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Intergenerational Cooperation and Justice between Age Groups

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Abstract: In this paper, I bring together the problems of justice between age groups and intergenerational cooperation in light of real-life demographic trends. I begin by presenting a simple model of intergenerational cooperation based on indirect reciprocity and show how cooperation can break down due to exogenous factors, including demographic change. I use the model to make the argument that principles for justice between age groups must be sensitive to the stability of intergenerational cooperation. I illustrate my thesis by considering the debate between distributive and relational egalitarians on justice between age groups.

Keywords: intergenerational cooperation, indirect reciprocity, justice between age groups, intergenerational justice, demographic change, relational equality, distributive equality

JEL Classification: J110, J180, H55, O15

I. Introduction

For the last 150 years, global life expectancy has been increasing by around six hours *every day*. This is unprecedented in human history. Average life expectancy at birth has increased from the mid-30s to the low 70s, with some countries now having life expectancies in the mid-80s. This is due

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both to many more children surviving infancy and to dramatic reductions in late life mortality. At the same time, fertility rates have collapsed; on average, the total fertility rate today is 2.49, with the average in developed countries 1.67—well below the replacement rate of 2.1. While mid-income and developing countries have lagged behind developed countries, all are undergoing the same trends: to various degrees, they also experience increasing life expectancy and falling fertility. This trend is known as the *demographic transition*.[1]

As a result of this transition, populations in developed countries are aging rapidly: with falling fertility rates and declining late-life mortality, they increasingly have a shrinking proportion of younger people and an ever-growing proportion of older people, including increasing numbers of the "oldest old." With no historical experience to rely on, we do not know what the resulting "gray" societies will look like. Neither do we know what will happen to less developed countries which might grow old before they had a chance to become affluent.

The demographic transition raises difficult questions for theories of justice in philosophy. One set of questions concerns *justice between age groups*. Should social policies aim at equalizing welfare (or resources, opportunities, or whatever the appropriate "currency" of distribution is) between members of different age groups? Alternatively, can unequal distributions between the young and the old be justified?[2]

Another set of questions concerns *justice between generations*. What are the obligations of currently living people towards their descendants? What share of their social and natural resources should they save for future generations? More generally, what is the moral basis of our obligations to future generations who cannot harm or benefit us?[3]

There are two notable aspects of the philosophical debates on justice between age groups and generations. First, the problem of justice between age groups and the problem of intergenerational justice are usually treated separately: theories of justice between contemporaneous age groups usually ignore questions of justice between non-contemporaneous generations, and theories of justice between present and future generations usually ignore justice between present age groups. Second, both sorts of theories tend to ignore demographic factors. Theories of justice between age groups tend to assume that all birth cohorts are of the same

[1] For an overview, see Harper (2016).
[2] See, for instance, Bidadanure (2021), Daniels (1988), McKerlie (2013), and Wareham (2022).
[3] See, for instance, the papers in Gosseries and Meyer (2009) and Laslett and Fishkin (1992).

size and have similar demographic characteristics (for instance, there are no differences in life expectancy between them).[4] Theories of intergenerational justice, for their part, are preoccupied with formulating principles of justice to determine what mix of saving, investment, and consumption current generations ought to choose, rarely acknowledging the relevance and potential impact of demographic trends on these principles—and, more broadly, on institutions of intergenerational cooperation. The consequences of the demographic transition for both the size and the composition of populations are for the most part missing from the philosophical debate.[5]

It would be crucial for theories of justice to take these consequences into account. The demographic transition has had—and will continue increasingly to have—a massive impact on the composition of populations by changing their age structure. This has obvious bearing on justice between age groups. The transition will also have an increasingly important impact on the size of populations. This has significant implications for the institutions of intergenerational cooperation that allocate resources between generations.

This paper aims to bring together the problems of justice between age groups and intergenerational cooperation in light of real-life demographic trends. It argues that there are important connections between the two sets of problems, especially when demographic trends are taken into account. In particular, the demand that intergenerational cooperation be stable puts limits on the principles that are admissible in considering redistribution between age groups. Since the benefits of stability are uncontroversial, my argument can advance the debate without relying on any controversial moral intuitions. I illustrate this point by applying it to the disagreement on justice between age groups between distributive and relational egalitarians.

The argument proceeds as follows. Section II introduces the problem of intergenerational cooperation. Section III presents a simple model that

[4] A birth cohort is a group of people born at a similar time (e.g., in the same year or decade). Thus, each person belongs to only one birth cohort, but many age groups as time passes. (Note that I use *birth cohort* and *generation* interchangeably.)

[5] For an exception, see Gosseries (2022). In addition, there is a large literature on population ethics, starting from Parfit (1984), but a lot of it is concerned with issues in formal value theory. For some applications, see Broome (2004) and Arrhenius *et al.* (2022). In contrast, demographic change and transfers between age groups and generations have been discussed extensively in economics, although primarily not from the normative perspective that I take in this paper. See, for instance, Cigno (1993); Cipriani (2014, 2018); Fanti and Gori (2012); van Groezen and Meijdam (2008), and especially Musgrave (1981). A recent discussion that tries to bridge the concerns of philosophers and economists is Dasgupta (2019).

incorporates demographic change. Section IV explains how the model might be relevant to real-life demographic and political trends. Section V returns to the problem of justice between age groups and applies my argument to the debate between distributive and relational egalitarians. Section VI concludes.

II. INTERGENERATIONAL COOPERATION

All human societies, from small tribal bands to large-scale industrialized nation states, require extensive cooperation to function. While cooperation can create enormous individual and collective benefits, it is also often individually risky, costly, or both. A standard illustration of the problem of cooperation is the Prisoner's dilemma—a game in which two players would both be better off if they cooperated, but because defection is the dominant strategy, they will both defect. If the game is played only once, mutual defection is the only equilibrium.

Cooperation, however, can emerge in repeated interactions when it can be sustained by *reciprocity*. Players can reward cooperators by cooperating themselves and punish defectors by withholding cooperation. They can, for instance, use a strategy like *tit-for-tat*, in which a player starts off by cooperating and then chooses the action that the other player chose in the previous round. Or they can use the *grim strategy*, on which a player will cooperate as long as their opponent cooperates, but defect in perpetuity once their opponent defects.

There is one form of cooperation, however, where this model of cooperation runs into difficulties. It is the case of *intergenerational cooperation*. If cooperation is sustained by mutual reciprocity, then it seems that different generations should not be able to cooperate, and for simple reasons. For instance, our generation benefits enormously from the cooperative efforts of generations of the past, but we can't reciprocate. Similarly, we can bestow great benefits on our distant descendants, but they can't benefit us in any way. Closer to my interests in this paper, cooperation is also problematic when an earlier, older generation receives support from a later, younger generation, but it can't reciprocate, since it will be gone by the time the later generation would need to receive similar support.

To see this, suppose there are two generations: old people who need support from others, and young people who can provide it to them. Young people can support the old by paying for their pensions and health care, for instance, but they will not receive any benefits from *those* old people,

since by the time they will become old, the earlier generation will be gone. This is known as the *nonreciprocity problem*.[6]

A prominent solution to the nonreciprocity problem is to adopt a broader notion of reciprocity. The idea is that reciprocity can also be *indirect*. It need not be the case that your own benefit comes from those whom you benefit. That is, each generation can behave cooperatively towards earlier generations based on the *expectation* that later generations will behave cooperatively towards it as well. The young cooperate by supporting the old, not because the old can reciprocate, but because they expect a later generation to support them when they themselves become old. This way, all generations take part in a system of cooperation: each generation contributes by supporting its "upstream" neighbors and benefits from the support of its "downstream" neighbors.

Such cooperative schemes are actually common and familiar. Pay-as-you-go pension systems, for instance, are based on indirect reciprocity. Currently active birth cohorts support older, inactive birth cohorts by funding their pensions. They, in turn, will be supported when they are not active any more by the contributions of later birth cohorts. Public health care systems work the same way, given that people tend to need most health care services when they are old and do not pay into social insurance any more. For instance, in the United States, Medicare benefits those who are over 65, but it is funded by the payroll taxes of those who currently do not benefit from the program at all.

Joseph Heath explains the idea of indirect reciprocity with the following example.[7] Imagine eight people seated in a circle, facing inwards. Each person has two tokens, one worth $2 and the other worth $5. Going clockwise, each person can choose between placing the $5 token in the account of the person sitting on their left or placing the $2 token in their own account. At the end of each round, the tokens are collected and the amount in each person's account is recorded. In this game, placing the larger amount into your neighbor's account is the cooperative strategy; keeping the smaller amount in your own account is the non-cooperative strategy. If everyone follows the cooperative strategy, the group as a whole earns $40 in each round, with each player ending up with $5. If everyone de-

[6] For an overview, see McCormick (2009). See also Barry (1989, 189), Goodin (1985, 177), Gosseries (2009) and Page (2007). One might point out that the older generation has already cooperated by raising the younger generation. Now it is the younger generation's turn to reciprocate. But the problem is that the older generation won't have another chance to reward or punish the younger generation. The young and the old are in a one-shot Prisoner's dilemma and hence their cooperation cannot be explained by the standard model of cooperation.

[7] See Heath (2013) and Heath (Forthcoming) for a more recent discussion.

fects, the group as a whole collects only $16, with each player ending up with $2. If only one person defects and everyone else cooperates, the defector ends up with $7, the person on her left ends up with $0, and everyone else ends up with $5.

Suppose also that everyone adopts a version of the grim strategy: if the person on their left defects, they will defect on him in perpetuity in future rounds. It can be shown that, technically, this set of strategies is an equilibrium outcome of the game, and results in everyone cooperating in every round.[8] Thus, cooperation can be achieved and sustained, even though the kind of mutual, direct reciprocity that can be present in repeated Prisoner's Dilemmas is missing from this game: the players who retaliate against defectors are not identical to those whom defectors exploit. All players benefit from the action of the player to their right, but they must rely on the whole group, including the person to the defector's right, to deter defection. Even though there is no direct reciprocity between the players, the group as a whole is clearly engaged in cooperative action.

To mimic the structure of intergenerational cooperation, suppose that after each round, one player is removed from the game. Everyone else is moved one place to the left, and a new player is added to the beginning of the queue. We can say this player has just been born, the player who is removed has just died, and everyone else has aged. As before, each player can choose to keep her $2 token or transfer her $5 token to the player on her left. And just as before, each player can adopt the grim strategy: each defects in perpetuity once the player on their left does not cooperate. The only complications are that in each round the first player ends up with $0 (since there is no player on her right), and the last player defects, keeping her $2 token (since there is no player on her left). The first player cooperates in the first round since she cannot gain by defecting (she may end up with $5 rather than $2 in later rounds if she cooperates). Moreover, the last player's defection will not start a cascade of defection, as she is not present any more in the next round when her defection could be punished.

As a result, the group ends up with $37: the "oldest" player gets $7, the "youngest" player gets nothing, and everyone else gets $5. Using the grim strategy, the players can maintain an ongoing system of cooperation where "younger" players support "older" players. The older players, however, cannot reciprocate by directly benefiting or harming younger players. Nevertheless, younger players benefit older ones in the expecta-

[8] For details, see Fudenberg and Tirole (1991, 171–172).

tion that they will be benefited by even younger players down the line. The system of cooperation is maintained by indirect reciprocity. The game can be used as a simple model of intergenerational cooperation. It captures the central elements of intergenerational redistribution in major social institutions like pay-as-you-go pension schemes or health care systems.

Importantly, the central idea is *not* that by using the grim strategy, players punish non-cooperators. In repeated Prisoner's dilemmas, when I defect on you, it is in your interest to punish me by withholding cooperation, since even though you might forgo a benefit by defecting, you will also avoid a greater loss (you avoid being exploited). Players in the intergenerational game cannot punish those who defected on them. Rather, as Heath argues, defection by any one of the players starts a cascade of non-cooperation down the line. The first player who is a victim of defection has to choose between ending up with $0 (since the defector on her right withheld the $5 token) and ending up with $2 (keeping her own token). She will thus choose to defect herself, and the system of cooperation will unravel. But the cascade of non-cooperation is not due to punishment; as Heath puts it, "it merely shifts expectations away from cooperation toward defection in response to free riding" (2013, 57). Defection does not just result in the punishment of the defector, but in the total breakdown of cooperation.

III. Intergenerational Cooperation and Demographic Change

For the purposes of my argument, I am going to adopt the indirect reciprocity model of intergenerational cooperation. However, I'm also going to relax one of its simplifying assumptions. In Heath's example, each player represents a birth cohort, and it is assumed that each birth cohort makes the same sacrifice and obtains the same benefits in each round of the game. Thus, the model assumes a population with a fixed size (one player dies and another is born each round) and with a fixed age composition (each age group is the same size). In other words, there is no demographic change whatsoever.

In order to examine the role of demographic factors, I'm going to use a different, but similarly simple model. It is illustrated in Figure 1. In the table, A, B, C, . . . , represent successive birth cohorts; the vertical dots indicate earlier and later cohorts (I will omit the dots in subsequent figures). Each birth cohort survives for two periods in time. Its members are active (young) in the first period, and inactive (old) in the second. (Childhood is ignored for simplicity.) As you move right along the columns, denoted by

	t_1	t_2	t_3	t_4	t_5
⋮	2				
A	4	2			
B		4	2		
C			4	2	
D				4	2
⋮					4

Figure 1: No intergenerational cooperation

	t_1	t_2	t_3	t_4	t_5
A	4–1	2+3			
B		4–1	2+3		
C			4–1	2+3	
D				4–1	2+3

Figure 2: Intergenerational cooperation

$t_1, t_2, \ldots$, later birth cohorts replace earlier ones. To keep matters simple, only two cohorts—a young and an old one—are present in each period.

In Figure 1, there is no intergenerational cooperation. Each birth cohort has a per capita payoff of 4 in the period in which its members are young and active, and a payoff of 2 in the period its members are old and inactive. The overall, or lifetime, per capita payoff for each cohort is 6.[9]

Next, suppose there is an institution of intergenerational cooperation. Each cohort can choose to take part in the cooperative scheme by sacrificing some of its payoff to benefit the earlier cohort. It can forgo some of its payoff in the period in which it is active in order to receive a greater payoff in the period in which it is inactive. For instance, it can receive a payoff of 3 instead of 4 in the first period and a payoff of 5 rather than 2 in the second. (Suppose the units of payoff each of its members contribute yield greater benefits to their recipients; in other words, taking away a certain amount of resources from members of one generation can generate greater benefits to members of another generation). For illustration, see Figure 2. Each cohort receives a lifetime per capita payoff of 8, rather than the 6 its members would receive in the absence of intergenerational cooperation.

[9] In each example, I assume each member of a cohort gets the exact same payoff and has to make the exact same sacrifice. This way, I can simply speak of a cohort's payoff and a cohort's choice. A cohort's choice is a collective action by its members, assuming for simplicity that there is no free riding.

	t_1	t_2	t_3	t_4	t_5
A	4–1	2+3			
B		4–1	2+4		
C			4–2	2+3	
D				4–1	2+3

Figure 3: Moderate intergenerational conflict

Cooperation is sustained by indirect reciprocity: each generation or cohort is willing to accept a smaller payoff in the first period in order to secure a greater one in the second. If any cohort defects in the first period, the system of cooperation breaks down: the next cohort in the sequence will refuse to contribute in the second period, unleashing thereby a cascade of defection down the line, eventually leading back to the situation depicted on Figure 1.

So far, this is just like the standard indirect reciprocity model. But suppose that, for some reason, one cohort needs to make a greater sacrifice than others during its active period, while it will not receive a greater payoff in its inactive period. Moreover, the previous cohort that is inactive in the period in which the sacrifice is made receives an even greater payoff than it would receive if only the normal sacrifice were made. For instance, suppose that cohort C has to sacrifice 2 units instead of 1, with the result that the payoff of B, the contemporaneous cohort, increases to 6 from 5 in this period. All other cohorts receive an overall payoff of 8, just as before, but the overall payoff of cohort C is only 7, and the overall payoff of cohort B is 9. This is illustrated on Figure 3; the action takes place during t_3.

There can be many reasons for the unequal distribution of benefits between B and C in t_3. Perhaps cohort B has greater political power than cohort C and is able to exploit its advantageous position to extract a greater contribution to the cooperative scheme from C. Perhaps B is an unusually large cohort, and thus it needs greater contributions from the active members of the population to maintain an adequate standard of living. It is even possible that no individual member of cohort B enjoys greater benefits than members of A or D, but collectively the payoff to B as a whole is greater than to any other cohort.[10]

Whatever the reason, the example raises a problem of *fairness* for intergenerational cooperation. The benefits of the cooperative scheme are distributed unequally between birth cohorts B and C. The unfairness is

[10] In this case, the per capita payoff for B at t_3 would be only 2+3, as before. Since my argument focuses on the sacrifice that C has to make, this makes no difference to the conclusions.

	t_1	t_2	t_3	t_4	t_5
A	4–1	2+3			
B		4–1	2+5		
C			4–3	2+3	
D				4–1	2+3

Figure 4: Extreme intergenerational conflict

readily apparent in the case where cohort B exploits cohort C (by using its political power, for example). But arguably it is also unfair when the greater payoff is due merely to the greater size of B. Even if no individual member of B benefits at the expense of any member of C, there is still unfairness if cohort C has to make an uncompensated sacrifice. Compared to other cohorts, it must carry greater burdens for maintaining the cooperative scheme.

To be sure, cohort C does better by cooperating than by defecting. Its overall payoff is 7, which is greater than the payoff of 6 that it would receive in the absence of the cooperative scheme. But suppose now that C has to make an even greater sacrifice at t_3: it has to transfer an even greater proportion of its payoff to the currently inactive birth cohort. See Figure 4.

In this example, the lifetime payoff of cohort B is 10, and the lifetime payoff of cohort C is 6. Thus, besides the concern of fairness, another problem arises. It is a problem of *stability*. Social cooperation, in addition to being fair, must also be stable, and a theory of justice must contribute to the stability of social institutions, as Rawls emphasized. In addition, stability is in part a function of people's sense of justice: just social institutions generate their own support by bringing forth people's willing cooperation.[11]

Since the payoff of cohort C in this example is no greater than its payoff would be in the absence of cooperation, it has nothing to gain from contributing to the cooperative scheme. Therefore, C will be indifferent between cooperation and defection. In fact, C may defect even before its cooperative payoff becomes small enough to match its non-cooperative payoff. For one thing, members of cohort C may also care about the distribution of benefits between the two periods of their lives. In the absence of cooperation, they would receive 4 in t_3 and 2 in t_4. In the present example, they would receive 1 in t_3 and 5 in t_4. Members of cohort C may prefer the more equal distribution of benefits within their lives, even if the overall benefits are the same. Moreover, even if the cooperative payoff was

[11] Rawls (1999, 5–6, 119).

slightly greater, they might still prefer the smaller non-cooperative payoff because of the positive value they give to equalizing benefits between periods in which they are alive. Consequently, the problem of stability is likely to arise even before the cooperative payoff falls to the level of the non-cooperative payoff, as long as people give some value to equality within their lives.

Second, the concern for fairness may hasten the appearance of the problem of stability on the scene. In economic experiments, it has been found that people are willing to forgo benefits if they feel that their distribution is unfair. For an example, consider the Ultimatum game. In this game, one player is asked to propose a division of some monetary prize between himself and a second player. The second player can either accept the proposed division, in which case the two players get the prize divided in the proposed way, or reject it, in which case neither player gets anything. Even though the alternative is to walk away with nothing, people regularly reject proposals in which they are offered a share that is felt to be too low. They consider such offers unfair, and they are willing to make sacrifices in retaliation for unfair offers.[12]

In the example described on Figure 3, cohort C's payoff is greater than it would be in the absence of intergenerational cooperation. Its members benefit overall even if they have to make a substantial sacrifice in their active period. However, just as people reject unfair proposals in Ultimatum games, members of C may reject an arrangement in which they have to make a substantial sacrifice for which they are only partly compensated, even when they still would end up better off overall. They may consider the arrangement unfair. Thus, they may refuse to cooperate even if that leads to the complete breakdown of the system of intergenerational cooperation. The problem of unfairness can lead to—or even create by itself—the problem of stability.[13]

IV. A World Familiar to Us?

It is central to my argument that C's defection cannot be explained by an attempt to benefit at the expense of others. Unlike defection in a Prisoner's dilemma—or, for that matter, in Heath's model of intergenerational

[12] For an overview of the Ultimatum game and the experimental results, see Camerer (2003).

[13] Thus, stability is a broader concept than *sustainability*—roughly, the financial viability of an institution of intergenerational cooperation across time. Most discussions, especially in economics, focus on the sustainability of such institutions (for instance, pension systems). But stability encompasses more than just sustainability. For one thing, as I argue in this paper, justice between age groups is a determinant of stability.

cooperation—it is not motivated by the aim of securing a greater payoff by free riding on the cooperative efforts of others. You might even say that C's defection is purely defensive. Its goal is to *avoid* being exploited rather than to exploit others. But C's defection is not a response to defection by any other player either. No player or cohort defects against C.

Instead, in the case depicted on Figure 4, C's defection is a rational response to the *cooperation* of others, given that the sacrifices cohort C has to make within the cooperative scheme leave it no better off than not cooperating. In less extreme cases (like the case of moderate intergenerational conflict depicted on Figure 3), defection may be felt, by members of cohort C, to be the appropriate moral response to unfair terms of cooperation. It is an example of non-cooperative behavior as the morally right response to unfair but cooperative behavior on the part of others.

Even more intriguingly, the system of cooperation can break down even though there is no one who attempts to free ride on the cooperative behavior of others. To be sure, it is cohort B that triggers the defection of C; but as I have already hinted at, B's triggering the defection of C need not be a consequence of an attempt to benefit at the expense of C. Instead, it may be an *unintended side-effect*. No member of generation B need attempt to exploit any member of generation C, yet members of C may withhold their cooperation.

In other words, B's triggering C's defection can happen due to *exogenous factors*. There are at least three groups of factors that can play a role, and the breakdown of cooperation may be the result of any combination of them.

The first group of factors is demographic. One possibility that I already mentioned is that cohort B may be especially large. This cohort may form a "demographic bulge" as a result of falling newborn and childhood mortality rates, followed by a drop in fertility rates. The drop in fertility, in turn, may result in smaller subsequent birth cohorts, leading to an increased old-age dependency ratio just at the time when these cohorts enter their active period. Thus, a subsequent cohort like cohort C has to contribute at a higher level in order to maintain an adequate standard of living for members of cohort B. The result is increasing transfers from the young to the old, which can threaten the stability of intergenerational cooperation and lead to a sense of unfairness on the part of the young.

Population aging can have the same effect. Suppose that all generations are roughly the same size. However, cohort B experiences rapidly falling old-age mortality, and members of this cohort survive many years

more than their predecessors. As a result, members of cohort C must increase their contributions to maintain an adequate standard of living for members of cohort B. This results in increasing transfers from the young to the old, threatening the stability of intergenerational cooperation.

Falling fertility rates can work the same way. Even if cohort B is no larger than earlier cohorts, and its life expectancies are also similar to earlier generations, it may have a much lower fertility rate. As before, the result is a smaller subsequent cohort that struggles to fulfill its role in the system of cooperation.

Migration adds considerable complexity to the effects of demographic trends. Migrants tend to be younger and have higher fertility rates than the population of target countries. Thus, high levels of immigration may counterbalance some of the effects of population aging, even though they are unlikely to fully prevent them.[14] Immigrants may also contribute to the stability of intergenerational cooperation, given that they are typically in their active period. However, the impact of immigration is less clear on the long run. Moreover, at the same time, high rates of *emigration* may accelerate population aging in source countries. Thus, migration complicates demographic trends.

Notice that these factors may work in tandem. Therefore, none of the demographic changes have to be overwhelming in itself, yet they can add up to result in changes to the pattern of intergenerational redistribution that are sufficient to threaten the stability of the intergenerational cooperative scheme. Cohort B need not be substantially larger than earlier cohorts if its members also have an increased life span and low fertility rate. This is not unlike the situation in which many developed countries are currently in.[15]

For instance, many developed countries show a pro-elderly bias in social spending, based on the ratio of old-age-related benefits (general and disability pensions, transfers in kind, early retirement, etc.) and other social spending (including family benefits, income maintenance, unem-

[14] See Harper (2016, 157), and the references therein.

[15] For a general overview, see Harper (2016); for the low-fertility trap hypothesis, see Lutz *et al.* (2006); for a somewhat more optimistic picture about the effects of low fertility and population aging, see Lee *et al.* (2014); and for an argument that these changes combine into falling population levels, which in turn leads to the problem I'm discussing, see Bricker and Ibbitson (2019). It has also been argued that arresting the demographic transition by pro-natalist social policies seems to have little or no effect at considerable costs (Gauthier 2007). A further factor that I cannot consider here is that fertility is affected by the institutional context; for instance, it has been argued that the very existence of pension schemes may affect fertility. See, for instance, Fenge and Scheubel (2014).

ployment compensation, educational spending, and so on). The bias is particularly strong in countries like Poland, Italy, Greece and Japan. Italy and Japan are also among the demographically oldest societies today.[16]

The second group of factors is technological. Health care costs are rising everywhere, and one of the major factors behind their growth is benefit expansion: an increasing range of services are available in health care systems, and with longer life spans, more services are used by the elderly. With continuing biomedical advances and breakthroughs, benefit expansion is likely to accelerate. As mortality continues to fall, disability may be "compressed" towards the end of life; at the same time, falling mortality may lead to an increase in morbidity and disability. The net effect may be longer periods at the end of life when people live with disability and chronic health conditions, fueling a further increase in health care costs for the elderly.[17] This matters because it has been argued that already a major contributor behind increasing health care costs are "death-related costs": that is, expenditures in the last year before death which can be up to 15 times higher than they are for those who survive.[18]

Falling productivity growth and slow economic growth in general may exacerbate the problem. As the old-age dependency ratio rises, the burdens of active cohorts to support health care and pension systems will also increase.

The third group of factors is political. Members of different age groups tend to have different political preferences, and the discrepancies in the size and political participation of different birth cohorts may result in policies that primarily benefit the old. This may have implications not only for specific policies like pension reform, but on equality of opportunity between different birth cohorts in general. In particular, underinvestment in education, lack of affordable housing, and unemployment may affect the young disproportionately.[19] In recent years, there have been calls

[16] For an overview, see Vanhuysse and Tremmel (2018). On the other hand, some similarly old societies, like Sweden and Germany, exhibit weaker pro-elderly bias.

[17] For a brief overview of the "compression of morbidity" and "expansion of morbidity" hypotheses, see again Harper (2016, 85–88).

[18] See Marino *et al.* (2017). Note that there is some controversy about the extent to which population aging drives the increase of health care costs: some health economists argue that its effect is much smaller than usually assumed (e.g. Zweifel *et al.* 1999). For a general overview, see Bongaarts (2004).

[19] For implications on pension reform, see, e.g., Barr and Diamond (2008) and Pamp (2015). Consider also that "currently, half the world's population is under age 25, with some 1.2 billion aged between 15 and 24. This is the largest youth cohort ever to transition into adulthood. Youth represents one-quarter of the global working-age population, but accounts for 40 per cent of total world unemployment" (Harper 2016, 90).

for unconventional forms of redistribution to address intergenerational wealth inequalities.[20]

As this brief survey shows, the factors that I have listed are not unfamiliar to us. In fact, in some combination they characterize most countries and regions of the world. The problems for the fairness and stability of intergenerational cooperation are fast becoming pressing practical challenges. They also have direct implications to the problem of distributive justice between age groups.

V. Justice Between Age Groups

Intergenerational cooperation is in the interest of present and future generations alike. Maintaining the cooperative scheme benefits all of them, and if it breaks down at any point of time, all future generations may be harmed. Simple models of intergenerational cooperation ignore the fact that exogenous factors—including demographic trends, technological change, and political power imbalances—can introduce instability into the system. I have argued that one central aspect of the problem of intergenerational cooperation is justice between age groups: the way resources are allocated between present age groups affects the fairness and stability of the institutions of temporally extended intergenerational cooperation. It is surprising therefore that to date, the topics of intergenerational cooperation and justice between contemporaneous age groups have been treated entirely separately. What I have tried to show is that there are important connections between the two.

Recognizing the link between intergenerational cooperation and justice between age groups leads to what I shall call the *Stability requirement*. It is an application of one of John Rawls's arguments in his work on the theory of justice, known as the strains of commitment (1999, 153). Rawls argues that people would not accept principles for the regulation of basic social institutions to which they could adhere only with great difficulty. That is, acceptable principles of distributive justice do not put such burdens on some that they cannot carry, for otherwise the system of social cooperation would break down. When, in his thought experiment, people consider different principles (without knowing their own identity and therefore how the principles would affect their own prospects), they must consider whether they can maintain their commitment to those principles even if their circumstances turn out to be unfavorable. Rawls himself applies the idea to the problem of justice between generations: the parties

[20] For instance, Halliday (2023) proposes a delayed housing wealth tax. See also Bidadanure (2021).

(to the agreement on principles of justice) "ask what is reasonable for members of adjacent generations to expect of one another" (1999, 255) when they search for a principle of just savings between generations.

Analogously, the Stability requirement places limits on the extent of transfers between age groups. No currently active generation should be required to make transfers to the inactive generation that are burdensome to the degree that they threaten the stability of ongoing intergenerational cooperation. At the same time, no generation should end up in a very bad position in its inactive period. Thus, the requirement applies in both directions: "downstream," by putting limits on what the currently inactive generation can reasonably expect from the currently active generation, as well as "upstream," by putting limits on what the currently active generation can reasonably expect from the currently inactive generation. The limits ensure that resource transfers between age groups do not destabilize the cooperation of the currently active generation, that the demands of the currently inactive generation do not undermine the system, and that the currently active generation can expect that it will not end up in circumstances later in which it does not enjoy an adequate standard of living.

Consequently, the Stability requirement puts a *constraint* or *evaluative criterion* on principles of justice between age groups. It limits the set of principles that are admissible by ensuring that they do not turn out to be overly demanding for any group and allows them to be evaluated in terms of their contribution to the maintenance of stability. It is able to do these, moreover, without relying on controversial moral premises, since every generation agrees that maintaining the system of intergenerational cooperation is essential to its interests.

Here's an illustration of how the requirement might be put to work for resolving some of the disagreements in the debate on the demands of justice between age groups within egalitarian theories. The disagreements are between defenders and opponents of "complete life" egalitarianism, and between distributive and relational egalitarians.

One view among egalitarians is that equality should obtain between complete lives: what matters is how well, compared to others, a person's life goes overall.[21] On this kind of "complete life" egalitarian view, from the point of view of equality it makes no difference how benefits and burdens are distributed within people's lives as long as there is equality with respect to the overall value of those lives. In the context of justice between age groups, there can be large inequalities between periods (such as the

[21] See Rawls (2001, 55), Nagel (1979), and McKerlie (2013, ch. 2).

active and inactive periods in my examples) as long as all generations end up equally well off.

Consider the conflict between cohorts B and C again. In my discussion, I have assumed that the problem of fairness arises because cohort C has to make a greater sacrifice than other cohorts for the benefit of B during its active period. Since it will not receive a greater payoff in its own inactive period, it will be worse off in terms of its lifetime payoff than other cohorts. The cause of the unfairness is the overall inequality between the cohorts. But there are other ways to think about the unfairness. One is to say that it is unfair that members of a cohort are worse off during a particular period of their lives than members of other cohorts in the corresponding period of theirs. For instance, you might think that what makes the burden placed on cohort C during t_3 unfair is that members of C are worse off in their active period than members of other cohorts in their active periods—such as the members of cohort B in t_2 or the members of D in t_4. This can be considered a separate source of unfairness, based on the inequality that obtains between corresponding segments of people's lives.

Alternatively, you might think that it is a separate source of unfairness that members of a cohort are worse off at a particular time—within a specific period—than others within the same period. For instance, in my examples cohort C is considerably worse off than cohort B during t_3, when C is in its active period and B is in its inactive period. In this case, the source of unfairness is inequality between simultaneous segments of lives.[22]

Simultaneous segments inequality has been considered particularly problematic for egalitarian theories that focus on equality between complete lives. It is usually illustrated by Dennis McKerlie's example of a city block that contains a condominium complex with middle-aged, middle-class, affluent and happy residents, and an overcrowded, dilapidated retirement home, where the elderly residents are impoverished, poorly cared for, and unhappy. However, the middle-class residents of the complex are going to end up in such retirement homes when they get old, and the residents of the home used to live in the exact same comfortable and affluent circumstances when they were middle-aged. Thus, there is no overall, lifetime inequality between the two groups.[23]

It has been argued that egalitarian theories that take into consideration only the overall value of lives (whether in terms of welfare, resources,

[22] For an exploration of these ideas, see McKerlie (2013).
[23] McKerlie (2013, 6–7).

opportunities, or some other currency of distribution) cannot object to the unfairness of the conditions in this city block. Egalitarians need to move beyond distributive fairness and adopt a *relational* conception of equality—one that focuses on whether the relationships between people are free of dominance, oppression, exploitation, marginalization, and the like. The unfairness between the residents of the condominium complex and the retirement home can only be explained in relational terms. Therefore, complete lives egalitarians must adopt at least a hybrid view that combines distributive and relational conceptions of equality.[24]

To be sure, we don't know what kind of relationships, if any, exist between the residents of the condominium complex and the retirement home—McKerlie doesn't say. But the idea is that relational egalitarianism has the resources to tell a compelling story about the unfairness in the example, while complete lives distributive egalitarianism does not. Given the inequality in the conditions of the two groups, it is likely that the residents of the retirement home are marginalized, lack respect, and appear undignified to their neighbors in the condominium complex. Thus, what makes the inequality unfair is the quality of the relationships between the two groups.

My argument, however, suggests a possible response on behalf of distributive egalitarians. The response makes no assumptions about the relationships between the two groups. Instead, it points out that the extreme inequality in the example is likely to be a symptom of a broken system of intergenerational cooperation. The affluent residents of the condominium complex might be refusing to cooperate fairly because of the expectation that downstream generations are likewise going to refuse to fairly cooperate. This may be because the currently active generation is in the process of defecting or because intergenerational cooperation was undermined by an earlier generation. In either case, the inequality is unfair because it puts unbearable burdens on the currently inactive generation. A stable system of intergenerational cooperation would require a more equal distribution between the two groups. The currently active generation should recognize the unfairness and restore the stability of the system by addressing the inequality. Roughly, this is the story that complete lives distributive egalitarians can tell without locating the source of the unfairness in the quality of the relationships of the two groups.

Thus, distributive egalitarians have the resources to explain the unfairness in the city block example by appealing to the Stability requirement.

[24] For this argument, see Bidadanure (2016, 2021). For relational egalitarianism, see, for instance, Anderson (1999), Scheffler (2003), or O'Neill (2008).

The requirement puts constraints on the distributive arrangements that are acceptable between different age groups. The distributive arrangement in the city block example is clearly inadmissible from the perspective of stability: the inequality either undermines or threatens to undermine intergenerational cooperation. Distributive egalitarians can argue that a more equal distributive arrangement is necessary for its stability. More equal distributions between age groups, therefore, can have instrumental value for complete lives distributive egalitarians, even if they want to maintain that only equality between complete lives have intrinsic value.

Moreover, distributive egalitarians can make a similar appeal in the case of corresponding segment inequalities. Suppose now that the residents of the retirement home are just as happy and affluent as their middle-aged neighbors. However, it is known that the residents of the condominium complex will end up in the retirement home when they get old, and their conditions will be much worse: they will be just as impoverished, poorly cared for, and unhappy than the elderly in the original example. There is no simultaneous segments inequality, but there is going to be corresponding segments inequality when the middle-aged get old.

Since, at this point, there is no inequality between the two age groups, it is safe to assume that there is no relational inequality; relational egalitarians can find nothing objectionable at the current period. And, since the elderly will be gone by the time the middle-aged will suffer, there is no relational inequality in the future. Relational conceptions of egalitarianism are blind to corresponding segments inequality—inequalities across time. Distributive egalitarians, on the other hand, can appeal to the threat to the stability of intergenerational cooperation posed by the unfairness of inequality between the currently old now and the currently middle-aged in the future (over and beyond the unfairness of inequality between the complete lives of the currently old and the currently middle-aged). Their theory has ample resources to accommodate the Stability requirement.

VI. Conclusion

Intergenerational justice and justice between age groups are usually treated as separate topics in philosophical discussions. Moreover, the debates in both topics have tended to ignore demographic change, taking a static perspective with fixed-sized birth cohorts and uniform populations. My aim in this paper has been to extend the discussion by exploring the connections between the two topics, as well as to enrich it by introducing some more realistic assumptions about demographic trends.

I have argued that whatever else we owe to future generations, we at least owe them a concerted effort to maintain the intergenerational cooperative schemes from which all generations benefit. But these cooperative schemes cannot be taken for granted: they might be more fragile than we realize in the face of exogenous shocks. Because we have a duty to maintain beneficial intergenerational cooperative schemes, there must be limits to the range of distributive schemes across age groups that we can reasonably endorse. Therefore, the demands of justice between age groups are constrained by the requirement of stability in intergenerational cooperation. Recognizing this connection enables us to make some progress with regard to both problems. Crucially, it also enables us to recognize the need to take real-life demographic trends into account in our theorizing about justice.

My argument has different implications for societies at different stages of the demographic transition. Maintaining stability and fairness between age groups poses different challenges for "old" societies at the later stages of the transition, facing population aging in the near future, and for "young" societies that have yet to create new institutions for intergenerational cooperation. But the arguments of this paper have direct practical relevance for both. Health care and pension costs are rising everywhere as populations are growing and aging rapidly. All countries will need to make difficult trade offs between providing for older generations and creating opportunities for younger and future generations. With the demographic changes already under way, the challenges that I have explored can be expected to exacerbate. Assessing their moral and practical implications is an urgent task.

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