

The Convention of Representatives of All Generations Under the ‘Veil of Ignorance’

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1. Intergenerational Justice

The notion of justice has been at the centre of intense philosophical debate since the times of ancient Greece. Nevertheless, systematic concepts and theories of justice between non-overlapping generations have only been developed in the last few decades.¹ A great majority of philosophers supports a comparative standard with regard to intergenerational justice; that is a standard that determines the wellbeing of future generations by comparing it to that of today or to that of earlier generations. Within this group, a considerable number of scholars postulate principles of strict equality between generations (‘as good as’). A proponent of such an egalitarian standard of intergenerational justice is Brian Barry who demands “that the overall range of opportunities open to successive generations should not be narrowed.”² Richard De George formulates the egalitarian maxim negatively. With regard to family generations, he says: “Parents do not owe their children better lives than they had.”³ An even greater number of texts in literature on intergenerational justice use the formulation ‘at least as good.’ See some examples: just like John Locke, 300 years ago (“at least as much and as good”),⁴ the philosopher Gregory Kavka suggests: “[...] I interpret this to mean that, in this context, the generation in question leaves the next generation *at least* [emphasis added] as well off, with respect to usable resources, as it was left by its ancestors.”⁵ Eric Rakowski puts it this way: “Everyone born into a society is entitled, *as a minimum* [emphasis added], to the same quantity of resources that all who participated in the original division of the community’s goods and land received.”⁶ Likewise, Dieter Birnbacher argues: “Everyone should leave *at least* [emphasis added] as many natural resources as it was left to him. What someone has inherited, he should pass on undiminished (‘to sustain’), and *possibly* [emphasis added] increased (‘to cultivate’), to future people, be it as a private citizen or as a representative of a collective.”⁷ James Woodward adds ‘opportunities,’ but he sings the same tune: “Each generation ought to leave for succeeding generations a total range of resources and opportunities which are *at least* equal [emphasis added] to its own range of resources and opportunities.”⁸ But the idea of an obligation to *improve* the quality of life for future generations is also expressed sometimes. Karl Marx writes in the third volume of *The Capital*: “Even a whole society, a nation, or indeed all concurrent societies taken together are not the owners of the earth. They are only its possessors, its beneficiaries, and like *boni patres familias*, they must hand it down to succeeding generations in an *improved* condition [emphasis added].”⁹ And the philosopher John Passmore claims that: “(. . .) [W]e ought to try to improve the world so that we shall be able to hand it over to our immediate successors in a *better* [emphasis added] condition, and that is all.”¹⁰

The principles laid out above are conflicting in terms of the extent of our obligations to future generations; however, all acknowledge that obligations do indeed exist. None of these conceptions of intergenerational justice purport that we have no obligations to coming generations. This does not come as a surprise. *Prima facie*, in the universalistic tradition that coins our moral reasoning since the Enlightenment, differences in time should matter no

more than differences in race or gender. It seems to be both logical and intuitive to extend the principles concerning our dealings with our contemporaries to our dealings with future people. Once a moral maxim of impartiality is accepted as a core of moral reasoning, it seems plausible to extend the realm of moral patients to future persons. The *moral* point of view is a point of view beyond all particular perspectives, and any attempt to privilege the present over the future is *prima facie* at odds with impartiality. However, the reference to impartiality is often quite vague in the above-cited concepts of intergenerational justice. It is *mentioned* as a principle of moral evaluation, but it is not *applied*.

Content-related conclusions about intergenerational justice would be more legitimate if arrived at through well-established and generally recognized *procedures*. In this article, I will apply the ‘veil of ignorance’—a well-known procedural model to find principles of justice—to the problem of intergenerational justice.

2. The ‘Veil of Ignorance’ in the Intergenerational Context

John Rawls’ *A Theory of Justice* (1971) contains one of the earliest debates on the question of intergenerational justice. His famous paragraph 44 included in his chapter *Distributive Shares*¹¹ and called *The Problem of Justice between Generations* sent reverberations through academic circles. It is claimed that in the 1970s and 80s most of the works on intergenerational justice were a reaction to Rawls.¹²

Since the Age of Enlightenment, the thought experiment of an ‘original position’ has often been used in theory-building to fulfill conditions of impartiality.¹³ This can be called a procedural approach to justice: if a method is just, the outcome—whatever it might be—should also be just. Rawls enhances the concept of the ‘original position’ by adding a ‘veil of ignorance’: “First of all, no one knows his place in society, his class position or social status; nor does he know his fortune in the distribution of natural assets and abilities, his intelligence and strength, and the like. Nor, again, does anyone know his conception of the good, the particulars of his rational plan of life, or even the special features of his psychology such as his aversion to risk or liability to optimism or pessimism.”¹⁴ In such a setting, we can assume that “[. . .] no-one is in the position to tailor principles to his advantage.”¹⁵ Rawls rightly believes the participants would reach a unanimous decision. It is important to understand that the ‘veil of ignorance’ creates a situation of *choice*, not of *negotiation*.¹⁶ As the personal preferences are veiled and all remaining interests are equal and known to everybody, the individuals have no reason to negotiate the principles of justice. By identifying with others, a universalisable standpoint is chosen.

Rawls’ settings of the veil of ignorance lead him to his final justice principles, which are moderately egalitarian.¹⁷ To justify the second part of the latter principle (the difference principle), Rawls is forced to face the question of accumulation between generations. Otherwise, the participants in the ‘original position’ could support the least-advantaged members of their generation by failing to save for the next generation. For Rawls, the obligation to save for future poor people limits the extent to which wealth can be redistributed in the present. The ‘just savings principle’ thus must be understood as a constraint to the ‘difference principle.’¹⁸

Rawls’ ‘veil of ignorance’ thought experiment is promising in the intergenerational context because the ‘veil of ignorance’ ensures equal consideration of the viewpoint of each generation (“[. . .] the different temporal position of persons and generations does not in itself justify treating them differently”).¹⁹ Discounting the future merely on temporal grounds

would go against this demand. Rawls himself states: “In this case the ethical problem is that of agreeing on a path over time which treats all generations justly during the whole course of a society’s history. (. . .) When this principle is followed, adjacent generations cannot complain of one another; and in fact no generation can find fault with any other no matter how far removed in time.”²⁰ The aim of this article is to use the ingenious ‘veil of ignorance’ to derive principles of intergenerational justice. As Rawls is the inventor of the ‘veil of ignorance,’ such an endeavour is unthinkable without making reference to him. But as Rawls’ own discussion of this important topic is “both rough and unclear”²¹ the intended reference to his description of the ‘veil of ignorance’ in paragraph 44 unintentionally but unavoidably became a matter of interpretation to some extent. However, the aim of this article is an analytic one—to build upon the ‘veil of ignorance’ and draw my own conclusions. I do not intend to interpret Rawls more than is necessary.

Rawls’ application of the ‘veil of ignorance’ in the intergenerational context has been criticised by most commentators.²² A recurring criticism is that Rawls switches quite haphazardly between three different models of the ‘veil of ignorance.’ The exact *intergenerational* analogy to the *intragenerational* ‘original position’ is as follows:

Model 1: Representatives of all past, present, and future generations meet in the ‘original position.’ Because of the ‘veil of ignorance,’ they do not know which generations they belong to and will later live as. Each representative is only guided by self-interest.²³

Rawls replaces his own model with a second one described below offering no explanation other than the vague assertion that the first model would “stretch fantasy too far” and “cease to be a natural guide to intuition”²⁴

Model 2: Only people from one generation come together in the ‘original position’ behind the ‘veil of ignorance.’ They do not know which generation in the history of mankind they belong to and will later live as. Each person is only guided by self-interest.²⁵

Rawls calls this model the “present time of entry interpretation.”²⁶ He dismisses it, too, and replaces it by a third one in which the individual representatives do not act out of pure self-interest, but also keep in mind the well-being of their offspring.

Rawls states: “It seems best to preserve the present time of entry interpretation and therefore to adjust the motivation condition. The parties are regarded as representing family lines, say, with ties of sentiment between successive generations”²⁷ Now, the ‘original position’ contains a gathering of *parents* who do not know which generation they will later live as.²⁸

The problem with this is not the idea of parental love itself. John Passmore has elaborated an attractive chain-of-love-model that builds on the same thought.²⁹ The problem is that it is an ad-hoc-assumption within Rawls’ system as this motivational assumption forsakes one of the central premises of the whole Rawlsian theory of justice: the self-interest of the actors. By allowing an altruistic interest in the ‘original position,’ the whole theoretical contract with its program of deduction is disavowed.

Barry argues that this can no longer be called a discussion about justice *between* past, present, and future generations, as Rawls continues to do. Instead, it becomes a matter of justice *with respect to* [emphasis in the original] future generations.³⁰ English points out that Rawls’ modified parameter in his ‘veil of ignorance’ model would change the result even on the *intragenerational* level, because it leads to a concept of justice focused on families, not on individuals.³¹ After all, ‘heads of families’ is clearly a societal position in which case the

'veil of ignorance' would be prematurely removed. Paden's criticism is that the introduction of parental love in the model requires each generation to save for the next generation even if just and stable institutions have already been achieved.³²

In my opinion, the literature thus far has overlooked another inconsistency on Rawls' part. He changes his definition of the term 'generation' when he switches from model 2 to model 3. In model 2, he uses 'generation' to refer to all people living at one moment in time.³³ But when he refers to the parent-child model, he uses a family-related meaning of the term 'generation,' thus narrowing down the extension of the term to a faction of all people living at one moment in time. While the dichotomy is 'present generation – future generation(s)' in model 2, it is 'parent generation – children generation' in model 3.

By switching to model 3, Rawls wants to avoid the scenario in which no one has a duty to save for posterity. As he says himself: "Previous generations have saved or they have not; there is nothing the parties can now do to affect that. So in this instance the 'veil of ignorance' fails to secure the desired result. Therefore I resolve the question of justice between generations in a different way by altering the motivation assumption."³⁴ However, such an ad-hoc-assumption is not legitimate. Rawls himself concedes that the problem of justice between generations exhausts him: "it submits any ethical theory to severe if not impossible tests"³⁵

In the subsequent revisions of his theory of justice, Rawls later rectifies what he calls "the more serious faults."³⁶ In his book *Political Liberalism* (1993), Rawls states that he need not introduce the ad-hoc parental care assumption if the parties assume, ideally, that previous generations saved justly for them, the present generation.³⁷ In *Justice as Fairness: A Restatement* (2001), his most recent book, Rawls reinforces his renunciation of the problematic assumption of parental affection, and he reformulates the 'just saving principle' as follows:

"the members of any generation (and so all generations) would adopt as the principle they would want preceding generations to have followed, no matter how far back in time. Since no generation knows its place among the generations, this implies that all later generations, including the present one, are to follow it. In this way we arrive at a savings principle that grounds our duties to other generations: it supports legitimate complaints against our predecessors and legitimate expectations about our successors."³⁸

It is quite obvious that this is an attempt to circumnavigate the outcome that no-one would save for posterity without inducing love for the offspring as a premise, as in model 3. But does this entirely new principle offer a satisfying solution? *Prima facie*, the participants would introduce a positive savings rate, because otherwise they would risk inheriting nothing at all and having to start from scratch. But this new principle creates new problems, mostly with regard to model 2, in which the convention solely consists of coevals. Only here, there are 'past generations' from the participants' point of view. In model 1, all generations take part in the convention. As from this perspective there are no 'past generations,' Rawls' new principle cannot be applied.

In 2001—unlike in 1971—Rawls does not state whether the participants would decide on a high, low, or no rate of savings. In this context, the new question becomes which savings rate the participants would choose if the new principle were applied. Rawls' new principle is a variation of the Golden Rule 'Do unto others as you would have them do unto you.' But in the intergenerational context, this rule cannot be fulfilled by the principle of reciprocity. Previous generations have either saved or not saved—in any case the result is unalterable. Let us assume the previous generation has chosen a very low savings rate.

Should the participants nevertheless select a high savings rate? If so, how does this fulfill the assumption of self-interest?

Rawls' new principle is an intergenerational categorical imperative, i.e. ultimately deontological, and not intended as a contract theory. How is the new imperative derived? Why should the parties in the 'original position' adopt it without further deontological assumptions?³⁹ Rawls does not address any of these questions. In the relevant paragraphs of his later works, he only briefly touches on the question of intergenerational justice.⁴⁰

The premise for the conclusions arrived at in this article is that the original model 1 was dismissed too hastily by Rawls. It is a sound starting point for further reflections even if Rawls himself did not build on it.⁴¹

3. What Would Really be Arrived at in the 'Original Position'?

Only model 1 is indeed the intergenerational parallel to the intragenerational 'original position.' Whether a thought experiment is 'far-fetched' or 'very far-fetched' is irrelevant, as long as it is a guideline for deriving principles of justice. This guideline is that rational and self-interested⁴² actors have to be in a situation that does not allow an individual to translate his bargaining power into personal advantage.⁴³ This condition is met by model 1.⁴⁴ Before applying the prolific thought experiment of the 'veil of ignorance' to the intergenerational context, we need to take a step back to clarify how many generations are to be taken into consideration. Do we assume an infinite number of generations starting with generation G₀, or a finite number of generations starting with generation G₀ and ending with generation G_n? An infinite number of participants in the 'original position' would mean that an assembly will become impossible to imagine. It seems far more fruitful to assume a finite n. The number of generations is therefore exogenous in this model. The question as to how many generations *should* exist in an optimal world is not discussed here.

3.1. Model 1, Finite n

The first representatives of the human race, and thus the first possible generations within this model, came into being hundreds of thousands of years BC. Back then, life expectancy was limited to 25 to 30 years. It increased in the mid-eighteenth century and again significantly in the twentieth century on a global scale. Using the factual (and thus varying) historical life expectancy of generations of humans, it can be calculated that altogether at least 6,000 generations of Homo sapiens have populated the Earth so far.⁴⁵ Of these thousands of generations, only the last 20 were familiar with books and only the last two could travel long distances with an airplane. As far as the future is concerned, there are three ways in which humanity could meet its end: by way of a man-made catastrophe, through a fatal collision with an asteroid, or due to the explosion of our sun at the end of its lifetime. If we can avoid the first two cases, then mankind would have 8,000,000,000 more years to exist as a species, barring abandonment of our solar system and settlement on a new planet. In any case, the future is not foreseeable.

The imaginative part of the thought experiment is not the determination of the number of past generations, but rather that of future generations. But in order to build a less complex model, I take a cultural instead of a genetic turning point as my starting point. The largest biological experiment performed by humans to date was the introduction of wild animals into the household around 12,000 BC. The emergence of agriculture differentiates the Neolithic period from the Paleolithic and Mesolithic periods, in which people lived as hunters and

Table I. Classification of (settled) Humanity in Generations

Era	12000-8000 BC	7999-4000 BC	3999 BC – 0	0–4000 AD	4001-8000 AD	8001-12000 AD	12001-16000 AD	16001-ca. 20000 AD
Life expectancy	30 years	30 years	30 years	30–120 years	130 years	140 years	150 years	160 years
Number of generations	133	133	133	83	31	29	27	25

From 0–1740 AD an average life expectancy of 30 years is assumed (= 58 generations), from 1740–2200 AD an average of 60 years (circa 8 generations), from 2200–2500 AD 80 years (= circa 4 generations), and from 2500–4000 AD a life expectancy of 120 years (13 generations). Thus, there are 83 generations in this period in all. The segues are ‘flowing;’ i.e., they have no fixed start and end year.

gatherers. Without the use of domesticated animals, neither the advanced civilization of early humans would have been possible nor would we be capable of sustaining our civilization today, because the food requirements of humanity cannot be served by hunting wild animals and gathering plants alone. The domestication of plants and animals fundamentally changed the way of life and made the establishment of the first cities possible. It was the first time that people substantially changed their environment. One could therefore argue that the first genetic humans and their biological predecessors had more in common (both were hunters and gatherers) than the generation of people who lived before and after the Neolithic revolution.

Thus I will take the number of generations after the Neolithic revolution as my starting point. The question of the best assumption for an end point is still unsolved, it was postponed above. Hence, I extrapolate (arbitrarily) that people will populate the Earth until 20,000 AD. Any other assumption would be equally arbitrary since the future is by its very nature unknown. With regard to life expectancy, I take for the past actual values. For the future, I assume a continued linear increase. As table I shows, this results in approximately 600 generations altogether that have lived, are currently living or will live:

It is assumed that the convened representatives of generations possess knowledge of how societies function and have at least a basic awareness of the evolution and history of humanity. One of our central premises is that the participants under the ‘veil of ignorance’ are human beings. Among other things, humans differ from animals in that they are not limited to genetically inherited information or information based on personal experience, but rather have knowledge and information generated by the generations before them also at their disposal. They have an awareness of the ‘before,’ for their history. Therefore, the assembled in their original position have a fundamental understanding of evolutionary processes; they know that higher states evolve from lower ones. Consequently each generation knows the approximate level of civilization and the average well-being of past generations, for instance measured by HDI, the Human Development Index.⁴⁶

The main idea of the ‘veil of ignorance’ described above was: the participants do not know to which generation they belonged before the ‘veil of ignorance’ was ‘lowered’ nor do they know in which generation they will live after the veil has been lifted. The second aspect is the more important.⁴⁷ It is essential because theories of ‘justice as impartiality’ demand that the participants are unable to use their bargaining power to their own advantage. The model of ‘justice as impartiality’ is not compromised if we assume that even under the ‘veil of ignorance’ the participants know what they were *before* the ‘veil of ignorance’ was lowered. The decisive factor is that they do not know in which generation they will find

Table II. Development of the HDI values in Germany, France, Great Britain, Japan, the Netherlands, and the USA 1820–1992

Year	1820			1870			1913					
	Life Expectancy	GDP/capita	Education	HDI	Life Expectancy	GDP/capita	Education	HDI	Life Expectancy	GDP/capita	Education	HDI
USA	39	1287	1.75	0.13	42	2457	3.92	0.20	47	5307	7.86	0.34
Germany	33.1	1112	1.75	0.09	40.6	1913	3.9	0.19	47	3833	8.37	0.34
France	40	1218	1.75	0.13	41.6	1858	3.9	0.19	47	3452	6.99	0.31
Great Britain	39	1756	2	0.14	45	3263	4.44	0.24	51	5032	8.82	0.38
Japan	35	704	1.5	0.09	38	741	1.5	0.11	44	1334	5.36	0.23
Netherlands	32	1561	1.75	0.09	40	2640	3.9	0.19	52	3950	6.42	0.32
Total				0.11				0.19				0.32
Year	1950			1973			1992					
Country	Life Expectancy	GDP/capita	Education	HDI	Life Expectancy	GDP/capita	Education	HDI	Life Expectancy	GDP/capita	Education	HDI
USA	68.07	9573	11.27	0.57	73.88	16607	14.58	0.7	77	21558	18.04	0.87
Germany	68.7	4281	10.4	0.51	73	13152	11.55	0.6	76	19351	12.17	0.71
France	69.2	5221	9.58	0.50	72.8	12940	11.69	0.6	77	17959	15.96	0.79
Great Britain	69	6847	10.6	0.54	73.2	11992	11.66	0.6	76	15738	14.09	0.73
Japan	70	1873	9.11	0.47	74	11017	12.09	0.63	79	19425	14.87	0.79
Netherlands	69	5850	8.12	0.47	73	12763	10.27	0.60	77	16898	13.24	0.72
Total				0.51				0.64				0.77

Sources:⁴⁸

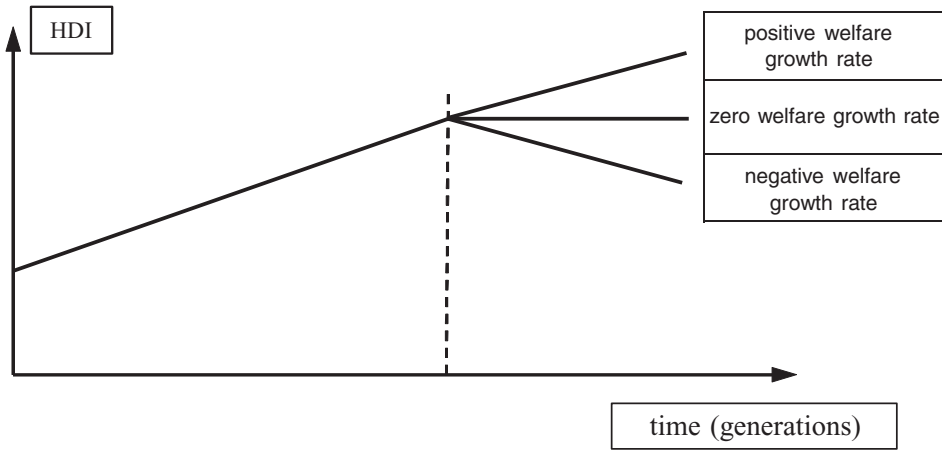


Figure 1. HDI development (past and future scenarios)

themselves *after* the ‘veil of ignorance’ is raised. Just as to us, the history of mankind is an open book to the participants (cf. the area to the left of the dashed line in figure 1). We know the medical advances that have increased the number of years spent in full health; the economic and technological achievements that have increased the availability of consumer goods and lowered working hours; as well as the political and social developments that have spread human and civil rights and led to democracy. Unlike any subjective, ‘utilitarian’ measure for well-being, the HDI is an objective measure for well-being, based on measurable data. Despite regional disparities, the HDI has risen steadily across the globe through the centuries. The positive trend does not only apply to industrialised countries, but also to developing continents like Africa, Latin America, and Asia.

However, the future (the area to the right of the dashed line in figure 1) is unknown. We do not know if the average HDI will continue to rise or if factors like climate change or a nuclear war will lead to a regressive trend. We assume that for each of the individuals assembled, the scope of experience extends as far as his chronological position in the order of all generations.

3.1.1. Model 1, Finite n , Unalterable History

In model 1 with a finite n , one parameter is crucial: can the past be changed or not? Let us first look at the model assuming an unchangeable past. For the sake of simplicity, we will group the 600 generations into six generations of 100 each. We will refer to these generations by their historical names (‘Herdsman,’ ‘Early Tiller,’ ‘Middle Tiller,’ ‘Late Tiller,’ ‘Modern Man,’ and ‘Man of the Future’). We can now imagine a meeting of six persons, each representing a certain level of well-being or human development (measured by the HDI). The size of the generations may vary. That does not affect the decision-making process, as long as we assume that each representative of a generation in model 1 has the same speaking and voting rights. Hence, the ‘Herdsman’ has the same say as the others, although the 100 generations he represents include fewer individuals than the 100 generations of the ‘Modern Man.’ Anyway, we do not know how many people will populate the Earth in 100 or 200 years, i.e. in the 22nd or 23rd century of the actual history of humanity. Thus, we don’t know

Table III. 600 generations and their average well-being

Generations	1–100	101–200	201–300	301–400	401–500	501–600
Era	12000–9000 BC	9000–6000 BC	6000–3000 BC	3000 BC – 0	0 – ca. 5420	Ca. 5420 –ca. 20,000
Name of Generation Cluster	Herdsmen	Early Tiller	Middle Tiller	Late Tiller	Modern Man	Man of the Future
Average HDI	100 ⁴⁹	200	300	400	500	?

Table IV. The fifth generation cluster

Generations	401–462	463	464–500	401–500
Name of Generation Cluster	Modern Man	Present Generation	Modern Man	Modern Man
Average HDI	400	450	?	500 (estimate)

how many single people will live in the 100 generations that are represented by the ‘Man of the Future.’ In order to avoid over-exaggerating the fantasy, this model is based on the number of generations instead of an actual population count.

The fifth group of hundred merits a closer look. Let us assume that G_{present} (the present generation, in other words: you and I) is G₄₆₃ of all 600 generations and has an HDI of 450. We know, then, de facto only the historical progression of the HDI for G₄₀₁ to G₄₆₃ but not for G₄₆₄ to G₅₀₀. To us, the future is unknown. We, the external on-lookers of this thought experiment, have knowledge of history limited to the (real) present time.

In the ‘original position,’ however, the participants are in the company of the ‘Man of the Future,’ who knows exactly what will happen between G₅₀₁ and G₆₀₀. The participants’ knowledge is decisive for the basis of the thought experiment, not our own. Therefore, we must consider various possible scenarios: if all goes well, the HDI of the ‘Man of the Future’ will have increased to 600. If things stay the same, it will stagnate at 450 (like that of the ‘Modern Man’), and in case of a catastrophe, it will have dropped to, say, 50.⁵⁰

The six participants will analyse their position as follows:

- ‘Man of the Future’: if the HDI continues to rise, he will have the most to lose. His chances are five out of six to end up in an earlier, less developed generation. He also knows that someone else would then belong to the sixth (hundredth) generation and enjoy its benefits. In the case of a catastrophe, he has the most to win. His chances are five out of six to wake up as a member of an earlier generation with a higher HDI. As is the case for everyone else, he has a one in six chance of ending up with the same HDI.

- Herdsmen: he has a lot to win. If the development of mankind continues to be positive, his chances are five in six to improve his lot. Even if a catastrophe should take place, reducing the ‘Man of the Future’s’ HDI to 50, the ‘Neanderthal Man’s’ chance to be better off than before he came under the ‘veil’ would still be four out of six.

- The ‘Early Tiller’ will have a good chance to improve his fate if mankind makes further progress (four out of six). In case of a catastrophe, his chances are three out of six to achieve a higher HDI.

- The chances of the 'Middle Tiller' to improve his fate if mankind makes further progress are three out of six; his chances to improve his living conditions would be two out of six in the case of a catastrophe.
- The chances of the 'Late Tiller' to improve his fate if mankind makes further progress are two out of six; his chances to improve his existence in the case of a catastrophe would be one out of six.
- The chances of the 'Modern Man' to improve his fate if mankind makes further progress are one out of six; in case of a catastrophe, he would have no chance at all to improve his position.

We have chosen the parameter 'unalterable history,' which means that the participants can hope not to wake up in an unfavourable generation, but they cannot influence any aspect of the era in which they will live. All the plagues, wars, and other events about which we can read in history books will still take place. On an intragenerational level, it might be possible that the well-being of the least-advantaged members of society be improved by worsening the situation of the most advantaged ones. On an intergenerational level, however, that is not possible: generation 1 would not benefit if the situation of generation 463 was worsened. When the 'veil of ignorance' is lifted, generation 1 will still wake up in the year 12,000 BC in the agronomy of the stone age, probably in a cold cave, plagued by vermin and infectious diseases. An equal distribution of well-being is not an option. All participants know that the HDI distribution depicted in table V cannot be achieved.

Table V. Equal distribution of well-being among 600 generations

Generations	1–100	101–200	201–300	301–400	401–500	501–600	Average
Average HDI	300	300	300	300	300	300	300

3.1.2. Model 1, Finite n, Alterable History

The constellation of our parameters obviously does not make sense as long as we assume that history is unalterable. The main attraction of the 'veil of ignorance' in the *intragenerational* context is that the participants are in the position to 'dig their own graves' so to speak. If they imprudently introduce a slave-holding society, they might end up as slaves themselves once the 'veil of ignorance' is lifted. You make the bed you lie in, one might say.

This mechanism can be maintained in the intergenerational context by exchanging the parameter 'unalterable history' for 'alterable history.' Let us assume the 'Herdsman,' the 'Early,' 'Middle' and 'Late Tillers,' the 'Modern Man' and the 'Man of the Future' were supposed to design rules for a parallel world that still has the entire history of mankind ahead of it. If this were simply a world for others, there would be no risk involved for the participants, so their self-interest would be irrelevant. Therefore, we must assume that the participants and the 600 generations represented by them will be a part of the population of this new world. However, they do not know which generation they will belong to once the 'veil of ignorance' has been lifted. A position between 1 and 600 will be randomly assigned to them, and they will have to bear the fate of that generation whether they like it or not.

How would their decision-making process work? They could, for example, want well-being to be divided as shown in table VI:

Table VI. Well-being distribution (wishful thinking)

Generations	1–100	101–200	201–300	301–400	401–500	501–600	Average
Average HDI	800	800	800	800	800	800	800

We must consider, however, that, according to the premises of the model, they have knowledge of the fundamental principles of evolutionary processes. They are no illusionists. They know that it took millions of years for man to evolve and that the development of civilisation and of all the amenities that prolong life and make it comfortable also take time. Later generations will inevitably benefit from the inventions, experiences, and innovations of their predecessors. On the other hand, there is no way earlier generations could benefit from future technology and medicine, as time is one-directional and irreversible. Justice as ‘equality’ is not an option unless the participants behind the ‘veil of ignorance’ ordered each generation to burn down all its libraries and destroy all innovations and inventions before it dies. All generations would have to live on a low level of civilisation. Is it possible that the participants abide by the idea of equality and opt for the smallest denominator: a distribution like in table VII?

Table VII. Well-being distribution (smallest denominator)

Generations	1–100	101–200	201–300	301–400	401–500	501–600	Average
Average HDI	50	50	50	50	50	50	50

Such an equal treatment at the lowest possible level is profoundly unattractive and would probably not be chosen by the participants. But what will they prefer? We should not forget that the ‘Man of the Future’ knows the course of history, even if we do not. How will the participants decide if he shares his knowledge with them? Let us assume generations represented by the ‘Modern Man’ will trigger a nuclear or ecological catastrophe in the real world, leading to diseases and misery for all future generations. The few survivors would have a HDI of 50, and the well-being of all generations would be distributed as shown in table VIII.

Table VIII. Well-being distribution (decline after a catastrophe)

Generations	1–100	101–200	201–300	301–400	401–500	501–600	Average
Average HDI	100	200	300	400	500	50	258,33

Obviously, the participants will do their best to avoid the decline between generations five and six. This principle can be generalized as: ‘Any disturbance of the evolutionary growth of human development is to be prevented.’ This will lead to a distribution of well-being as shown in table IX.

Table IX. Distribution of well-being (steady HDI growth)

Generations	1–100	101–200	201–300	301–400	401–500	501–600	Average
Average HDI	100	200	300	400	500	600	350

As mentioned, the participants know the history of the real world. Thus, when they develop principles of justice for the parallel world, they will take into account that in our real world the HDI growth has not been steady, even if the trend line suggests so.

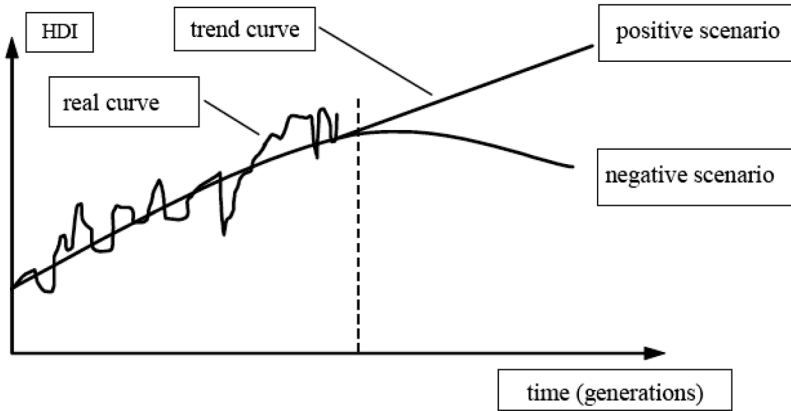


Figure 2. Real HDI increase and trend line

The participants will try to eliminate as many of the erratic fluctuations of the actual HDI curve as possible. They will try to avoid the mistakes of individual generations. In the real world, generation 450 may have started the Hundred Years’ War and thereby considerably diminished the HDI of generation 451. In the parallel world, however, the War could be avoided, because history can be changed in this model. The prevention of wars and man-made ecological, social, or technical catastrophes means that the values of Table VII have to be adjusted upwards.⁵¹ This generates values as shown in table X.

Table X. Well-being distribution (prevention of man-made mistakes)

Generations	1–100	101–200	201–300	301–400	401–500	501–600	Average
Average HDI	100	220	340	460	580	700	400
Increase	120	120	120	120	120		

3.1.2.1. Savings are not the most decisive factor for the welfare of the next generation. Traditionally, the accumulation problem was formulated as follows:

“Each generation needs to balance investment against consumption. If a generation consumes everything, then subsequent generations will be left with nothing and will starve.”⁵²

What is consumed is gone – this model is dominant in economics and in utilitarian calculus. One could call it “cake-thinking,” as in the metaphorical cake of which there is not enough for all. In the past, political philosophers regarded it as their duty to prove that intergenerational saving (i.e. non-consumption) was necessary for reasons of intergenerational morality. Usually, they failed. Ernest Partridge has pointed out that cake-thinking is not suitable for an intergenerational context. He shows that the cake analogy is applicable with regard to, for example, non-renewable resources, but not for other goods that are decisive for human well-being: “Quite the contrary, the more knowledge, skills, artistic expression, scientific research, and just institutions are ‘used,’ the more valuable they become through use.”⁵³

Instead of using one ‘savings rate,’ it is therefore important to differentiate between the following three rates:

- r_{aut} : the rate of HDI growth resulting from inventions, innovations and improvements

This rate is autonomous. It emerges as a by-product of mankind’s ability to invent new things. It is part of human nature to try, to invent, and to improve. The human race has been ingenious and innovative more or less throughout its entire history; the rate of innovations was never zero. This accumulation of theoretical knowledge and its practical utilization cumulatively benefits later generations. In this sense, each generation stands on the shoulders of its predecessors. The rate of growth of well-being stemming from inventions is *not* the result of a sacrifice of some kind by earlier generations and the term ‘saving’ does not apply as the generation that produces r_{aut} does not have to abstain from consumption. On the contrary, it would cost a generation effort and money to prevent r_{aut} . Assuming one generation invented the wheel,⁵⁴ would it be a sacrifice to pass it on to their next generation? No, it would rather be arduous to destroy all existing wheels. And it would be impossible to eliminate all knowledge concerning wheels anyway. Later generations benefit from the unconscious, but fortunate, conservation of the works previous generations created for their own purposes.⁵⁵

- r_{care} : the HDI growth rate resulting from the prevention of wars and man-made ecological, social, or technical collapses

Apart from epidemics and crop failures, the largest HDI decreases in human history occurred due to wars, enslavement, and oppression. In the future, ecological disasters and accidents involving large-scale technologies are more likely to play a prominent role. The participants would compel each generation to avoid such disasters. An important aspect here is that such man-made disasters do not only harm future generations but also the generation causing them.

- s : the HDI growth rate resulting from sacrifices (savings)

s results from a generation’s restraint. The savings rate is defined as one generation accepting a smaller HDI increase or even an HDI decrease for the sake of its succeeding generation. The rate s is similar to the economic savings rate, i.e. the share of the GDP that is not consumed, but put aside for the future, except that s refers here to the HDI instead of the GDP.

Empirical research on human development has shown that the traditional formulation of the accumulation problem was flawed. Firstly, it ignores that a significant amount of the growth in human development and human well-being is triggered by autonomous factors. Secondly, the shocks and deflections of the actual HDI curve, i.e. the deviations from the trend line, are not a result of egoistic versus selfless behavior of earlier generations, i.e. decisions to consume or save (= investment decisions).⁵⁶ Rather, they are the result of wars, epidemics, and other catastrophes. Therefore, it is wrong to ask how high the savings by one generation should be to secure the well-being of the next generation. Dealing exclusively with that question will rather obscure than clarify the obligations we have to future generations.

The lower curve in figure 3 shows the HDI growth based exclusively on r_{aut} , whereas the upper curve shows the additional effect of the prevention of man-made catastrophes (r_{care}). The question as to whether each generation has an obligation to save will surely be discussed by the participants. If a savings rate is introduced in addition to the other rates, human well-being would be distributed as shown by the rolling curve.

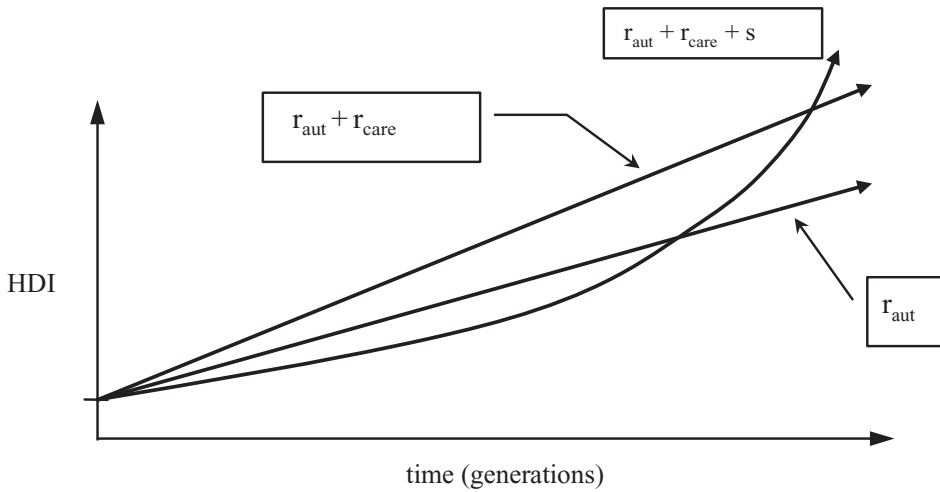


Figure 3. HDI Growth rates (r_{aut} ; $r_{aut} + r_{care}$; $r_{aut} + r_{care} + s$)

The maximisation of the average well-being might reach a higher level if each generation is obligated to save—that depends on the individual values assigned to different well-being distributions. Tables XI and XII both show different possible well-being distributions with s (note that the well-being distribution without s was shown in table X above):

Table XI. Well-being distribution ($r_{aut} + r_{care} + s$) with high average

Generations	1–100	101–200	201–300	301–400	401–500	501–600	Average
Average HDI	100	218	337	457	578	700	398
Increase	118	119	120	121	122		

Table XII. Well-being distribution ($r_{aut} + r_{care} + s$) with low average

Generations	1–100	101–200	201–300	301–400	401–500	501–600	Average
Average HDI	100	218	338	460	584	710	402
Increase	118	120	122	124	126		

Regardless of which table applies, the gathering would not oblige generations to save (in the sense of to sacrifice). Self-interested individuals would not accept an avoidable regression in well-being for the sake of increasing the average well-being of all generations. The principle of well-being maximisation is compromised by the principle that new savings are not morally required. This important result is owed to the ‘veil of ignorance.’ If we call the maximisation of well-being or benefit ‘utilitarianism,’ then the representatives of all generations under the Rawlsian ‘veil of ignorance’ would not choose exclusively ‘utilitarian’ principles of intergenerational justice. Why is this? Since time is one-directional only earlier generations can save for later ones, not vice versa. Due to r_{aut} , earlier generations are worse off than later generations regardless. If the assembly were to establish a savings system, they would only augment the degree of inequality. Since each participant knows that she might

belong to one of the earlier generations, she will not opt to further burden people of earlier times.

No generation is obliged to save for *new* investments. But what about *reinvestments*? It is important to differentiate between replacement investments and new investments. A society that only employs replacement investments (i.e. limits its rate of savings to the current level) takes care of the wear and tear on buildings, fights land erosion, and replaces knowledge that would otherwise be forgotten. It does not, however, abstain from consumption in any way to increase the number of buildings, to augment arable land surfaces, or to multiply or add to its wealth of knowledge. No investments, re-investments, and new investments (= net investments) must be distinguished in the context of intergenerational justice. Does a generation have the right to dissave if the previous generation saved? Or must the savings level be maintained at all costs? Here, the assembly would decide that no generation has the moral right to dissave. However, a succeeding generation is not obliged to save more than their predecesing generation.

It should be kept in mind that *s* must always refer to human well-being (measured on the basis of the HDI not as measured by GDP).

3.1.2.2. The principles of intergenerational justice derived from the original position under the 'veil of ignorance'

Representatives of all generations under the Rawlsian 'veil of ignorance' would ultimately agree on the following principles of intergenerational justice:

1. Maximise the average well-being of all members of all generations. This principle primarily obliges every generation to avoid wars as well as ecological, societal, and technological collapses that might significantly reduce human welfare.
2. No generation is obliged to save more than the previous generation.

My conclusions differ from Birnbacher's⁵⁷ in three ways:

1. Instead of using utilitarian subjective happiness, subjective well-being, subjective preferences, etc., I claim that an objective indicator, the HDI, should be used.
2. The role of saving (in the economic sense) for the well-being of future generations is not overrated as it is in earlier theories.⁵⁸ It would be worthwhile for social scientists, historians, and statisticians to correctly calculate the exact HDI decrease caused by specific disasters or catastrophes. Among all calamities, World War II would probably break the record.⁵⁹
3. No generation is obliged to generate net savings, even if this leads to a *smaller* average well-being for all generations than without this principle. The second principle confines the scope of the first one.

4. Conclusion

If justice is conceived as impartiality, 'veil of ignorance' theories are helpful tools for deducing principles of justice. In an intragenerational context, principles of justice are chosen by rational and self-interested individuals who have no knowledge of their role in society, their talents, their genetic endowment, their personal identities, or their natural or social advantages as long as they are under the 'veil of ignorance.' In the analogous intergenerational situation, representatives from all generations come together under the

‘veil of ignorance.’⁶⁰ They do not know which generation they will belong to once the ‘veil’ has been lifted. Nevertheless, they know the basic rules of evolution—especially that progress takes time. Each participant knows the course of history—not in detail, but in general—up to the point of his existence.

The main result of the application of the ‘veil of ignorance’ in the intergenerational context is that of the possible extent of obligations to future generations introduced at the beginning of the text (the same; the same or better; better), the application of the ‘veil of ignorance’ yields “better” as an answer. Thus, it supports the view that we should leave a better world to our descendants and it goes against the view that it suffices morally to leave behind a world that is as good as it was. Intergenerational justice means that the members of the next generation, on average, must be able to realize not an equal level of wellbeing, but a higher level. My concept, which could be referred to as ‘intergenerational justice as enabling advancement,’ requires making improvement possible for future generations.

The members of today’s generation A need not give more than they have received to the members of the next generation B, but if they give them as much of it, they will provide their descendants with the possibility to have an higher well-being (as measured by the HDI) than A. On account of ‘autonomous progress factors’—casual inventions, innovations, and improvements—each generation has a different initial position. The initial situation of later generations is normally better than that of earlier ones. Understandably, the gathered representatives will decide that no generation has the right to spoil the initial advantage of its successors with reference to a false ideal of equality. On the other hand, generational justice does not demand undue sacrifices from earlier generations for the sake of their successors. Instead of a savings rate in the sense of sacrificing consumption, each generation is obligated to avoid wars and man-made catastrophes. Each generation is nevertheless obligated to prevent dissavings.

The normative setting of our ethical obligations must not be confused with the empirical prognosis of whether future generations will have an equal or even higher HDI. According to the Is/Ought-dichotomy, I do not contradict myself by saying that future generations *should* have a higher HDI than the present generations, but that they probably *will* have a lower one. The normative and empirical level must be strictly distinguished. While our normative obligations to future generations are greater than we commonly assume, the empirical probability that we will leave behind a world with better or at least equal opportunities for future generations has dropped over the past decades. Just now, more and more states have nuclear weapons, there is man-made global warming, and we amass huge amounts of toxic waste. So today’s generation has the potential to irreversibly reduce the well-being of numerous future generations. It bears a great responsibility.

NOTES

1. The debate about our obligations towards future generations should not be confused with the question what we owe deceased people—or their descendants—as compensation for past injustices. Historical justice is often coupled with intergenerational justice, as both deal with justice in time. However, this is a matter of analytical complacency rather than reason. Historical injustice is characterized by the identification of distinct groups of descendants, at least one injured party and at least one causer of the damage, whereas intergenerational justice typically focuses on the way in which inequitable acts or social policies affect the well-being of a typical individual living in a subsequent generation.

2. Brian Barry, “Circumstances of Justice and Future Generations,” in *Obligations to Future Generations*, eds. Richard Sikora and Brian Barry (Philadelphia: Temple University Press, 1978), 243.

3. Richard T. De George, "The Environment, Rights, and Future Generations" in *Responsibilities to Future Generations. Environmental Ethics*, ed. Ernest Partridge (Buffalo, NY: Prometheus Books, 1980), 162.
4. John Locke explains that men in the state of nature are moral equals and that God has given to them, in common, the use of the earth and its resources. He claims that, under these conditions, an individual may fairly appropriate land for his own use without belying the equal status of his fellows, provided that he (a) uses rather than wastes what he appropriates and (b) leaves "enough and as good for others." Locke justifies the latter condition on the ground that a person who appropriates a resource, but leaves enough and as good for others, leaves others as well off as they were prior to the appropriation. Hence, they are not injured by his act and have no complaint against him. Given that present and future generations have equal claims to the earth and its resources, Locke's analysis can be extended to apply to the intergenerational allocation of resources. John Locke, 1689, *Two Treatises of Government*, ed. Peter Laslett. Second Treatise. (New York: New American Library, 1965), sec. 4, 309; 328–329.
5. Gregory S. Kavka, "The Futurity Problem," in *Obligations to Future Generations*, eds. Richard Sikora and Brian Barry (Philadelphia: Temple University Press, 1978), 200.
6. Eric Rakowski, *Equal Justice* (Oxford: Clarendon Press, 1991), 150.
7. Dieter Birnbacher, *Verantwortung für zukünftige Generationen*, (Stuttgart: Reclam, 1988), 220.
8. James Woodward, "The Non-Identity Problem," *Ethics* 96 (April 1986): 819.
9. Karl Marx, (1894) "Das Kapital. Kritik der politischen Ökonomie. Vol. 3," in *Karl Marx and Friedrich Engels, Werke. Vol. 25* (Berlin: Dietz, 1975), 784.
10. John Passmore, *Man's responsibility for Nature* (London: Duckworth, 1974), 91.
11. John Rawls, *A Theory of Justice* (Cambridge, MA: Belknap Press of Harvard University Press, 1971), 284–93.
12. Peter Laslett and James S. Fishkin, "Introduction. Processional Justice," in *Justice between Age Groups and Generations*, eds. Peter Laslett and James S. Fishkin (New Haven, CT/London: Yale University Press, 1992), 20.
13. The 'original position' is neither an early historical state of modern society nor a primitive near-natural lifestyle of certain groups of people, but a purely fictional thought experiment on contract theories. The factual situation, consisting of existing legal and state systems, is confronted with the 'original position' as an imagined situation without these systems. This construction was applied by Hobbes, Locke and Rousseau, for example—with very different results.
14. John Rawls, *A Theory of Justice*, 137.
15. *Ibid.*, 139.
16. It is thus doubtful whether the 'veil of ignorance' belongs to the group of 'contract theories.' At least one should make a terminological difference between 'contractarianism' and 'contractualism' as Gardiner does. Stephan M. Gardiner "A contract on future generations?" in *Intergenerational Justice*, eds. Axel Gosseries and Lukas Meyer (Oxford: Oxford University Press, 2009), 80.
17. In his book *Justice as Fairness: A Restatement*, published in 2001, Rawls rephrases the two principles of justice as follows:
 "1.) Each person has the same inalienable claim to a fully adequate scheme of equal basic liberties, which scheme is compatible with the same scheme of liberties for all;
 2.) Social and economic inequalities are to satisfy two conditions: first, they are to be attached to offices and positions open to all under conditions of fair equality of opportunity, and second, they are to be to the greatest benefit of the least-advantaged members of society (the difference principle)." John Rawls, *Justice as Fairness: A Restatement* (Cambridge, MA: Harvard University Press, 2001), 42–3.
18. Rawls, *A Theory of Justice*, 285. In line with Roger Paden, "Rawls' Just Savings Principle and the Sense of Justice," *Social Theory and Practice* 23, no. 1 (1997): 27–51, see esp. 29–35. I interpret the just savings principle to be a formal limitation on the difference principle, not an intergenerational difference principle. The difference principle, as designed by Rawls, requires goods to be distributed justly within each generation, while the just savings principle requires goods to be distributed so as to promote justice between generations.
19. Rawls, *A Theory of Justice*, 294.
20. *Ibid.*, 289–90.
21. This characterization is used by Paden in an article in which he intends to defend Rawls (Paden, "Rawls' Just Savings Principle," 27.)
22. This is true for the last three decades, cf. Richard Mervyn Hare, "Rawls' Theory of Justice," *Philosophical Quarterly* 21 (April and July 1973), 144–155 and 241–252; Brian Barry, "The Liberal Theory of Justice. A Critical Examination of the Principal Doctrines," in *A Theory of Justice*, ed. John Rawls (Oxford: Oxford University Press, 1973); Norman Daniels, ed., *Reading Rawls* (Oxford: Blackwell, 1975); D. Clayton

Hubin, "Justice and Future Generations," *Philosophy and Public Affairs* 6, no. 1 (1976): 70–83; Jane English, "Justice Between Generations," *Philosophical Studies* 31, (1977), 91–104; Dieter Birnbacher, "Rawls' Theorie der Gerechtigkeit und das Problem der Gerechtigkeit zwischen den Generationen," *Zeitschrift für philosophische Forschung* 31 (1977): 385–401; R. Routley and V. Routley, "Nuclear Energy and Obligations to the Future," *Inquiry* 21 (1978): 133–179; David Richards, "Contractarian Theory, Intergenerational Justice, and Energy Policy," in *Energy for the Future* eds. Douglas MacLean and Peter G. Brown (Totowa: Rowman and Littlefield, 1983), 131–150. Avner De-Shalit, *Why Posterity Matters. Environmental Policies and Future Generations* (London/New York: Routledge, 1995); Paden, "Rawls' Just Savings Principle," 27–51; Wilfred Beckerman, "Sustainability and Intergenerational Equality," in *Fairness and Futurity*, ed. Andrew Dobson, (Oxford: Oxford University Press, 1999), 71–92; Marcel Wissenburg, "An Extension of the Rawlsian Savings Principle to Liberal Theories of Justice in General," *Fairness and Futurity*, ed. Andrew Dobson (Oxford: Oxford University Press, 1999), 173–198; Claus Dierksmeier, "John Rawls on the Rights of Future Generations," in *Handbook of Intergenerational Justice*, ed. Joerg Chet Tremmel (Cheltenham: Edward Elgar Publishing, 2006), 72–85.

23. Rawls, *A Theory of Justice*, 287–9.

24. *Ibid.*, 139.

25. *Ibid.*, 287–9 and 139–40.

26. *Ibid.*, 140 and 292.

27. *Ibid.*, 292.

28. *Ibid.*, 289. It is not always clear which particular 'original position' model Rawls is utilizing. These three different models are usually identified in literature on the interpretation of Rawls' account, see for instance Paden "Rawls' Just Savings Principle," 38.

29. Passmore, *Man's Responsibility for Nature*, 88.

30. Brian Barry, *Theories of Justice. A Treatise on Social Justice*, Vol. 1, (London/Sydney/Tokyo: Harvester–Wheatsheaf, 1989), 192.

31. English, "Justice between generations," 93–6.

32. Paden, "Rawls' Just Savings Principle," 39.

33. For instance, John Rawls, *A Theory of Justice*, 287: "But this calculus of advantages, which balances the losses of some against benefits to others, appears even less justified in the case of generations than among contemporaries." Or, on page 293: "We can now see that persons in different generations have duties and obligations to one another just as contemporaries do."

34. Rawls, *A Theory of Justice*, 140.

35. *Ibid.*, 284.

36. Rawls, *Justice as Fairness*, xv.

37. John Rawls, *Political Liberalism*, (New York, NY: Columbia University Press, 1993), 273–5, esp. footnote 12 on 274.

38. Rawls, *Justice as Fairness*, 160. Rawls acknowledges that this principle is stated independently by English, "Justice between generations," 98.

39. Why act in an other-regarding manner at all? The question of what factors are necessary for this – the 'motivation' problem, as it is called nowadays – has been extensively discussed in the ethical systems of Plato, Spinoza, Hume, and Kant, and this everlasting debate reverberates in the recent dispute between internalists and externalists. For a good summary, especially with regard to future generations, see for example, Dieter Birnbacher "What Motivates Us to Care for the (Distant) Future?" in *Intergenerational Justice*, eds. Axel Gosseries, Lukas Meyer (Oxford: Oxford University Press, 2009), 273–300, with further references.

40. Paden "Rawls' Just Savings Principle," 41 states: "Therefore, Rawls' 'ideal' argument for the just savings principle seems as weak as his "adjusted motivational" argument."

41. Is the following reasoning susceptible to criticisms like: "Rawls didn't mean it like that."? This criticism would miss the point because in the following text I do not analyse Rawls. Rather, the following fictional exchange between representatives of all generations is my own configuration. To some extent, Birnbacher, "Rawls' Theorie der Gerechtigkeit und das Problem der Gerechtigkeit zwischen den Generationen;" Beckermann "Sustainability and Intergenerational Equality;" and Ernest Partridge, "Beyond 'Just Savings,'" unpublished manuscript, 1978. www.igc.org/gadfly/papers/swsabf.htm took a similar approach. Although I arrive at different conclusions, I am grateful for their intellectual groundwork.

42. These two terms are used synonymously by some writers, especially economists. I use 'rational' in a different sense than 'self-interested.' I call an actor 'rational' if he can clearly name his preferences and bring them into a consistent order (transitivity axiom). Self-interested behaviour serves to satisfy one's own interest. In my terminology, an altruistic person who can clearly order his own preferences but decides to give somebody else's preferences more weight, can also be called 'rational'.

43. Cf. Barry, *Theories of Justice*, 321.

44. It would be worthwhile to put model 2 (what Rawls calls the ‘present time of entry interpretation’) to the test also, but this would be an article of its own.

45. The exact number of generations cannot be assessed as long as the anthropological dispute persists on when the first primates of the family Hominidae, and the only living species of the genus Homo, reached anatomical modernity. For the purposes of this article, we can disregard the quibbles between anthropologists.

46. The HDI is the only international instrument for measuring wellbeing that has been accepted on the UN level. That gives it a legitimation the other well-being indices lack, as they are often only used by individual institutes or even individual researchers. The HDI has been developed by a large group of researchers from all cultures.

47. Sometimes, the first aspect is not mentioned at all. Dierksmeier describes the ‘veil of ignorance’ as follows: “One is to imagine all representatives who formulate the social contract and decide about basic matters of welfare distribution behind a veil of ignorance that obfuscates their view so they cannot find out about their future role in society.” Claus Dierksmeier, “John Rawls on the rights of future generations” in *Handbook of Intergenerational Justice*, ed. Joerg Chet Tremmel (Cheltenham: Edward Elgar Publishing, 2006), 73.

48. Own graph, data taken from: UNDP, *Human Development Report 2011*. (Basingstoke: Palgrave Macmillan, 2011). <http://hdr.undp.org/en/reports/global/hdr2011/download/> Angus Maddison, *Monitoring The World Economy 1820 – 1992*. (Paris: OECD, 1995). Indur Goklany, *The Improving State of the World*, (Washington, D.C.: CATO Institute, 2007).

49. Real HDI values are tiny and uneven. To simplify calculations in this article, real HDI numbers are reconstructed into fictional ones, which are easier to work with. It is important to remember that in table I, the HDI value for the Herdsman (100) is not the cumulative HDI of the members of generations 1–100, but the average of the individual HDIs of the first one hundred generations.

50. There is an absolute minimum for the HDI, because life expectancy (which accounts for one third of the HDI) cannot sink below a certain level. Otherwise reproduction would not be possible and the human species would simply become extinct.

51. Historically, the HDI did not increase steadily, but rather rose exponentially in the last few centuries. It is depicted as a straight line here for the sake of simplicity.

52. Tim Mulgan, “Neutrality, Rebirth and Intergenerational Justice,” *Journal of Applied Philosophy* 19, no. 1 (2002), 12.

53. Partridge, “Beyond ‘Just Savings,’” 4.

54. The wheel was invented by the Sumerians in Mesopotamia (modern Iraq) in the fifth millennium BC.

55. Annette Baier, “The Rights of Past and Future Persons,” in *Responsibilities to Future Generations. Environmental Ethics*, ed. Ernest Partridge (Buffalo, NY: Prometheus Books, 1980), 173.

56. In economic theory, saving = investing.

57. Already in 1977, Birnbacher published two lexicographically ordered principles: “1.) Maximise the expected value of the average of the average utility of the generations (respectively, minimise the expected value of the average of the average grief of the generations). 2.) Minimise the risk of drastic impairments for the less-advantaged generations in case you belong to the relatively least-advantaged generations by choosing out of two saving programs, which are indifferent concerning (1), the one which helps the least-advantaged—according to their average utility—generation the most.” Birnbacher, “Rawls’ Theorie der Gerechtigkeit und das Problem der Gerechtigkeit zwischen den Generationen”, 396.

58. For example, Mulgan, “Neutrality, Rebirth and Intergenerational Justice,” 12.

59. What would it have cost to prevent World War II? Not much, in economic terms. Even today, at the dawn of the 21st century, the arms race accrues costs instead of saving them. At any rate, principle 1 obliges every generation to avoid disasters even if it actually does cost something to prevent them (for instance global warming).

60. There are various possible points of origin for the ‘veil of ignorance’ (model 1) and consequently for the number of generations up to the present to be taken into account. For example, one could choose the beginning of the existence of man (several hundreds of thousands of years B.C.). Alternatively, one could justify choosing the Neolithic Revolution (as I did) or the beginning of the Industrial Revolution (ca. 1750). The same can be said of the ending points of time in Model 1, except that in this case we are dependent on speculations. Numerous variations of the model presented in my article are thus possible. Hopefully other scholars will take up the thread and vary the model assumptions. This is the opening of a broad field of research.

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