimes the stairway to heaven is brought forward to counter downward slippery slope arguments. Those who bring forward the stairway to heaven argument seem to be less susceptible to criticism although they may as well exaggerate and sometimes cannot substantiate their views with evidence.

The situation is, of course, even more complicated if one person’s view on heaven is another person’s image of hell.

We cannot go into the stairway to heaven argument extensively. But we want to point out that it is relevant in this context and that strong opposing scenarios will usually not facilitate a nuanced debate.

## The end is near: conclusion

We realize that the slippery slope argument has rhetorical advantages and can contribute to a debate, but it is necessary to be very careful and precise when using this argument. It should not be used to kill a debate by rhetorical apocalyptic sweeping statements. Arguments and evidence need to be brought forward.

The following questions should always be asked:

- *the use of the argument*. Is the argument used as an incentive to have a debate, and as a way to discuss different scenarios?
- *the point of departure*. What are the alternatives to allowing X in the current situation A, and do they not lead to a slippery slope? (There may be good reasons to criticize allowing X in A, but there may be equally good reasons to criticize alternative options as well);
- *the moral status of the end stage*. Is the end stage of the slope morally wrong or bad, is there agreement on this, and how strong is the moral evidence for this claim?
- *the slipperiness of the slope*. Is the slope really slippery or are there different measures, empirical or logical, to prevent the sliding down?

Whether the argument is convincing in the end is not decided by the sheer description of the end, but by the evidence and arguments that are provided to support the claim that allowing X in A (the contested method or policy in a particular area or situation) will lead to the end stage.

## Disclosure of interest

The authors declare that they have no competing interest.

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