

Opinion

Reproductive Timing and Climate Change

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Abstract: It has been argued that the most impactful choice an individual could make, with respect to mitigating greenhouse gas emissions, is to have fewer children. This paper brings up a related aspect of individuals' reproductive choices that has been neglected in the climate ethics literature: the timing aspect. It is argued that, from a climate change perspective, it does not matter only how many children people bring into existence, but also when they are brought into existence. The reason is that the age at which parents choose to procreate affects the number of people that will live simultaneously on the planet, which is in turn relevant for climate change. This provides individuals another means by which they can decrease their emissions.

Keywords: reproduction; individual responsibility; climate change; reproductive timing

1. Introduction

It has recently been argued that one of the best things an individual could do for the climate is to have fewer children, or to completely refrain from having children [1]. The reason is that the choice to bring new people into existence has a greater negative impact on the climate than the choice to fly, eat meat, or drive a fossil-fueled car, etc. This is due to the extra emissions that the lives of one's children will cause, which would have been absent if those children would never have been born [2].

This argument might appear offensive to some, as the issue of reproduction can be seen as more important and more private than issues about flying, meat eating, or car driving. Still, there is nothing that protects our choices regarding reproduction from having to undergo an ethical evaluation. Like most of our lifestyle choices, our reproductive choices affect others. This makes them suitable for ethical evaluation.

Nevertheless, there are several aspects of reproduction that problematize the argument that we should have fewer children for climate change reasons. For instance, it is *how* our children live—not *that* they live—that is relevant to climate change. If we manage to transform societies so that they become climate neutral, then our children's climate impacts will be more or less zero [3]. It is also possible to offset the emissions that our children will make, just as we can offset our own emissions, e.g., via projects that plant trees or install solar panels [4]. From a climate point of view, it is moreover irrelevant what we do to stay within the emissions budget (as set by the atmospheric absorption capacity). The only thing that matters is that we do enough to reduce our emissions. Abstaining from having kids may be one effective measure, but it is not the only one.

In this paper, I will put these issues aside, and instead focus on a separate aspect that has so far been neglected in the literature. This aspect concerns the timing of parents' procreation. More precisely, it concerns the age at which parents choose to have their children. As I will argue, this timing aspect affects how many people will live simultaneously on the planet, and thus how many people will share its resources, including the atmosphere's capacity to absorb greenhouse gases. An interesting ethical implication is that—even assuming that all people live for the same number of years and give rise to the same amount of emissions each—it may be better from a climate point of view to have more children later in life than fewer children earlier in life.



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It should be mentioned that it is well known that population size in combination with consumption patterns affects the climate system. The more people there are, and the more (fossil-based) energy they consume, the more the climate will change. It is also well known that fertility rates, as well as the age of people, affect population size. The more children people give birth to, and the older people get, the greater the number of people who will live simultaneously on the planet. The socioeconomic effects of the different ages at which couples procreate and the climatic effects of different socioeconomic statuses have also been studied. The more people earn, the more will they in general consume. Moreover, it has been shown how different energy consumption patterns relate to various combinations of aging, household size, and urbanization [5]. However, it has not yet been argued that reproductive timing is directly relevant from a climate change point of view. This paper provides such an argument.

Before spelling out this argument, it should be noted that I will throughout this paper be concerned only with the direct climate impacts of the timing aspects of different reproductive choices (I use “climate impacts” simply to denote that which we care about in relation to climate change). I shall thus bracket any further considerations regarding mere indirect effects of population sizes (regarding, for instance, economic growth, overcrowding, conflicts, and total welfare). Thus, I shall not consider the direct welfare effects of different population sizes, nor the indirect climate impacts of the different policies that might be taken in order to realize such population sizes. For the sake of argument, I will moreover disregard biological limits, socioeconomic factors, gender equality issues, and positive effects of reproduction. Of course, these issues must be taken into account before we can conclude which procreative choice is morally better *all things considered*. In this paper, however, I shall focus exclusively on the timing aspect of procreation.

2. The Argument

To see how parents’ timing of procreation is relevant from a climate point of view, imagine two different worlds, call them World 1 and World 2, respectively. Assume that the average life expectancy is 90 years in both worlds, and that each person (pair of parents) gives birth to one (two) child(ren) in each world. Furthermore, assume that the population is initially the same in both worlds, and that the people in both worlds produce the same amount of emissions per capita. The only difference, let us assume, is that people in World 1 have their children at the age of $22\frac{1}{2}$, while people in World 2 have their children at the age of 30. In other words, the children in World 1 are born after a quarter of their parents’ lifetime, while the children in World 2 are born after a third of their parents’ lifetime.¹

Based on these assumptions, the populations in the two worlds will soon differ, even though each person gives birth to the same number of children. In World 1, the population will stabilize around four simultaneously living generations, while in World 2 the population will stabilize around three simultaneously living generations. Although each generation will contain the same number of individuals in both worlds, the worlds’ total populations will thus differ. (Note that the difference would, of course, be even bigger if the difference between parents’ timing of procreation were bigger.) This can be illustrated as in Figure 1. (Note that the first generation, G1, dies at the same time as the fifth generation, G5, is born in World 1, while G1 dies at the same time as G4 is born in World 2.)

Given that human-induced climate change is the product of (i) the number of existing people and (ii) these people’s emissions, and given that the age at which parents reproduce affects the population size, this argument suggests that, other things being equal, it is not only the number of children that they have but also the time at which they have them that matters for climate change.

¹ To make the example more realistic, we can assume that parents in World 1 give birth to their first child when they are 21 and their second child when they are 24 years old, whereas parents in World 2 give birth to their first child when they are 29 and their second child when they are 31 years old.

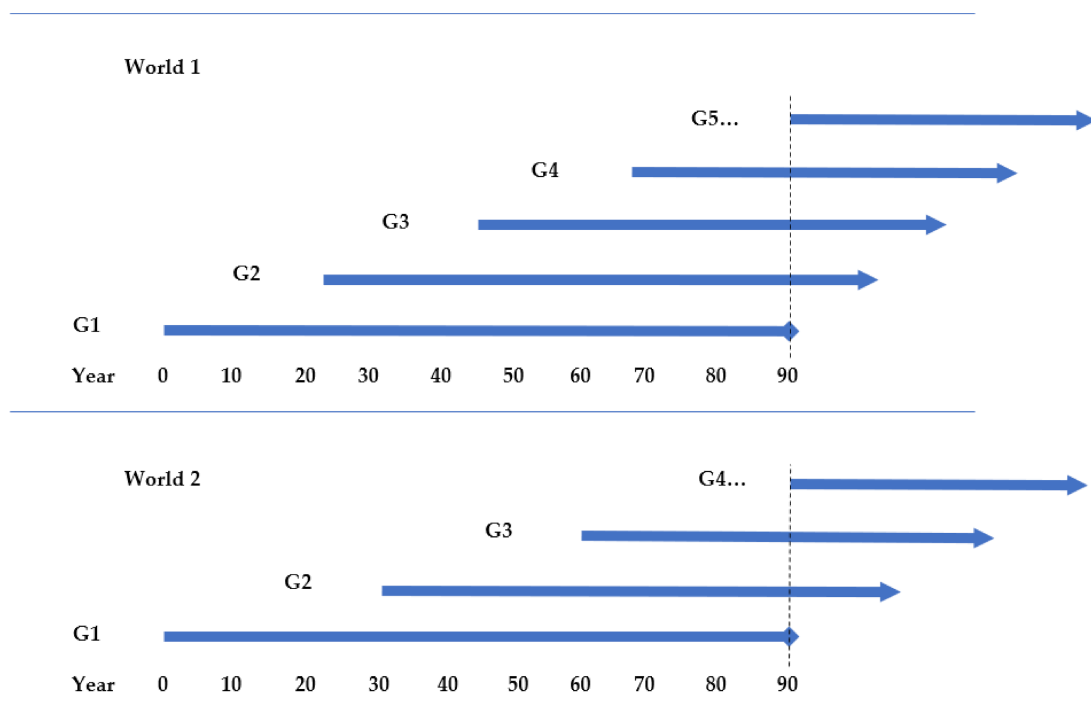


Figure 1. How differences in reproductive timing affect the number of generations living simultaneously.

Note that other features must be taken into consideration before an all-things-considered recommendation can be derived. If humans would eventually manage to adapt to climate change—in the sense that they were able to live flourishing lives even in a world with unmitigated climate change—then World 1 might indeed be better *overall* than World 2 for containing more net well-being than World 2. Alternatively, if humans would not manage to adapt to climate change, then World 1 might be overall worse than World 2 for containing more net suffering. As mentioned in the introduction, however, I am here putting such issues aside in order to isolate the direct climate effects of the timing of procreation.

3. Objections and Replies

One potential objection to the argument above is that it is not the emissions *rates* per generation that matters for climate change—in the sense that it determines peak warming—but rather humanity’s cumulative emissions across all time (c.f. [6]). And spreading out the population over a longer period of time, as postponed procreation implies, will have no effects on the cumulative emissions over time. Hence, there is no relevant difference, with respect to climate change, between World 1 and World 2 in my argument above. Consequently, it is not relevant from a climate point of view when in life people choose to have children (other things being equal).

However, this objection seems to assume that spreading out our cumulative emissions over a longer period of time has no climate effects. This moreover means that if humanity will eventually have used up all fossil-fuel reserves, then it does not matter for the climate whether we now increase our emissions so as to use them up within the next decade, or whether we now decrease our emissions so as to use them up only within the next century or so. However, this seems at odds with how the climate works. In fact, humanity’s cumulative emissions are determined by the time span during which the emissions take place. This has to do with mainly three things: (i) greenhouse gases do not live forever, (ii) the Earth’s atmosphere has a natural ability to absorb greenhouse gases, and (iii) this ability is cyclic. The Earth’s natural carbon sinks, such as forests, oceans, and the atmosphere, are capable of absorbing a certain amount of greenhouse gases each year [7]. This amount is approximately 11 billion metric tonnes of greenhouse gases annually [8]. This means that it is only the emissions that exceed this amount (and are thus not naturally absorbed)

that contribute to climate change. Given this natural “carbon cycle”, there is an annual emissions budget to stick to [9].

This means that—even assuming that the cumulative emissions will determine peak warming and reach a certain level regardless of what we do—it is relevant from a climate point of view whether the emissions take place over a shorter or longer period of time. The longer the time span during which the emissions take place, the greater the amount of emissions that will be absorbed naturally by the Earth’s atmosphere. This moreover means that both the emissions rate and the cumulative net emissions, i.e., the emissions made minus the amount being absorbed by the atmosphere, will be affected by how many people are around at a time. Therefore, there is after all a relevant difference between World 1 and World 2 above, which means that it is also relevant from a climate point of view when in life people choose to have children.²

Perhaps one might think that the timespan under consideration is relevant here, since it might be crucial to my argument whether we are considering a finite or an infinite time. However, the result appears to be the same in either case. If we assume that humanity will exist for a finite period of time, which is most plausible, then the argument entails that there will be a smaller total population in World 2 than in World 1. Since a smaller total population, other things being equal, implies a smaller total amount of cumulative net emissions, it then follows that it is nevertheless relevant for climate change when in our lives we choose to procreate.³ If, on the other hand, we assume that humanity will exist for an infinite time, then the size of the total population will be equal in both worlds. In such a case, my argument entails that although the cumulative emissions will be equal in both worlds, they will still be more spread out in World 2 than in World 1.

Spreading out the total population over a longer period of time is not only relevant for giving us more time to adapt to unmitigated climate change, but also for giving us more time to invent new methods to reduce our emissions in the first place [6]. Sure, this must be weighed against the fact that more people on Earth opens up for more researchers and inventors, who could make more and faster climate-relevant innovations [6]. However, it is doubtful that the extra people would be able to do so before it is too late, since it would take at least 20–30 years before they reached an age where they could make any relevant innovations [10]. Moreover, there is an untapped potential of already existing people. As the fastest population increase occurs in those parts of the world where access to qualitative education is scarce, further climate innovations could be better ensured by offering these existing people qualitative education. Therefore, it does not seem unlikely that continued population growth will result in further untapped potential rather than climate-relevant inventions.

Another objection to my argument would be if the cumulative emissions are *already* so extensive that a climate disaster is inevitable. In such a case, it would not matter whether we chose to have children later for climate reasons. However, the relevance of such a scenario is limited. First, if it were true, then no climate action would make sense. Thus, it would not be an argument particularly against having children later in life, but against any climate action in general (such as not having one more child, or not eating meat, etcetera). Second, the climate sciences indicate that we can in fact influence how drastic climate change will be, even if it would be inevitable [11].

Perhaps one might still want to object that we only have between 8 and 22 years to reduce our emissions if we want to avoid a climate disaster. Since our choices regarding reproduction will have climate effects after this time period, we will not be able to avoid a climate disaster by merely choosing to have children later in life [10,11]. However, this is only of partial relevance. For, climate change mitigation is not a one-time task. Even if we would succeed in avoiding a climate disaster in the coming decades by drastically

² Note that this has nothing to do with so called *pure discounting*, according to which a given change in well-being (say, due to climate impacts) matters less the further in the future it occurs.

³ Of course, if climate change will itself determine the point in time at which humanity goes extinct, then my argument suggests that this might happen sooner in World 1 than in World 2. I am here ignoring this complicating aspect for the sake of argument.

reducing our emissions at present, there is the continuous challenge to stay at such low emissions levels in order to avoid a climate disaster in the further future. For that reason, it remains relevant from a climate point of view that we have our children later in life (other things being equal). This recommendation would be further strengthened if we took into consideration that human population size is relevant for sustainability considered more broadly, e.g., considering issues of biodiversity loss and resource scarcity.

4. Conclusions

This paper has presented an argument according to which those of us who choose to procreate have climate-related reasons for doing so later rather than earlier in our lives.

Perhaps one might think that this argument is at most relevant from a political or collectivist point of view, since an individual's reproductive choices cannot make any real difference with respect to climate change. Were people to collectively choose to procreate later in our lives, that would have an effect on the climate. However, if only *I* (and my partner) do it, then that would make no sense. At a closer look, however, it turns out that the argument applies to individuals as well. Given that individuals have a duty not to emit more than their "fair share" of what the atmosphere can naturally absorb (whatever we take to be the "fair share" of this atmospheric capacity) [12], and if there are thus climate-related reasons for individuals to reduce their meat eating, flying, car driving, or childbearing, then this paper has shown that there are also climate-related reasons for individuals to have their children as late in life as possible.

Of course, this upshot must be seen in the context of the human biological limits that apply to reproduction, i.e., relative to the fact that humans can only reproduce at certain times in their lives. Moreover, the possible negative effects that a postponed procreation might have either for parents or their children must be taken into account before we can conclude which procreative choice is morally preferable all things considered [13]. All else being equal, however, it is clear that parents' timing of procreation is relevant for climate change.

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