Time discounting, consistency and special obligations: a defence of Robust Temporalism

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ABSTRACT: This paper defends the claim that mere temporal proximity always and without exception strengthens certain moral duties, including the duty to save – call this view *Robust Temporalism*. Although almost all other moral philosophers dismiss Robust Temporalism out of hand, I argue that it is *prima facie* intuitively plausible, and that it is analogous to a view about special obligations that many philosophers already accept. I also defend Robust Temporalism against several common objections, and I highlight its relevance to a number of practical policy debates, including *longtermism*. My conclusion is that Robust Temporalism is a moral live option, that deserves to be taken much more seriously in the future.

1: Introduction

> **Bunker:** Imagine that someone is trapped inside a military bunker, where she will spend the rest of her life. This bunker also houses two missile launchers. The 'smaller missile' of the two is programmed to fire in five days' time, towards Town One, which has a population of 5,000 people. Unless its firing sequence is deactivated, the missile will destroy the entire town, killing all of its inhabitants. The 'larger missile,' by contrast, is programmed to fire in seventy years' time, towards Town Two, which will then have a population of 6,000 people. Unless its firing sequence is deactivated, the missile will destroy the entire town, killing all of its inhabitants. Imagine, furthermore, that it is possible for the person trapped inside the bunker to deactivate one, but not both, of these two missiles. All else being equal, which of the two missiles should she deactivate?

Many of the people with whom I have discussed this thought experiment have reported the intuition that the right thing to do, morally speaking, is to deactivate the smaller missile, rather than the larger one. In other words, many people's intuitions support a view that almost all philosophers writing on the topic of social time discounting have thus-far repudiated, *viz.* the view that temporal proximity strengthens certain duties, including the duty to save.[1] Let's call this view *Robust Temporalism*.[2]

[1] According to Toby Ord (2020, pp. 254-5), "philosophers are nearly unanimous in rejecting" a positive rate of social pure time preference. See, e.g., Sidgwick 1907; Rawls 1972, §§44-5; Smart 1973, §9; Kavka 1978; Goodin 1982; Richards 1983; Baier 1984; Parfit 1984; Broome 1992; 2012; 2016; Cowen and Parfit 1992; O'Neill 1993, §4.3; Lagerspetz 1999; FitzPatrick 2007; Wolf 2009; Menzel 2011; Wilson 2012; Caney 2014; de Lazari-Radek and Singer 2014, §12.4; Moellendorf 2014; Nolt 2015, §4.1; Tarsney 2017; Greaves and MacAskill 2019; Ord 2020.

[2] The intended analogy here is with a term like 'speciesism.'

In this paper I defend Robust Temporalism against five common objections. In §2, I disambiguate Robust Temporalism, distinguishing it from some other closely-related moral views. In §3, I argue that a survey study sometimes cited by critics of Robust Temporalism does not undermine the claim that Robust Temporalism enjoys widespread intuitive support. In §4, I critique a common 'debunking' explanation of people's support for Robust Temporalism. In §5, I argue that temporal proximity is a morally salient kind of relation, plausibly capable of strengthening moral duties. In §6, I argue that the analogy between temporal and spatial distance sometimes invoked by Robust Temporalism's critics does not undermine the view. In §7, I argue that temporal discounting can be plausible only if the discount function has a nonzero horizontal asymptote, and I defend this kind of discount function against an objection from time inconsistency. In §8, I discuss some of the practical implications of Robust Temporalism, and I evaluate the extent to which what I have said about positive duties can be extended to cover negative duties. In §9, I conclude by suggesting that Robust Temporalism deserves to be taken much more seriously by moral philosophers than it has been until now.[3]

2: Disambiguating Robust Temporalism

2.1: Temporal distance always matters

I begin by mentioning four defences of social pure time preference that have been advanced by other philosophers.[4] (1) Andreas Mogensen has recently argued that policymakers should discount the future "in the context of decisions that concern the global community as a whole" because, according to Mogensen, we members of the global community have a stronger group-relative duty to care for our closer kin than we have to care for our more-distant descendants.[5] (2) The communitarian philosopher Avner de-Shalit has argued that a moral agent should prioritise the interests of a moral patient who is temporally closer to her to the extent that temporal proximity is correlated (*ceteris paribus*) with the degree to which the agent and the patient can be said to belong to the same (intergenerational) moral community.[6]

(3) Duncan Purves has defended temporal discounting on the *costs* of any *identity-affecting* public policy decisions that will not cause anybody to have a life that is not worth living, on the grounds that a future patient's temporal distance from an identity-affecting act will typically be closely correlated with the likelihood of her owing her existence to that act, and hence with the probability that she will have some reason to be glad, insofar as her life is worth living, that this act was performed.[7] (4) Insofar as one expects human beings in the future

[3] Critics of time discounting also sometimes argue that Robust Temporalism relies upon a naïve, pre-relativistic conception of time (Cowen 2018, pp. 68-9). I hope to discuss this objection elsewhere.
[4] Cf. also Mintz-Woo 2019; Heath 2017; 2021, chapter 6. For a detailed critique of Heath 2017, see Tarsney 2017, §3.
[5] Mogensen 2019a; see also Rothenberg 1993; 1999; Schelling 1995; Beckerman and Hepburn 2007. I hope to critique this argument in future work.
[6] de-Shalit 1995; forthcoming. Cf. also Golding 1972; Tenenbaum 1989; O'Neill 1993; Thompson 2009a; 2009b; 2017. Rothenberg 1993; 1999 and Schelling 1995 to some extent anticipate de-Shalit's use of the notion of "moral similarity" (1995), by arguing that the reason why we typically discount the interests of future people is that we typically feel reduced empathy (cf. Slote 2003) for people whom we expect to differ from ourselves in culture, values, and patterns of living.
[7] Purves 2016.

to live longer[8] and/or happier[9] lives than they do in the present, one can argue that the value of distributive justice gives one a reason to prioritise aiding temporally proximate human beings over aiding temporally distant ones who are likely to be more prosperous.

All four of these arguments justify social time discounting only insofar as temporal distance is *imperfectly correlated with* some other variable(s) of moral interest. Mogensen, for instance, uses temporal distance as a proxy for remoteness of kinship; and Purves uses temporal distance as a proxy for the extent to which a policy choice is likely to have influenced people's identity. As I wish to define and to defend Robust Temporalism in this paper, however, it is committed to the claim that temporal proximity *always and without exception* strengthens certain duties, including the duty to save.

2.2: It is sometimes impermissible to save the greater number

I now want to draw a distinction between (a) the claim that prioritising people who are temporally closer to oneself is sometimes morally *permissible*,[10] and (b) the stronger claim that one is sometimes morally *required* to prioritise people who are temporally closer to oneself.[11] As I wish to define Robust Temporalism in this paper, it is committed to the latter, stronger claim. Robust Temporalism sometimes tells us that we are morally required to save a smaller number of people who are temporally closer to us, rather than a larger number of people who are temporally distant.

2.3: Precisifying 'temporal distance'

According to the version of Robust Temporalism that I wish to discuss in this paper, the form of 'temporal distance' that matters for moral time discounting is the temporal distance between (a) the time at which one makes some moral choice, and (b) the time(s) at which one's moral choice will cause people to be harmed or benefitted. In **Bunker**, for instance, there is a temporal distance of five days between the present moment and the time at which the residents of Town One stand to be harmed, and a temporal distance of seventy years between the present moment and the time at which the residents of Town Two stand to be harmed.

3: Lay intuitions

Critics of Robust Temporalism who wish to argue that the view does not enjoy widespread intuitive support often cite a 2003 survey study conducted by Shane Frederick. Simon Caney points out, for instance, that when Frederick's respondents

> were asked to compare a death from pollutants 100 years from now compared to a death from pollutants next year, 64% replied that they were 'equally bad' (Frederick 2003, p. 43). A similar result was obtained when people were asked whether they would prefer

[8] Bobinac et al. 2011.

[9] G. Brennan 2007; Dasgupta 2008; Zuber and Asheim 2012; Adler and Treich 2015, §4.2.

[10] J. Paul Kelleher (2017, pp. 468-9) expresses some attraction to this view, although he stops short of actually defending it; and Dan Moller (2006, p. 246) suggests that "it's much harder than is sometimes appreciated to take seriously the notion that moral reasons aren't attenuated over time."

[11] According to a third, intermediate potential view, prioritising people who temporally closer to oneself is sometimes *supererogatory*. In other words, although prioritising people who are temporally proximate is never morally required, this will nonetheless sometimes be the best or most choiceworthy course of action available.

> a policy that saved 300 lives in the current generation, 0 lives in the next generation and 0 lives in the next generation after that to a policy that saved 100 lives in this generation, 100 lives in the next generation and 100 lives in the generation after that. Frederick (2003 p.46) reports that 80% preferred the second policy. By doing so they chose a view that does not discriminate against future generations and they rejected a view that is characterised by pure time preference. The assumption that people's views are strongly pro-discounting is therefore not as straightforward as is often assumed.[12]

Neither of these results cited by Caney, however, constitute evidence that Frederick's respondents disagreed with Robust Temporalism.

First of all, the claim that a death 100 years from now and a death next year are "equally bad" is most naturally read as an *axiological* claim. Thus, the fact that 64% of Frederick's respondents assented to this claim does not constitute evidence that these respondents would disagree with the *deontic* claim made by Robust Temporalism. (Axiological claims concern the goodness or badness of states of the world, whereas deontic claims concern rightness and wrongness. Most non-consequentialists believe that an act can sometimes be morally required even when an available alternative act would produce a better state of the world.)

The second of Frederick's survey questions cited by Caney forced participants to choose between intergenerational equality on the one hand, and prioritising temporally nearer people on the other. Robust Temporalists do not need to deny, however, that considerations of intergenerational equality can have *pro tanto* moral force, so long as they nonetheless maintain that considerations of temporal proximity *also* have some *pro tanto* moral force. At worst, the second of Frederick's studies cited by Caney constitutes evidence that 80% of Frederick's respondents regarded considerations of intergenerational equality as trumping considerations of temporal proximity in this particular case.

Several of Frederick's other results provide some limited evidence to suggest that many of his respondents actually supported some form or other of time discounting. When respondents were asked how many lives Program B would have to save 100 years from now in order for the respondent to be indifferent between Program B and a program that will save 100 lives this year, the median response was 324.[13] And when respondents were asked to choose between

> Program A, [which] will save 55 lives now and 105 more lives 25 years from now, for a total of 160 lives, [and]
>
> Program B, [which] will save 100 lives now and 50 more lives 25 years from now, for a total of 150 lives

54% preferred Program B,[14] despite the fact that Program A is more equal, and will save a greater number of lives. Participants' responses to two of Frederick's other experimental

[12] Caney 2008, p. 543; see also Menzel 2011, p. 256-8; Cowen 2018, p. 67; Mogensen 2021, n. 2.
[13] Frederick 2003, p. 42.
[14] Frederick 2003, p. 44.

vignettes[15] were also consistent with time discounting.[16] Hence, although it would be irresponsible to draw any firm conclusions from a single study,[17] Frederick's paper in fact on balance provides evidence for, rather than against, the claim that time discounting enjoys widespread intuitive support.[18]

4: Debunking explanations

Supposing she concedes that time discounting enjoys widespread intuitive support, a critic of Robust Temporalism might now wish to argue that people's Robust Temporalist intuitions in cases like **Bunker** are the product of some kind of cognitive bias, and that the epistemic status of these intuitions should as such be discounted.[19] A similar kind of debunking argument is often deployed to critique the rationality of discounting one's own future well-being as compared against one's well-being in the present. Pigou famously argued that if a person has a nonzero rate of private time preference, then this implies that her "outer telescopic faculty is defective" and "perverted."[20] Supporting Pigou's claim, recent work in experimental psychology has found that when people try to imagine a future pleasurable or painful event, they often imagine the pleasure or pain as being less intense than they would do if they imagined that same event occurring in the present.[21] There is also some evidence to suggest that the average person's mental representation of her future self is often closer to her mental representation of a third person than it is to her mental representation of her present self,[22] and even to suggest that the average person typically regards her future self as in some sense "less human" than her present self.[23]

It is not at all clear, however, whether a Pigouvian error theory can be deployed to critique people's Robust Temporalist intuitions. Two of the most plausible explanations for private time discounting are that the average person typically (*i*) fails to imagine herself as vividly in the distant future as she does in the near future, picturing her distant future self in a more abstract and less detailed way,[24] and/or (*ii*) is prone to regard her future self as dissimilar

[15] 'Choice' and 'Context.'
[16] Although most responses to Frederick's 'Sequence' vignette were not; and cf. also Graham et al. 2017. On potential confounds in 'Sequence'-style vignettes, see Frederick and Loewenstein 2008, pp. 223-4.
[17] For objections to certain features of almost all the other empirical studies on this topic, see Frederick 2003; Menzel 2011, p. 256; cf. also Bechtel et al.'s suggestion (2019) that social desirability bias might lead respondents to overstate their support for long-termist views. Frederick (2003) questions the robustness of some of the pro-discounting results from his study, on the grounds that (a) "even presenting respondents with a choice between saving a smaller number of lives now or a greater number in the future may convey the message that future lives should be discounted," via an "experimental demand effect: [a] cue about what a reasonable answer should be," and (b) respondents might also feel uncertainty over whether the purported long-term consequences of the policy programs in survey vignettes would actually occur as-promised. On the role of uncertainty in social time discounting, see Jacobs and Matthews 2012; 2017; Fairbrother et al. 2020; Christensen and Rapelli 2021.
[18] As does Christensen and Rapelli 2021.
[19] Frank Ramsey (1928, p. 543) describes pure time preference as "ethically indefensible," claiming that it "arises merely from the weakness of the imagination." See also Cowen 2018, pp. 64, 124.
[20] Pigou 1932, §II.3.
[21] Kassam et al. 2008.
[22] Pronin and Ross 2006; Ersner-Hershfield et al. 2009; Mitchell et al. 2011; Molouki and Bartels 2020.
[23] Haslam and Bain 2007.
[24] Trope and Lieberman 2010.

(in particular: psychologically dissimilar) to her present self.[25] One of the reasons why people fail to picture themselves vividly in the distant future might be that they "have a difficult time imagining which future self – among many possible future selves – will arise." Furthermore, "when it comes to imagining much older selves, people may simply be unmotivated to fully engage, due to negative stereotypes that are associated with the aging process, older people in general, and a desire to avoid thinking about death."[26]

It seems much less plausible to suppose, however, that people will typically imagine 5,000 strangers in the present day much more vividly than they will imagine 6,000 strangers seventy years from now. To make it easier to imagine these two populations equally vividly, one can build into the **Bunker** thought experiment a stipulation that little technological and/or social progress will occur in the next seventy years, so that the residents of Towns One and Two will be extremely similar. Unlike in private first-personal scenarios, then, it is not as though one is being asked to compare something tangible, detailed, and youthful against something intangible, abstract, and aged. In all of these respects, the residents of the two towns are identical, so it seems plausible to suppose (*i*) that imagining the two towns will be equally difficult, and (*ii*) that one will imagine the residents of Town One and Town Two as being equally dissimilar to oneself. Even under these conditions, many people with whom I have discussed this thought experiment have intuited that we have a stronger duty to save the 5,000 inhabitants of Town One than we have to save the 6,000 inhabitants of Town Two. Thus, it is much more difficult to dismiss Robust Temporalist intuitions as the product of a "defective telescopic faculty" than it is to critique the rationality of private time preference on these grounds.[27]

5: How temporal distance could matter

According to Simon Caney, "the most common and straightforward argument for a zero pure time discount rate maintains simply that we have no reason to attribute fundamental moral importance to someone's location in time."[28]

> The idea of impartiality insists that political decisions should not reward or penalize people on the grounds of personal properties that lack any fundamental moral relevance. It is on this basis that we hold that persons should not be discriminated against because

[25] Urminsky 2017; Hershfield and Bartels 2018. Where present, impulsive or 'visceral' appetites may also contribute to private time discounting (Soman et al. 2005, §2.3).
[26] Hershfield and Bartels 2018 (citations omitted).
[27] Jacobs and Matthews 2012, pp. 920-2 and Bechtel et al. 2019, §4.2 provide some empirical evidence to support this claim that social time discounting is a separate phenomenon from private time discounting, that should not necessarily be assumed to have a similar cognitive basis. In their survey study of public-policy social time discounting, Jacobs and Matthews found that private time preference (as measured by participants' responses to three hypothetical choice questions) was in fact *inversely* related to social time preference. Using a different, 'convex time budgets' measure of private time preference, Bechtel et al. found that private time preference was uncorrelated with support for four possible future-oriented public policies. Further research would be useful to determine the robustness of these results.

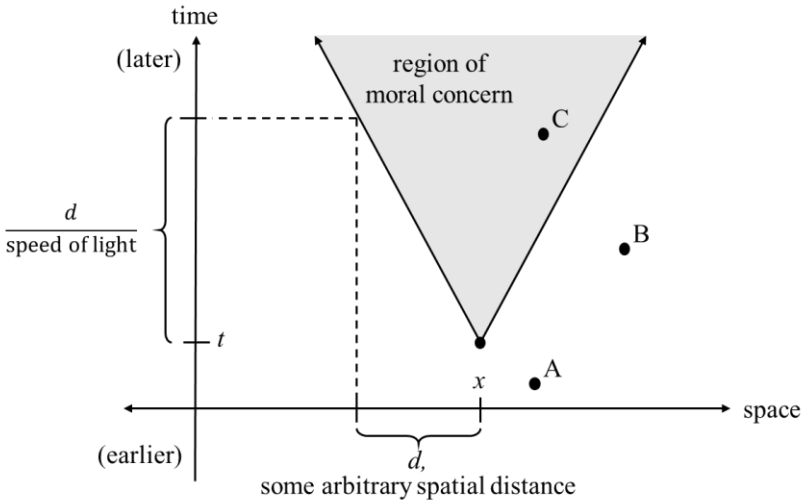
For more on the experimental psychology of time discounting, see Urminsky and Zauberman 2015. In particular, pp. 159-60 summarize some of the evidence against the claim that social time discounting can be attributed to superficial and/or impaired mental functioning.
[28] Caney 2014, p. 323.

> of their race or gender or socioeconomic class. These factors do not correspond to any morally relevant features of persons. In the same way, however, it seems inappropriate to discriminate against a person simply because of their location in time, for that seems equally arbitrary. It may be appropriate to favour some in some circumstances – if they are more deserving or more needy or they possess some other morally relevant property – but simply being born further into the future is not one of these properties.[29]

Thinking concretely about particular thought experiments like **Bunker**, many people's intuitions support Robust Temporalism. Thinking more abstractly, however, I suspect that a fair proportion of these people would nonetheless agree with Caney that it is much less intuitively plausible to claim that temporal proximity is a "morally relevant" relation than it is to claim that desert, need, or virtue, say, are "morally relevant properties." In this section, I outline a defence of the claim that temporal proximity is a "morally relevant" relation, capable of strengthening one's duties.

Many philosophers believe that we moral agents have a number of 'special obligations' to people like our families, friends, and co-nationals, stronger than our ordinary obligations to otherwise-similar moral patients.[30] The relationships linking people to their families, friends, and co-nationals are, these philosophers claim, sufficiently ethically salient as to ground certain special obligations. These ideas can also be invoked to justify Robust Temporalism.

I begin by introducing the notion of a *region of moral concern*. An agent J's region of moral concern at time *t*, when J is spatially located at *x*, is the region of spacetime that it is nomologically possible for J to causally influence at time *t*, from location *x*.[31] In a universe where there is one spatial dimension and one temporal dimension, one can graph the agent J's region of moral concern at time *t* on a two-dimensional coordinate plane (figure #1):



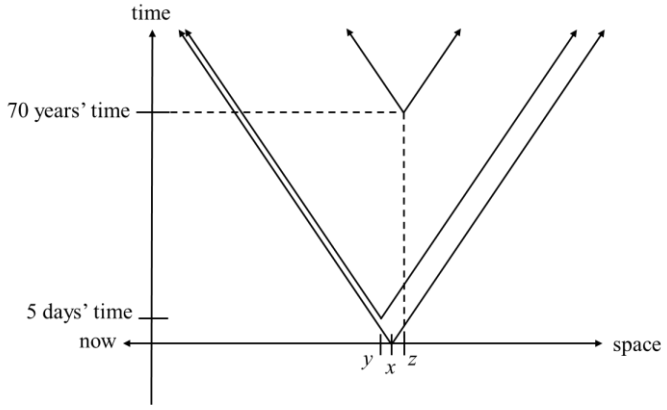
(Figure #1)

[29] Caney 2009, pp. 168-9; see also Rawls 1972, p. 298; Richards 1983, pp. 137-40; Adler 2009, pp. 1493-4; Heal 2009; Wilson 2012, p. 192; Moellendorf 2014, p. 109; Stern 2014; Adler and Treich 2015, p. 283; Nolt 2015, §4.1; Broome 2016, p. 907; Boston 2017, pp. 137-8; Ord 2020, p. 255.
[30] Jeske 2019.
[31] In the jargon of special and general relativity, agent J's region of moral concern at time *t* and location *x* is the *future light cone* of the event (*x*, *t*).

Event A is outside J's region of moral concern at time *t* because A occurred before time *t*, and retrocausality is nomologically impossible. Event B is outside J's region of moral concern at time *t* because J-at-time-*t* causally influencing B would require faster-than-light causation, which is nomologically impossible. Event C, however, is within J's region of moral concern at time *t*, because J-at-time-*t* causally influencing C would require neither retrocausality, nor faster-than-light causation.

It is possible at time *t* for an agent J to have a *pro tanto duty* to influence some event E only if E lies within J's region of moral concern at time *t*. At the present moment, for instance, none of us can have a *pro tanto* duty to prevent World War II from occurring, because (since retrocausality is nomologically impossible) World War II lies outside of all of our present regions of moral concern. That's how J's region of moral concern at time *t* gets its name: it is the only region of spacetime that J would need to 'search' if she were trying to draw up a longlist of events that she might be morally obligated at time *t* to influence.

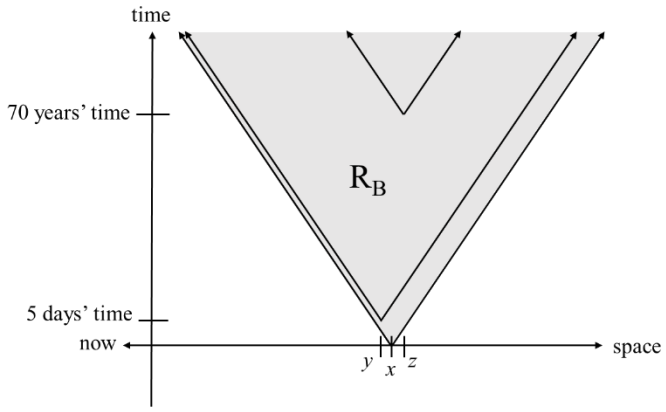
Suppose now that *x* is the spatial location of the **Bunker**, *y* is the spatial location of Town One, and *z* is the spatial location of Town Two. For sake of simplicity, I will continue to assume that there are only two dimensions: one spatial, and one temporal.[32] Consider the following graph (figure #2):



(Figure #2)

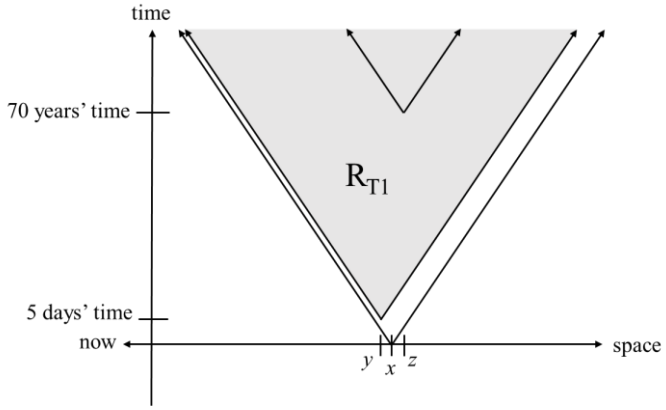
Figure #2a highlights the region of moral concern R_B of the person inside the bunker at the present moment:

[32] If there were two spatial dimensions and one temporal dimension, then regions of moral concern would be cones. In the actual world, where there are three spatial dimensions and one temporal dimension, regions of moral concern are hypercones. In both cases, however, the same points can be made as I shall make in the two-dimensional case.



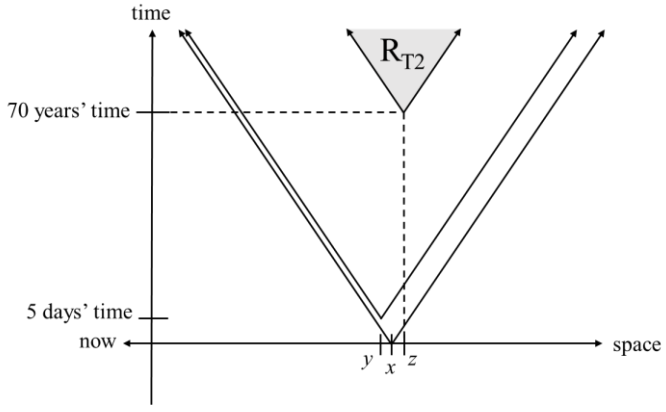
(Figure #2a)

Figure #2b highlights the region of moral concern R_{T1} of the residents of Town One in five days' time:



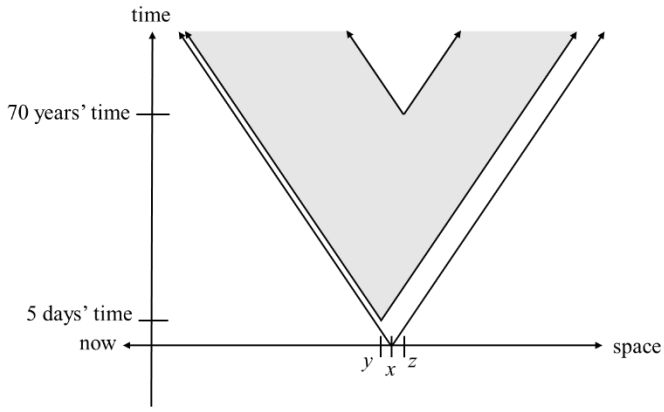
(Figure #2b)

Finally, figure #2c highlights the region of moral concern R_{T2} of the residents of Town Two in 70 years' time:



(Figure #2c)

As these graphs illustrate, there is a high degree of overlap between R_B and R_{T1}. In other words: almost any event that the person inside the bunker needs to worry about when trying to work out what her *pro tanto* duties are is also an event that a person in Town One will need to worry about in five days' time when trying to work out what her *pro tanto* duties are. Furthermore, there are plenty of upcoming events that are inside R_B and R_{T1}, but outside R_{T2} (figure #2d):



(Figure #2d)

In other words: there are plenty of upcoming events that the person inside the bunker now and a resident of Town One in five days' time will both need to worry about when trying to work out what their *pro tanto* duties are, but that a resident of Town Two in seventy years' time will not need to worry about when trying to work out what her *pro tanto* duties are.

The person inside the bunker now and the residents of Town One in five days' time thus have an important area of moral concern in common, that neither of them have in common with the residents of Town Two in seventy years' time. The person inside the bunker now and the residents of Town One in five days' time share a certain *moral burden* in common, that they do not share in common with the residents of Town Two in seventy years' time, or with future generations. It seems reasonably plausible to claim, moreover, that this relationship is an ethically salient one, capable of grounding special obligations. In particular, Robust Temporalists can claim that this relationship intensifies the duty to aid. *Ceteris paribus*, the strength of at least some of one's duties at time *s* to an agent *J*-at-time-*t* are an increasing function of the degree of overlap between one's region of moral concern at time *s*, and *J*'s region of moral concern at time *t*; and this in turn depends upon the temporal distance between *s* and *t*. ('Degree of overlap' is a term of art that I do not yet know how best to define intensionally; the potential unboundedness of spacetime makes things difficult. I hope, however, that the extensional characterization provided in this paper will suffice for present purposes.)

Further strengthening this line of argument would require me to develop a complete account of which kinds of relationships ground special obligations, which is well beyond the scope of this paper.[33] Even in the absence of such an account, however, I claim that insofar as my regions of moral concern argument is *prima facie* plausible, it shifts the burden of proof over to those critics of Robust Temporalism who wish to claim that temporal proximity is a morally irrelevant property, incapable of strengthening one's moral duties.

Although my regions of moral concern argument supports the claim that a greater temporal distance between oneself and some other moral agent always weakens at least some of one's moral duties towards her, it does not support the parallel claim concerning *mere patients*, who lack moral agency. No mere patient has any *pro tanto* moral duties at all, and so it would be nonsensical to ascribe regions of moral concern to any mere moral patients. It trivially follows, then, that increasing the temporal distance between a moral agent and a mere

[33] For a useful overview of some of the possibilities, see Keller 2013.

moral patient cannot alter the degree of overlap between their regions of moral concern, since the mere patient has no such region.

Hence, the regions of moral concern argument that I have been advancing here implies that if two moral agents have at least some degree of overlap in their regions of moral concern, then these agents will have stronger *pro tanto* duties to each other than either of them has, *ceteris paribus*, to a mere moral patient. Robust Temporalism defended on the basis of my regions of moral concern argument has as its natural bedfellow, then, a 'hierarchical' theory of moral status, according to which the strength of one's duties to some individual will depend (at least in part) upon whether she has moral agency.[34]

6: Spatial discounting

Several critics of Robust Temporalism have objected to the view by drawing an analogy between time and space. Gregory Kavka argues, for instance, that "location in space is not a morally relevant feature of a person determining his worthiness for consideration or aid. Why should location in time be any different?"[35] One potential response to this objection would be to argue that we should not be so quick to dismiss the claim that spatial distance is morally salient. Frances Kamm, for instance, has elaborated this claim in considerable detail, and defended it against able objections from Unger and Igneski.[36]

I shall argue in this section, however, that the overlapping regions of moral concern framework that I introduced to defend Robust Temporalism in §5 at worst commits its advocates only to spatial discounting on *duties concerning 'spooky' moral effects*: duties to influence events that will affect some agent's rights or interests without actually physically affecting that agent.[37] Let me mention two examples. Firstly, some philosophers believe that destroying a person's artistic legacy after her death might make her life go worse for her, for instance by reducing the welfare value of those moments of her life during which she was engaged in her artistic projects.[38] Secondly, some philosophers believe that a moral agent can sometimes wrong another simply in virtue of having certain beliefs about her, even if that agent's having those beliefs does not cause any further harmful consequences.[39]

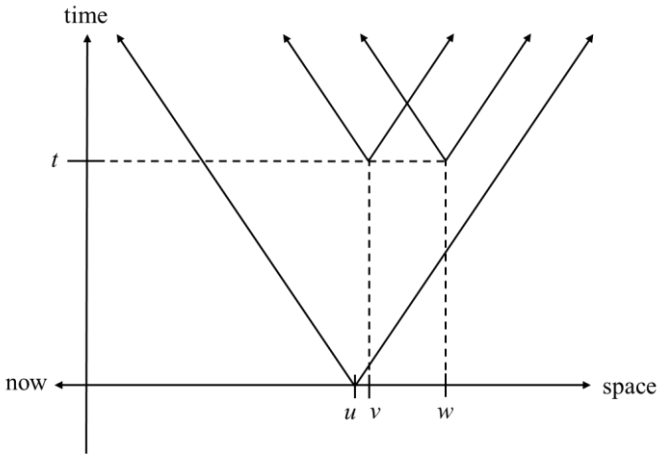
6.1: The duty to save

Before I discuss spooky moral effects in any more detail, however, I shall first argue that the overlapping regions of moral concern framework that I introduced in §5 of this paper does not commit its advocates to spatial discounting on the duty to save.

To see why this holds true, imagine that an agent J located at some point in space *u* faces a choice between saving an agent K from death at some arbitrary time *t* and location *v*,

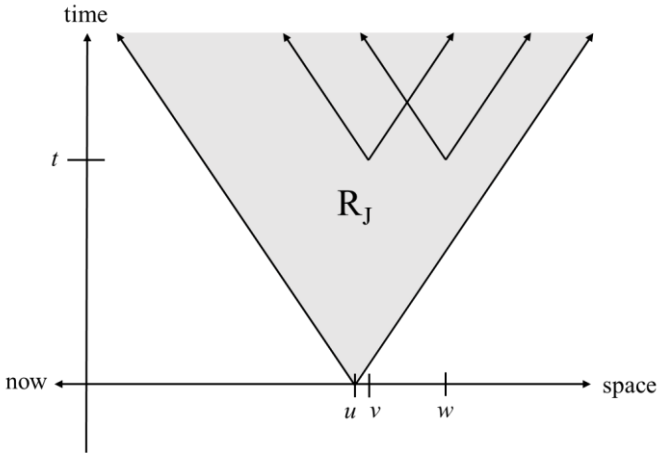
[34] An individual's moral status might also depend upon the *degree* to which she has moral agency. For a general critique of hierarchical theories of moral status, see Lloyd 2021.
[35] Kavka 1978, p. 188; see also Smart 1973, p. 63; Parfit 1984, p. 357; Davidson 2006; 2014; Heal 2009, p. 277; Tinghög 2012, p. 309; Cowen 2018, p. 69. For an alternative critique of this argument, see Heath 2021, §§6.1.2-6.1.3.
[36] Kamm 2007, pp. 345-97.
[37] The name is inspired by Einstein's famous description of quantum entanglement as involving "spooky action at a distance." I thank Shelly Kagan for suggesting it to me.
[38] See, e.g., Boonin 2019.
[39] See, e.g., Basu 2019.

or saving an agent L from death at time *t* and location *w*. Since J is, *ex hypothesi*, presently capable of saving either K or L, the spacetime points (*v*, *t*) and (*w*, *t*) must both lie within J's present region of moral concern (figure #3):



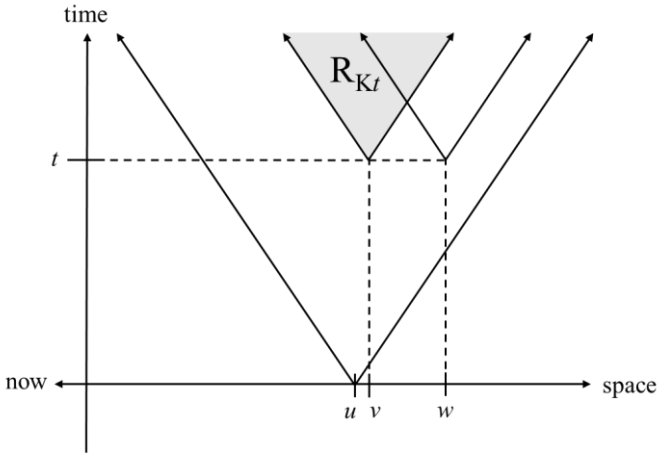
(Figure #3)

Figure #3a highlights J's present region of moral concern R_J:



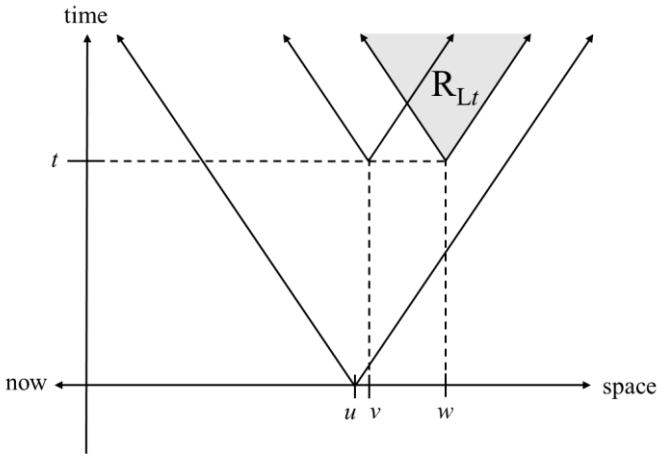
(Figure #3a)

Figure #3b highlights K's region of moral concern at time *t*, R_{Kt}:



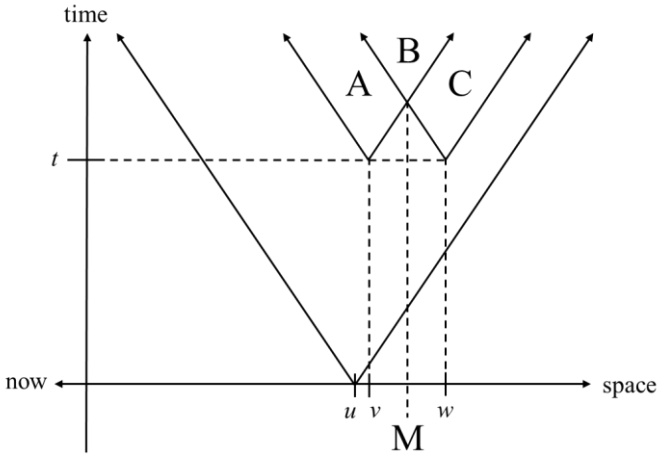
(Figure #3b)

Finally, figure #3c highlights L's region of moral concern at time *t*, R_{Lt}:



(Figure #3c)

The key point to be noticed here is that regardless of one's choice of *t*, *u*, *v*, and *w*, so long as (*v*, *t*) and (*w*, *t*) lie within J's present region of moral concern, the degree of overlap between R_J and R_{Kt} must be equal to the degree of overlap between R_J and R_{Lt}. For a simple geometrical argument, consider the following graph (figure #3d):



(Figure #3d)

The area of overlap between R_J and R_{Kt} is given by R_{Kt} = A + B, and the area of overlap between R_J and R_{Lt} is given by R_{Lt} = B + C. However, A is just a mirror image of C (in figure #3d, the mirror line is labelled M). Hence, the degree of overlap between R_J and R_{Kt} must be equal to the degree of overlap between R_J and R_{Lt}. *Ceteris paribus*, considerations of degree of overlap between regions of moral concern do not imply that J should prioritise saving K over saving L, despite the fact that K-at-time-*t*'s location *v* is closer than L-at-time-*t*'s location *w* is to J's present location *u*. The overlapping regions of moral concern framework does not commit its advocates to a positive spatial discount rate on the duty to save.[40]

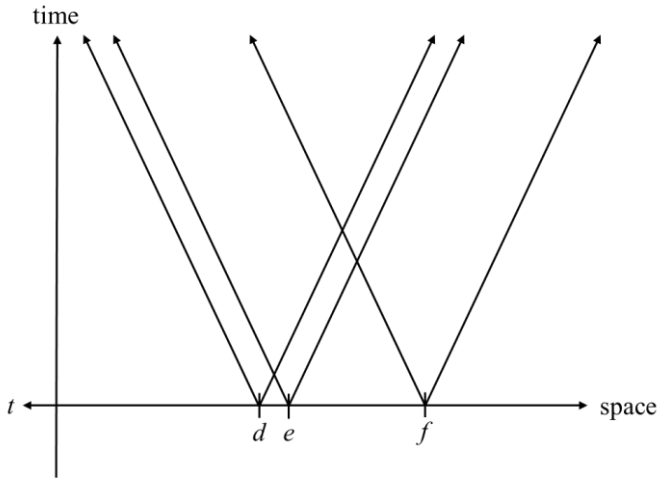
In this section, I draw a contrast between 'the duty to save' on one hand, and 'duties concerning spooky moral effects' on the other. Duties concerning spooky effects, however, might also be relevant in a dilemma requiring one to choose whom to save. It might be the

[40] I am particularly grateful to Paul Forrester for drawing my attention to this fact.

case, for instance, that if K dies at time *t* then she will be unable to complete the artistic project that she has been working on, which might reduce the welfare value of her earlier work on the project. Perhaps L's death, on the other hand, would not have any retroactive impact upon her earlier rights or interests. In the foregoing discussion, however, I intended to rule out any such differences between K and L, by invoking a *ceteris paribus* clause.

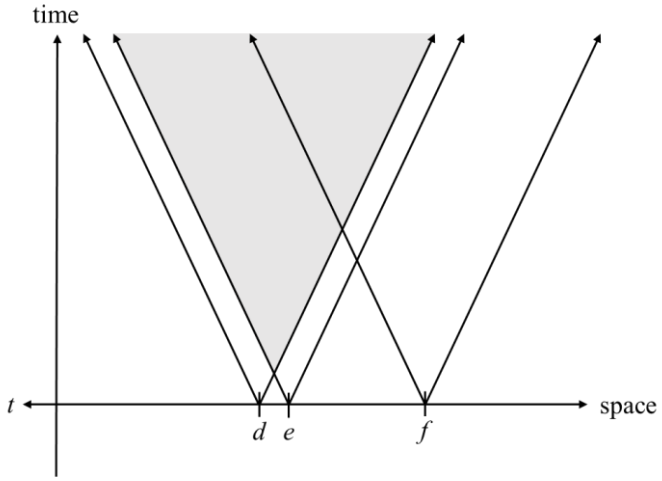
6.2: Duties concerning spooky effects

I now turn my attention to duties concerning spooky effects (henceforth: spooky duties). Suppose, for illustration, that there are three agents, P, Q, and R. At time *t*, P and Q are located close to each other in space, at points *d* and *e* respectively, whereas R is located far away from both of them, at point *f*. We can graph the three agents' regions of moral concern at time *t* as follows (figure #4):



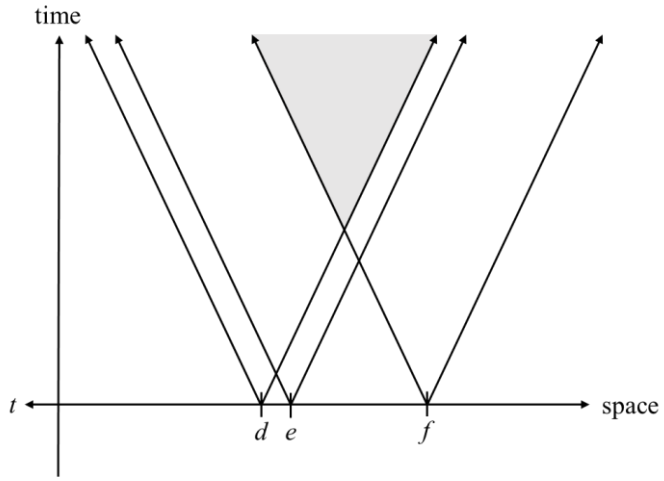
(Figure #4)

As this graph illustrates, there is a high degree of overlap between P and Q's regions of moral concern at time *t* (figure #4a):



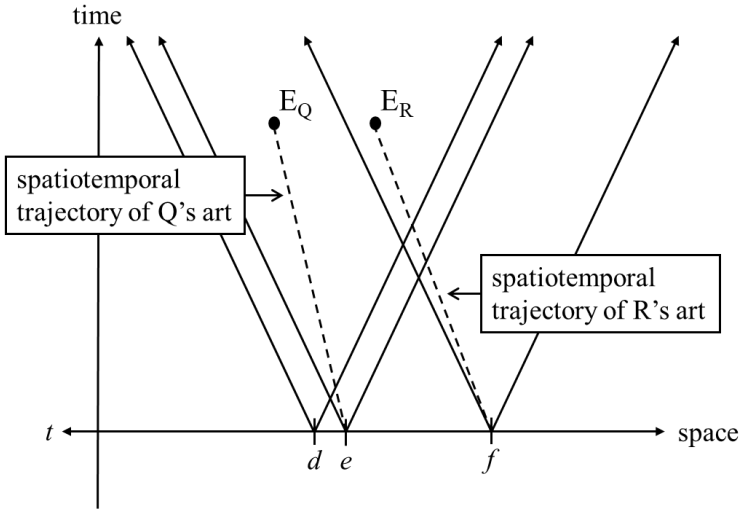
(Figure #4a)

There is, by contrast, a lower degree of overlap between P and R's regions of moral concern at time *t* (figure #4b):



(Figure #4b)

Now, suppose that Q and R are engaged in artistic projects at time *t*, and P faces a choice at time *t* between averting a future event E_Q that would destroy the art that Q is working on, or averting a future event E_R that would destroy the art that R is working on (figure #4c):



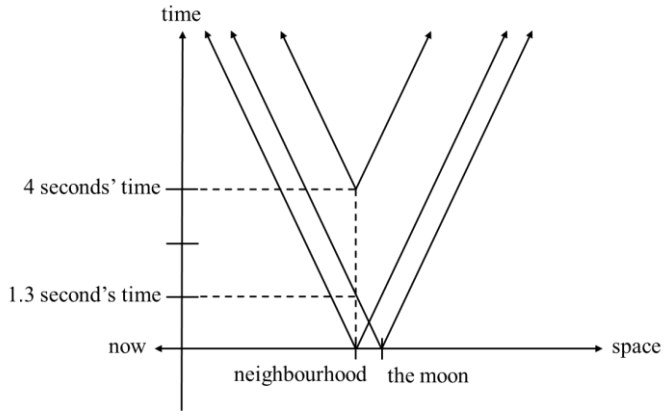
(Figure #4c)

Some philosophers will wish to claim that E_Q would reduce the welfare value of Q's life at time *t*, by preventing the artistic project that Q is engaging in at time *t* from having the kind of long-term legacy that Q desires it to have; and the same goes *mutatis mutandis* for E_R and R. Hence, these philosophers will wish to claim that P has a *pro tanto* duty to Q to avert E_Q, and a *pro tanto* duty to R to avert E_R. Insofar as this kind of *pro tanto* duty is subject to Robust Temporal discounting *in virtue of depending for its strength upon the degree of overlap between the regions of moral concern of the two agents involved*, it looks as though one has to conclude that, *ceteris paribus*, P has a stronger duty to avert E_Q than to avert E_R, since P's region of moral concern overlaps with Q's to a greater degree than it overlaps with R's.

The overlapping regions of moral concern framework that I introduced to defend Robust Temporalism in §5 of this paper hence commits its advocates to spatial discounting on any spooky duties that they believe are also subject to Robust Temporal discounting. On the flipside, a Robust Temporalist can avoid spatial discounting altogether if she wishes to, either

by taking the view that spooky duties do not exist, or by taking the view that spooky duties do not belong to the set of duties subject to Robust Temporal discounting.[41]

An overlapping regions of moral concern defence of spatial discounting on spooky duties would suggest, moreover, that in the kinds of decisions that we human beings currently face, although spatial proximity may sometimes determine which action one should perform as a 'tie-breaking' factor, it is (unlike temporal proximity) unlikely to determine which action one should perform when *ceteris* is not *paribus*. To see why this holds true, suppose, for instance, that I want to compare how much I should spatially discount my (spooky) obligations to a man on the moon against how much I should temporally discount my obligations to my next-door neighbour in four seconds' time. Since the moon is about 380,000 km away from the Earth, and the speed of light is about 300,000 km/s, it would take about 1.3 seconds for light to travel through a vacuum from the Earth to the Moon. Hence, consider the following graph (figure #5):



(Figure #5)

As this graph illustrates, there is a greater degree of overlap between my present region of moral concern and the present region of moral concern of the man on the moon than is between my present region of moral concern and my neighbour's region of moral concern in four seconds' time. Hence, the regions of moral concern defence of spatial discounting on spooky duties implies a level of spatial discounting on spooky duties to the man on the moon less drastic than the level of temporal discounting appropriate for one's duties to one's neighbours in four seconds' time. The degree of spatial discounting on one's spooky duties to people on the other side of the Earth will be an order of magnitude smaller even than this!

My considered response to Kavka's objection to Robust Temporalism, then, is to argue that my overlapping regions of moral concern defence of Robust Temporalism at worst requires one to embrace a very mild and limited form of spatial discounting, that shouldn't really bother anyone who shares Kavka's intuition contra spatial discounting in the kinds of decisions that we human beings currently face. Someone who actually wants to embrace a more robust form

[41] On the temporal discounting of spooky duties concerning data from unethical medical research, cf. Cox 2005.

of spatial discounting would have to go beyond the overlapping regions of moral concern framework presented in §5 of this paper in order to defend her view.[42]

7: Time inconsistency

7.1: Motivating time inconsistency

I begin this section by introducing some notation. $\Delta_{save}(t)$ will denote the *temporal discount factor* on the duty to save, as a function of the temporal distance t between now and the time at which the person(s) whom one has the option to save stand at risk of dying.[43] The lower the value of Δ_{save}, the greater the discount on the duty to save. In scenarios like **Bunker**, where one faces a choice between (a) saving n_s people from death at a temporal distance of s into the future or (b) saving n_t people from death at a temporal distance of t into the future, *ceteris paribus* one should save the n_s people if

$$\Delta_{save}(s) \cdot \mu_{save}(n_s) > \Delta_{save}(t) \cdot \mu_{save}(n_t)$$

and one should save the n_t people if

$$\Delta_{save}(s) \cdot \mu_{save}(n_s) < \Delta_{save}(t) \cdot \mu_{save}(n_t)$$

where $\mu_{save}(n)$ is a function that measures the strength of the duty to save n people from immediate death.[44]

The duty to save people from death will qualify as a *time consistent* duty iff: if

$$\Delta_{save}(s) \cdot \mu_{save}(n_s) > \Delta_{save}(t) \cdot \mu_{save}(n_t)$$

then

$$\Delta_{save}(s + i) \cdot \mu_{save}(n_s) > \Delta_{save}(t + i) \cdot \mu_{save}(n_t), \forall s, \forall t, \forall i$$

If, on the other hand, the duty to save is time inconsistent, then one might sometimes face a choice between (a) saving n_s people from death at a temporal distance of $s + i$ into the future or (b) saving n_t people from death at a temporal distance of $t + i$ into the future where

$$\Delta_{save}(s + i) \cdot \mu_{save}(n_s) < \Delta_{save}(t + i) \cdot \mu_{save}(n_t)$$

yet

$$\Delta_{save}(s) \cdot \mu_{save}(n_s) > \Delta_{save}(t) \cdot \mu_{save}(n_t)$$

---

[42] A suitably modified and extended version of the regions of moral concern framework could in fact be used, I believe, to defend a more robust version of spatial discounting (as I hope to argue in more detail elsewhere). That is not to say, of course, that Robust Temporalists who oppose spatial discounting would be at-all committed to accepting any such modifications or extensions.

[43] Some Robust Temporalists might wish to claim that the discount factor Δ_{save} is also a function of the number of people n who stand to be saved, as well as of temporal distance t. In what follows, I shall assume for simplicity that this is not the case, although nothing substantive shall turn on that assumption. I focus in this paper on the duty to save only for the sake of concreteness.

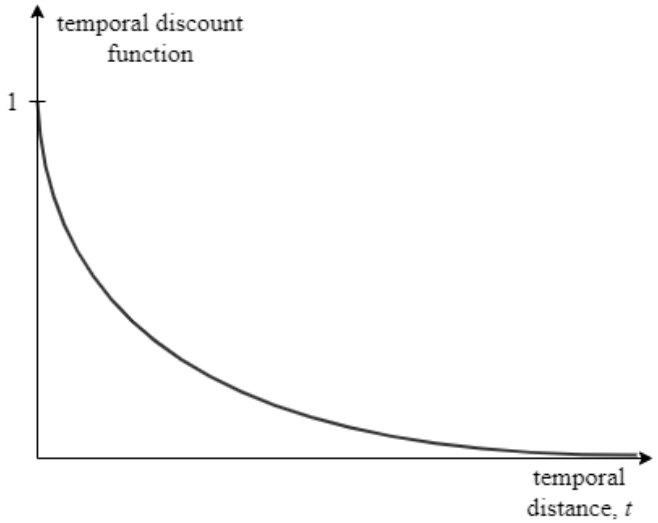
[44] Technical note: given that this setup embodies the extremely plausible assumption that the duty to save is *time invariant*, this duty will also be *stationary* iff it is *time consistent* (see Halevy 2015, §3). In what follows, I hence elide these two properties.

In other words: although one is more strongly obligated now to save the n_t than to save the n_s, one also knows that after i units of time elapse, one will become more strongly obligated to save the n_s than to save the n_t.

Suppose that Robust Temporalism is correct, and that the duty to save is time consistent. In that case, $\Delta_{\text{save}}(t)$ will have to be an exponential function:

$$\Delta_{\text{save}}(t) := \delta_{\text{save}}^{t}$$

where $\delta_{\text{save}} \in (0, 1)$ is the *discount rate* on the duty to save.[45] Hence, the graph of $\Delta_{\text{save}}(t)$ will look like this (figure #6):



(Figure #6)

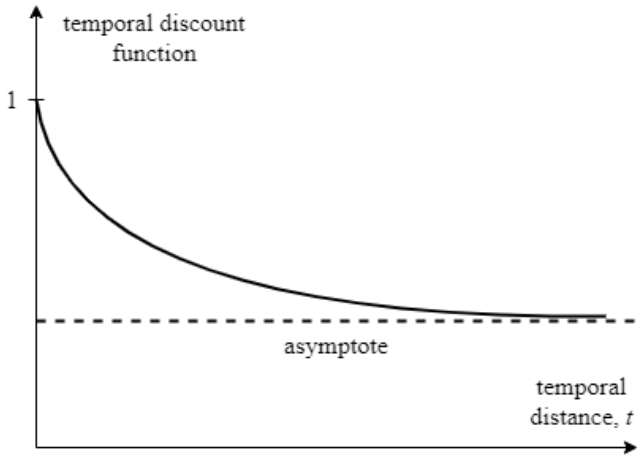
As temporal distance t tends towards infinity, $\Delta_{\text{save}}(t)$ tends towards zero. This implies that for some sufficiently large temporal distance T,

$$\mu_{\text{save}}(1) > \Delta_{\text{save}}(T) \cdot \mu_{\text{save}}(10^9)$$

In other words: for some sufficiently large temporal distance T, it would be better to save one person from death today than to save one billion people from death at a temporal distance of T into the future. However, this is extremely implausible. There exists *no* temporal distance T large enough that one should prioritise saving one person today over saving one billion people at distance T into the future.[46]

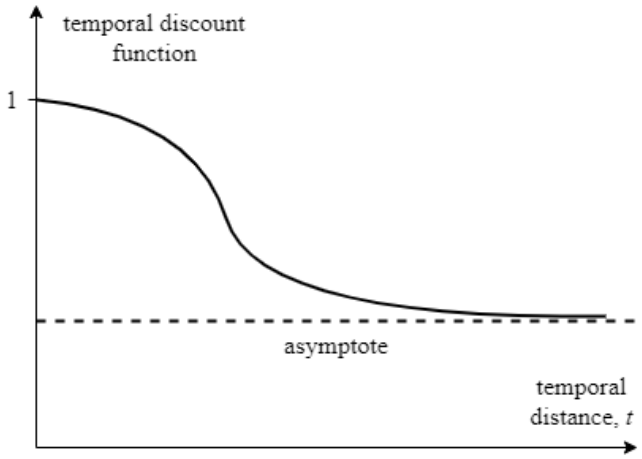
In order to avoid results like this one, Robust Temporalists will have to adopt a time inconsistent temporal discount function, such that the graph of $\Delta_{\text{save}}(t)$ tends toward some strictly positive horizontal asymptote as temporal distance t tends toward infinity. In other words, the graph of $\Delta_{\text{save}}(t)$ will have to look something like this (figure #7):[47]

[45] Strotz 1956, p. 172.
[46] Although some might disagree – cf. Farber 2003, p. 307; Heath 2021, p. 251.
[47] Li and Löfgren (2000) defend a temporal discount function shaped like this in the context of resource management.



(Figure #7)

or this (figure #8):



(Figure #8)

The overlapping regions of moral concern framework that I developed in §5 of this paper also provides support for the claim that $\Delta_{save}(t)$ has a non-zero horizontal asymptote. According to that framework, temporal proximity to some other moral agent strengthens the duty to save because, like friendship, motherhood, or co-nationality, it grounds a special obligation. Very few philosophers believe, however, that all moral obligations are special obligations. There exists, for instance, a perfectly general duty to save, antecedent to any special obligations that might arise to strengthen it. Consider, for instance, my claim in §5 of this paper that mere moral patients cannot stand in the relation in virtue of which the duty to save is strengthen by temporal proximity. We should not take this fact to imply that it is possible for a moral agent to have no *pro tanto* duties to save certain mere moral patients. On the contrary, all moral agents plausibly have a general *pro tanto* duty to save moral patients from unnecessary harm.

Now suppose that two moral agents X-at-time-*t* and Y-at-time-*s* are extremely temporally distant from each other. Thus, X-at-time-*t*'s special obligation on grounds of temporal proximity to save Y-at-time-*s* must be extremely weak. X-at-time-*t* still has, however, a perfectly general duty to save Y-at-time-*s*, antecedent to any special obligations that might arise to strengthen it. Therefore, no matter what the temporal distance is between X-at-time-*t* and Y-at-time-*s*, the strength of X-at-time-*t*'s duty to save Y-at-time-*s* can never fall below a

certain minimum threshold. The graph of $\Delta_{save}(t)$ must hence have a positive horizontal asymptote.

7.2: Defending time inconsistency

Under a temporal discount function $\Delta_{save}(t)$ that tends towards a strictly positive horizontal asymptote, it will sometimes be the case that both: (a) a moral agent is more strongly obligated to avert a later harm than to avert an earlier harm; and (b) after a certain amount of time passes, she will become more strongly obligated to avert the (same) earlier harm than to avert the (same) later harm. She will then have a *pro tanto* moral reason to reverse her earlier decision to avert the later harm. If, on the other hand, she could find a way in the present moment to 'bind her own hands' so as to prevent herself from switching in the future to averting the earlier harm, then she would have a *pro tanto* moral reason to implement such a scheme now – even (in fact, especially!) if she knows that she will be strongly motivated to comply with all of her moral obligations in the future.[48]

Is there anything implausible about a temporal discount function on the duty to save that generates these kinds of results? It initially appears, I admit, somewhat counterintuitive to suppose that a moral saint, who knows that she will remain a moral saint for the rest of her lifetime, could have a *pro tanto* moral reason to bind her own hands so as to prevent herself from acting upon her moral obligations in the future. With a little imaginative effort, however, one can construct roughly analogous cases in which it does appear plausible that even a moral saint's intertemporal sequence of moral obligations might have this kind of time-inconsistent structure.

As I mentioned in §5 above, many of us believe that we human beings have special moral obligations to advance the interests of our loving spouses, stronger than our moral obligations to advance the interests of strangers. Now, suppose that I am a moral saint, and that I have recently inherited some money, with which I intend to establish a charitable foundation. My current spouse, an archaeologist, has devoted her life to unearthing ancient Mesopotamian artefacts. Hence, I decide that the mission of my charitable foundation should be to support a university museum of ancient Mesopotamia, to educate the general public and to showcase my wife's discoveries.

Suppose that I am now informed by a reliable oracle that my current spouse will die in several decades time. After that, I will go on to remarry a cancer researcher. In drawing up the charter for my charitable foundation, I face a choice between (a) drawing up a flexible charter, which will keep open the possibility of altering the foundation's activities in the future, or (b) drawing up an inflexible charter, which will commit the foundation to supporting a Mesopotamia museum in perpetuity.

Even if I know that I will remain a moral saint for the rest of my lifetime, at this moment in time I might well have a *pro tanto* moral reason to choose the inflexible charter. Once I remarry a cancer researcher, my strongest moral obligations will be to her, and not to my first wife (the archaeologist). At that point in time, then, I will have a strong *pro tanto* reason to spend any charitable funds at my disposal on supporting my new spouse's cancer research. Right now, however, one of my strongest moral obligations is to advance the interests of my

[48] On the real-world possibilities for influencing future decisions under time-inconsistent climate-change policy discounting, see Gerlagh and Liski 2018; Harstad 2020.

current spouse, by ensuring that the ancient Mesopotamia museum will receive funding for as long as possible. Thus, at this moment I have a *pro tanto* moral reason to pick the inflexible charter, binding my own hands so as to prevent myself from acting in the future upon the moral obligations that I will then acquire.

Insofar as I am a real moral saint, it might well be possible for me to engage in hand-binding without adopting an inflexible charter. It might be enough, for example, for me to simply promise my current wife that the foundation's funds will always be reserved for an ancient Mesopotamia museum. By making this promise, I might well be able to eliminate the time inconsistency in my intertemporal profile of moral obligations, by giving my future self an extra moral obligation not to break his earlier promises. That does not change the fact, however, that unless and until I do make such a promise, my profile of moral obligations will be time inconsistent, giving me a *pro tanto* reason to bind my own hands (be that through drawing up the inflexible charter, or through making the self-binding promise).

This *pro tanto* moral reason in favour of hand-binding of course needs to be set against any other *pro tanto* moral reasons that I might have against it. I might, for instance, have a meta-obligation to try to promote my ability to fulfil my own first-order moral obligations throughout my lifetime. On balance, then, the best option might well be for me to only partially bind my own hands, by reserving some of the foundation's funds exclusively for the museum, affording myself full control of the remainder going forward. Although this partly ameliorates the time inconsistency of my moral obligations, it clearly does not completely eliminate it. Insofar as one finds time inconsistency plausible in cases like this, it becomes less implausible to claim that temporal discounting on the duty to save can also produce time-inconsistent sequences of duties.

8: Practical implications

8.1: Cost-effectiveness analysis

The choice between accepting and rejecting Robust Temporalism has important implications for public policy issues such as healthcare, climate change, and education.[49] For instance, to the extent that the duty to aid those who are currently suffering is stronger than the duty to prevent people from suffering in the future, medical investments in screening and vaccination programmes will look less attractive relative to medical investments in improving present-day healthcare.[50] On the climate change issue, suppose that one faces a choice between (a) aiding future generations, by reducing the number of one's contemporaries who are breaking emissions regulations, or (b) aiding people who are at risk of imminent harm in the present day. To the extent that one embraces Robust Temporalism, one will say that (b) is more urgent that (a), *ceteris paribus*.

8.2: Negative duties

Several philosophers and economists have pointed out that it is important to carefully distinguish between time discounting on the duty to alleviate suffering, and time discounting

[49] On education, see Gilead 2015.
[50] Frederick 2006, p. 668; Jit and Mibei 2015; Cowen 2018, p. 93.

on the duty to avoid inflicting it.[51] This is particularly important in the climate change debate. When a moral agent chooses to emit greenhouse gases, she is choosing to impose certain costs upon future generations, rather than merely choosing to refrain from aiding them. If one accepts time discounting on the duty to alleviate suffering, then should one also accept time discounting on the duty to avoid inflicting it?

In §5 of this paper, I defended Robust Temporalism by arguing that temporal proximity is similar to (for example) friendship, in that it generates special obligations. Most people are inclined to believe, moreover, that friendship strengthens not only the duty to alleviate suffering, but also the duty to avoid inflicting it. If n is the minimum number such that it is permissible to sacrifice one stranger in order to save n others, and k is the minimum number such that it is permissible to sacrifice one friend in order to save k strangers, then most people will intuit that $n < k$. In my experience, most Robust Temporalists likewise intuit that duties to avoid inflicting temporally distant harms can be more easily permissibly infringed than duties to avoid inflicting temporally proximate harms. To the extent that a Robust Temporalist embraces these intuitions, she will be more positive, for instance, about a plan to increase greenhouse gas emissions in order to alleviate present-day world hunger.

Is the discount function on the duty to avoid inflicting harm identical to the discount function Δ_{save} on the duty to save? At least some of the people with whom I have discussed Robust Temporalism have expressed intuitions supportive of the idea that the duty to avoid inflicting suffering should be temporally discounted more drastically than the duty to alleviate it. Let n once again denote the minimum number such that it is permissible to today sacrifice one stranger in order to save n others. Some people have the intuition that it is permissible to perform an act that will kill one stranger in 50 years' time, say, in order to save $n - 1$ others in 50 years' time. This suggests that the 50-year temporal discount factor on the duty not to kill is lower than the 50-year temporal discount factor on the duty to save. In other words: temporal proximity makes more of a difference to the morality of killing than it makes to the morality of saving.

The analogous claim when it comes to special obligations of friendship would be the claim that friendship makes more of a difference to the morality of killing than it makes to the morality of saving. Although this is, I think, a reasonably plausible view, defending it in any detail is well beyond the scope of this paper. Likewise, I will simply leave it as an open question here whether the discount function on the duty to avoid inflicting harm is identical to the discount function on the duty to save.

8.3: Patented drugs

Another public policy issue centrally affected by Robust Temporalism is the debate over whether state-funded healthcare providers should purchase patented drugs.[52] Suppose that a certain patented, high-priced drug saves the lives of people with a particular disease. In ten years' time, the drug's patent will expire, and so it will become much cheaper. The state health provider, since it has a limited budget for drug purchases, will be able to save more lives in

[51] Sen 1982, §7; Broome 1992, pp. 107-8; Cowen and Parfit 1992, p. 150; Spash 1993; 1994; Cline 1998; Davidson 2006, p. 59; 2014; Caney 2008; 2009; Dasgupta 2008, §3.5; Shue 2014; Tarsney 2017. Schelling (1995) arguably fails to appreciate this distinction.
[52] Wilson 2012.

total if it waits to purchase more of the drug after its patent expires, rather than purchasing some of the drug today. Those lives, however, will be saved in ten years' time, rather than in the present.

James Wilson has recently argued that even if one accepts Robust Temporalism,

> it is difficult to see how adopting a nonzero pure discount rate could provide a cogent reason to prefer using drugs while still on patent. In order for pure discounting to do so, [some back-of-the-envelope calculations suggest that] the pure discount rate would [typically] need to be at least 3%. If we adopted this pure discount rate, then … a benefit in 100 years would be worth less than 5% of one now.

Wilson claims that this is implausible, especially if one applies such a discount rate to "other future harms and benefits, such as those due to climate change."[53]

In drawing an inference to climate change, one has to be careful not to elide inflicting suffering with failing to alleviating it, since (as I noted in §8.2) it remains an open question whether the discount rates on these two things should be the same. Furthermore, Wilson's claim that a discount rate of 3% per annum in the near term would require us to discount benefits in 100 years' time by a factor of 0.05 presupposes that the discount rate is constant over time – a claim that I have argued against in §7 of this paper. *Pace* Wilson, then, accepting Robust Temporalism might well allow one to mount a plausible defence of state healthcare providers purchasing patented drugs.

8.4: Political economy

Several political economy issues are also connected with Robust Temporalism. For instance, Tyler Cowen has argued that rejecting Robust Temporalism makes it more difficult to justify the existence of a large welfare state.[54] Although welfare states benefit the poor, expanding them beyond a certain size tends (at least in developed countries) to retard economic growth,[55] perhaps because such expansions increase "the administrative costs of the welfare state and the expenditures of real resources on lobbying the state for welfare privileges," and/or because such expansions increase the marginal rate of tax on productive activity (a) for welfare recipients, and (b) for people taxed to fund the welfare state.[56] Someone who rejects Robust Temporalism would be more willing to countenance cuts to the welfare state that will harm the poor of today, if these cuts will benefit the poor of the future by increasing economic growth.[57]

Rejecting Robust Temporalism also makes it easier to argue in favour of privatization and market liberalization 'shock therapies,' on the assumption that although these processes typically harm workers in the short run by creating temporary unemployment, they will benefit

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[53] Wilson 2012, p. 193.

[54] Cowen 2002, §IV; 2004, §III.A; 2018, pp. 81-3; see also Narveson 1997; Schmidtz 2000; J. Brennan 2007.

[55] Churchill and Yew 2017.

[56] Cowen 2002, p. 46.

[57] On the moral value of economic growth, see Bostrom 2003, §§I-II; Friedman 2005; 2007; Baumol, Litan and Schramm 2007, chapter 2; Moller 2011; Oulton 2012; Tomasi 2012; Galston 2014; Herzog 2016; Cowen 2018; Rose 2020; Jackson 2021. Several authors have also discussed the possibility of an inverse relationship between economic growth and existential risk: see Beckstead 2013, §3.3.6; Jones 2016; Aschenbrenner 2020; Ord 2020, pp. 205-10; Schmidt and Juijn 2021, pp. 16-7.

these workers in the longer run, by increasing economic growth.[58] Another argument in favour of privatization available to those who reject Robust Temporalism is the argument that

> market practice comes much closer to a zero discount rate than does government practice. Markets for short-term high-quality securities in the United States generate implicit (near) riskless discount rates between one and two percent. The federal government gives several indications of using higher discount rates. At typical interest rates, governments are typically net borrowers and the private sector is typically a net lender. … The magnitude of government borrowing is [even] greater when we consider the unfunded liabilities of the government, such as we find in social security and health programs. … The self-reported discount rates of government agencies also tend to be higher than market rates of interest.[59]

This should not be too surprising, given that politicians' planning horizons are often constrained by a 2–6-year electoral cycle, and/or by pressure to deliver immediate benefits to special interest groups.[60] By contrast, insofar as the market is functioning well, the share price of a publicly listed company should trade at the present discounted value of its expected future income stream. A private-sector manager whose remuneration is tied to the share price of her company thus has a strong incentive against significantly reducing the company's expected future revenue in order to deliver short-term windfall profits.[61] Of course, critics of Robust Temporalism should lament the fact that the market incorporates some private pure time preference into the discount rate that it uses to evaluate expected future dividend streams. Nonetheless, if pure time preference is lower in the private sector than it is in the public sector, then rejecting Robust Temporalism will make it easier to argue that private-sector provision is the lesser of two evils.[62]

Thirdly, rejecting Robust Temporalism would make it easier to argue in favour of government policies to promote saving and investment, again with the goal of promoting

[58] Cowen 2004, §III.D-E; 2018, p. 86.

[59] Cowen 2004, pp. 134-5. Note that a large budget deficit need not necessarily signal a high rate of pure time preference. A government could, for instance, run a large budget deficit in order to invest in infrastructure and educational projects whose benefits will continue into the medium and long term. At present, however, many government deficits in developed countries are in large part wealth transfers to the aged – see, e.g., Howker and Malik 2010; Batini et al. 2011; Kotlikoff and Burns 2012; Gibney 2017; Hammer et al. 2018; Kershaw et al. 2018; Bui 2021.

[60] On political short-termism, see Jacobs 2011; 2016; Uppal 2011; Elder and Wagner 2015; MacKenzie 2016; Boston 2017; Sheffer et al. 2018; Caney 2019, §3. The theoretical literature on 'political myopia' suggests a host of reasons why democratic pressures might induce underinvestment in long-term projects. See, e.g., Besley and Coate 1998; Leblanc et al. 2000; Persson and Tabellini 2000; Velasco 2000; Darby et al. 2004; Aidt and Dutta 2007; Battaglini and Coate 2007; Bohn 2007; Garrì 2010; Bonfiglioli and Gancia 2013; Azzimonti 2015; Aaskoven and Lassen 2017; Callander and Raiha 2017.

[61] Epstein 1989, pp. 1479-82. Note, for example, that Spotify, Snapchat and Tesla have had high market valuations for a long time, despite until recently all being loss-making. The market expectation, of course, is that these short-term losses will eventually be more than compensated for by profits in the longer term (whether or not these expectations are well-founded remains to be seen).

[62] Cf. Pérotin's (2016) argument that worker-cooperative, employee-owned firms show more concern for the long run and for future generations than publicly-listed firms do. She goes so far as to suggest that every company in the private sector could eventually be replaced by a worker cooperative.

economic growth.[63] One could, for instance, "institute a tax subsidy for savings. Individuals who save could be granted some form of tax deductibility, just as they currently receive tax deductibility for charitable donations. Japan has had such a policy for most of its post-World War II history. Similarly, we might choose to apply the subsidy on the demand side, such as having an investment tax credit, as the United States did through part of the 1980s."[64] At the very least, rejecting Robust Temporalism makes it harder to justify current practices of double-taxation on interest income, capital gains, and dividends.[65] There is also some evidence to suggest that redistributive inheritance taxes may discourage saving by the elderly, by reducing the incentive to save in order bequeath wealth to one's children.[66]

In summary, then, rejecting Robust Temporalism will make it harder to defend several 'progressive' economic policies. Rejecting Robust Temporalism does not, of course, make it *impossible* to defend these policies. One might argue, for instance, that Cowen overestimates the value of economic growth as compared against redistribution, perhaps by underestimating the extent to which the marginal utility of extra wealth for the poorest people declines as an economy grows,[67] and/or by underestimating the moral importance of intra- and/or intergenerational equality. Secondly, one might argue that income inequality and social immobility have adverse long-term political consequences, like elite capture, rent seeking, loss of popular trust in political institutions, and/or the replacement of compassionate and inclusive social norms with norms of excessive individualism.[68] Thirdly, one might embrace time discounting on grounds other than Robust Temporalism (see §2.1 above). Finally, one might argue that economic growth has its own adverse long-term consequences. Especially in lower- and middle-income countries, faster economic growth might increase greenhouse gas emissions,[69] and/or increase animal suffering by driving up demand for meat.[70]

On the flipside, embracing Robust Temporalism would not make it impossible to reject progressive economic policies either. One could argue, for instance, that these policies are highly costly in the short term as well as in the long term, and/or that even the discounted balance of long-term costs is large enough to outweigh the balance of short-term benefits.

We can at least conclude, however, that the choice of whether to accept or to reject Robust Temporalism will significantly affect which *kinds* of arguments will have the most force in the policy debates discussed in this subsection. For instance, someone who accepts

[63] Rejecting Robust Temporalism might also lead one to the view that private philanthropists should invest their money for a long period of time (perhaps even for hundreds of years, insofar as this is institutionally feasible) in order to donate a larger amount to charity in the future, instead of donating the principal immediately (see Moller 2006; MacAskill 2019).
[64] Cowen 2004, pp. 131-2. Barrage (2018) finds that a rate of pure time preference close to zero gives us reason to support a sizeable subsidy on capital income. Moreover, in circumstances where it is politically or constitutionally infeasible for a government to "subsidise capital income, the *constrained-optimal* carbon tax may be up to 50% below the present value of marginal damages (the social cost of carbon) due to the general equilibrium effects of climate policy on … households' incentives to save."
[65] Cowen 2004, p. 131.
[66] Gale and Perozek 2001; Holtz-Eakin and Marples 2001; Kopczuk and Slemrod 2001; Joulfaian 2006; Cagetti and De Nardi 2009; Goupille-Lebret and Infante 2018.
[67] Cf. Cowen 2018, pp. 41-8.
[68] Stiglitz 2012; Schmidt and Juijn 2021, §6.
[69] Jackson 2016; Victor 2019.
[70] Milford et al. 2019.

Robust Temporalism might perhaps be persuaded to support a large welfare state by the argument that redistributive policies will increase short-run total utility (because marginal utility is diminishing in wealth) – and any consequences decades down the line be damned! By contrast, a progressive who rejects Robust Temporalism will want to invoke one or more of the arguments in favour of redistribution that I have introduced as replies to Cowen. My own sense of the upshot here is that to the extent that a developed-world progressive embraces Robust Temporalism, she will have an easier time defending her preferred economic policies.

8.5: Existential risk

Several 'longtermist' moral philosophers have recently argued that the most important thing one can currently do with one's life is to attempt to reduce the probability of an 'existential catastrophe' ("the premature extinction of Earth-originating intelligent life or the permanent and drastic destruction of its potential for desirable future development").[71] Longtermists argue that the expected moral value of the future of humanity is so large that it should dominate one's moral deliberations. Greaves and MacAskill claim, for instance, that

> there are, in expectation, at least 1 quadrillion (10^{15}) people to come – 100,000 times as many people in the future as are alive today. This would be true if, for example, we assign at least a 1% chance to civilisation continuing until the Earth is no longer habitable, using an estimate of 1 billion years' time for that event and assuming the same per-century population as today, of approximately 10 billion people per century.

In fact, Greaves and MacAskill regard this as a conservative estimate.

> First, because of future technology, Earth could potentially host far greater per-century populations than is possible today … Second, and even more importantly, civilisation in the future may spread to the stars. … Even if just 0.01% of solar systems within the Milky Way were settled with the current population per century of Earth for just one billion years, there would be 10^{24} future people: one hundred trillion people for every person alive today. One would need to have a credence of less than one in one billion in this possibility in order for the expected number of future people to be fewer than one quadrillion.[72]

In light of these kinds of estimates, the longtermists argue that reducing existential risk by even a tiny amount will be much more valuable, in expectation, than alleviating suffering in the present day.

> Matheny (2007) [has] calculated that with a budget of $20 billion we could, in expectation, save 8 billion life-years via further improvements to defence systems against the possibility of a major asteroid colliding with Earth, giving an expected cost of $2.50 per life year saved. … Similarly, Millett and Snyder-Beattie (2017) calculate the total cost of interventions that aim to reduce extinction risk from biotechnology to be in the range of $0.10 to $100 per life year saved. … In contrast, funding for the Against Malaria Foundation, often regarded as the most cost-effective intervention in

[71] Bostrom 2013; see also Bostrom 2003; Beckstead 2013; Greaves and MacAskill 2019; Ord 2020.
[72] Greaves and MacAskill 2019, §2.1.

the area of short-term global health improvements, on average saves one life per $3500.[73]

Focusing on the lower bound of Millet and Snyder-Beattie estimated range, suppose that it costs about 70 × $0.10 = $7 to increase by 1 the expected number of human lives lived (I assume for simplicity that average life expectancy is 70 years, and, with Greaves and MacAskill,[74] that "the impact of grants is approximately linear in amount spent"). In that case, a philanthropist with $3500 available to donate faces a choice between (a) saving one life in expectation in the near future by donating to the Against Malaria Foundation, or (b) increasing the expected number of human lives lived by $3500 ÷ $7 = 500 by funding biotechnology extinction risk reduction. Let us concede to the longtermists, for sake of argument, that the duty to ensure that n human beings (with lives worth living) are brought into existence is just as strong as the duty to save the lives of n human beings, and has the same temporal discount function $\Delta_{\text{save}}(t)$. Let us also suppose, plausibly enough, that $\mu_{\text{save}}(n)$ is directly proportional to n, so that $\mu_{\text{save}}(n) := \alpha n$, for some positive constant α.[75]

If the philanthropist's donation to reduce extinction risk really does turn out to be the marginal donation that prevents an extinction event from occurring, then the extra lives that her donation causes to come into existence will be spread out between (a) the point in time T when the extinction event would have occurred had it not been for the philanthropist's donation, and (b) the point in time when humanity will in fact become extinct, given the philanthropist's donation. The vast majority of the 500 lives that the philanthropist's donation would bring into existence in expectation are thus extremely temporally distant from the present moment (even if we suppose that T is very close to the present). A Robust Temporalist philanthropist should thus discount the moral urgency of ensuring that these 500 lives are brought into existence in expectation by a factor close to the asymptotic lower bound $\lim_{t\to\infty} \Delta_{\text{save}}(t)$ on the discount function for the duty to save (illustrated by the dotted line in figures #7 and #8 above). Hence, a Robust Temporalist philanthropist should fund the Against Malaria Foundation instead of biotechnology existential risk reduction if

$$\Delta_{\text{save}}(\text{near future}) \cdot \alpha > [\lim_{t\to\infty} \Delta_{\text{save}}(t) + \varepsilon] \cdot 500\alpha$$

where ε is a small positive constant. This rearranges to:

$$\lim_{t\to\infty} \Delta_{\text{save}}(t) < \frac{\Delta_{\text{save}}(\text{near future})}{500} - \varepsilon \qquad (*)$$

Since Δ_{save}(near future) must be only slightly less than 1, and since ε is (by definition) only slightly more than 0, if $\lim_{t\to\infty} \Delta_{\text{save}}(t)$ is more-than-slightly below $\frac{1}{500}$, then equation $(*)$ will be satisfied.

Now, it strikes me as reasonably plausible to claim that the duty to save one person from dying tomorrow might well be more-than-slightly stronger than the duty to save 500 people from dying in a million years' time. Hence, it strikes me as reasonably plausible to claim that $\lim_{t\to\infty} \Delta_{\text{save}}(t)$ might well be more-than-slightly below $\frac{1}{500}$. A reasonably plausible version

[73] Greaves and MacAskill 2019, §§3.3-3.4.
[74] Greaves and MacAskill 2019, §3.4.
[75] $\mu_{\text{save}}(n)$ was defined in §7.1 above.

of Robust Temporalism therefore undermines the longtermist argument in favour of funding biotechnology existential risk reduction instead of donating to the Against Malaria Foundation – even if one works with Millet and Snyder-Beattie's lowest possible estimate for the cost per life year saved of reducing extinction risk from biotechnology.[76]

9: Conclusion

In this paper, I have defended the view that temporal proximity between two moral agents always strengthens at least some of their moral duties towards each other, including the duty to save. Although almost all other philosophers have dismissed this view out of hand, I have argued that it is *prima facie* intuitively plausible, and is analogous to a view about special obligations that many philosophers already accept. I have also defended time discounting against several common objections, and I have highlighted its relevance to a number of practical policy debates.

Robust Temporalism, then, is a moral live option, that deserves to be taken much more seriously in the future. It should amply reward further study.

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[76] For alternative critiques of Greaves and MacAskill 2019, see Mogensen 2019b; Thorstad 2021.

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