

# Cryonics for all?

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## Abstract

In fascinating recent work, some philosophers have argued that it would be morally permissible and prudentially rational to sign up for cryonics—if you can afford the price tag of the procedure. In this paper I ask: why not share the elixir of extended life with everyone? Should governments financially support, positively encourage, or even require people to undergo cryonics? From a general principle of beneficence, I construct a formal argument for cryonics promotion policies. I consider the objection that a subset of these policies would violate autonomy, but I argue that—to the contrary—considerations of autonomy weigh in their favour. I then consider objections based on cost and population, but argue that neither is fatal. Finally, I raise the objection that I believe poses the most serious challenge: that those who revive the cryonically preserved might inflict suffering upon them.

## KEYWORDS

cryonics, human enhancement, life extension

## 1 | INTRODUCTION

In his will, Jeremy Bentham requested that his body be preserved after his death and put on display. If you are ever in London, you can check it out for yourself, and even snap a selfie with the father of utilitarianism.

Had Bentham lived today, he could have chosen to preserve not only his body, but also his mind. By signing up for 'cryonics', people can have their brain frozen immediately after their 'death', in the hope that future medical advances will one day bring them back to life.

In fascinating recent work, some philosophers have argued that signing up for cryonics is a morally permissible and prudentially rational choice—if you can afford the price tag of the procedure.<sup>1</sup> In this paper I ask: why not share the elixir of extended life with everyone? Should governments financially support, positively encourage, or even require people to undergo cryonics?

In Section 2, I present an argument in favour of policies of cryonics promotion (CP). The boldest such policy would be to

make cryonics enrolment *compulsory*, and, in Section 3, I consider three forms that compulsory cryonics (CC) could take. In Section 4, I respond to the objection that CC would violate autonomy, and show how it could actually be *autonomy-enhancing*. In Section 5, I consider objections that apply to both compulsory and non-compulsory pro-cryonics policies, and raise the objection that I believe poses the most serious challenge: that the future society that revives the cryonically preserved might inflict suffering upon them.

## 2 | THE CASE FOR CRYONICS PROMOTION

In *Enhancement and the ethics of development*, Buchanan observes that much of the debate on human enhancement is based on the assumption that enhancement is something that individuals may—rightly or wrongly—choose for themselves, but that states should never be in the business of promoting. Buchanan thinks that this assumption is mistaken: because some enhancements 'create the potential for large scale increases in human wellbeing', states may have the right, or even the moral duty, to promote them, through means

<sup>1</sup>Shaw, D. (2009). Cryoethics: Seeking life after death. *Bioethics*, 23(9), 515–521; Moen, O. M. (2015) The case for cryonics. *Journal of Medical Ethics*, 41(8), 677–681; Minerva, F. (2018). *The ethics of cryonics: Is it immoral to be immortal?* Cham, Switzerland: Springer.

such as 'subsidies, tax credits, or other incentives'.<sup>2</sup> Following Buchanan, I will now make (and then critique) the case that—when it comes to the particular 'enhancement' of cryonics—governments should implement policies that promote uptake. But my argument goes one step further; while Buchanan shunned<sup>3</sup> the means of *compulsion*, I do not, *ex ante*, rule it out.

My argument for CP is as follows.

1. It would be morally good to implement policies that have a chance of benefitting people, provided that their implementation would not violate any moral constraints or result in too much harm.
2. Having one's life extended is a benefit, provided that the extended portion of one's life is worth living.
3. Cryonics has a chance of extending lives.
4. Cryonically extended lives would, in expectation, be worth living.
5. (From 1, 2, 3, 4) It would be morally good to implement policies that increase the number of people who undergo cryonics, provided that their implementation would not violate any moral constraints or result in too much harm.
6. Policies that increase the number of people who undergo cryonics would not violate any moral constraints or result in too much harm.
7. (From 5, 6) It would be morally good to implement policies that increase the number of people who undergo cryonics.

Before I critique this argument in Sections 4 and 5, I would like to offer some clarification of its premises.

Premise 1: *It would be morally good to implement policies that have a chance of benefitting people, provided that their implementation would not violate any moral constraints or result in too much<sup>4</sup> harm.*<sup>5</sup>

This premise follows from a weak principle of beneficence—that it is morally good to benefit others, all else being equal.

Premise 2: *Having one's life extended is a benefit, provided that the extended portion of one's life is worth living.*

<sup>2</sup>Buchanan, A. (2008). Enhancement and the ethics of development. *Kennedy Institute of Ethics Journal*, 18(1), 1–34.

<sup>3</sup>Buchanan writes that 'enhancements that are imposed on those who do not wish to have them would be wrong' (p. 7). However, Buchanan's position that people who do not want enhancements should not be required to have them, is, I would argue, inconsistent with the claims that he makes elsewhere in the paper. In particular, he analogizes biomedical cognitive enhancement with the 'great historical enhancement' of 'education'—which is (rightfully) compulsory in many countries.

<sup>4</sup>I leave open the question of whether it would be morally good to implement a policy so long as its (expected) benefits were *merely greater* than its harms (as consequentialists would hold), or whether the benefits would need to be *substantially greater* than its harms (as those who accept an asymmetry between harming and benefitting would hold). (Some would regard it as impermissible to produce certain serious harms *regardless* of the size of the benefits, but this is captured by the 'moral constraints' clause of Premise 1.)

<sup>5</sup>Harm should be understood here to include both 'person-affecting' harm as well as 'impersonal' harm. On this distinction, see Parfit, D. (1987). The non-identity problem. In *Reasons and persons*. Oxford, United Kingdom: Clarendon Press.

An extreme view is that it is *always* good to live, and bad to die, even if one's life contains overwhelming and irremediable suffering.<sup>6</sup> This is not a view that I endorse (though those who hold this view would even more readily accept this argument's conclusion). A more plausible view is that, so long as one's continued life satisfies some minimum threshold of wellbeing, one benefits from continuing to live.<sup>7</sup>

Premise 3: *Cryonics has a chance of extending people's lives.*

The probability that cryonics will succeed in bringing people back to life is an empirical question surrounded by great uncertainty and disagreement, but there is reason to believe that it is greater than zero.<sup>8</sup>

Premise 4: *Cryonically extended lives would, in expectation, be worth living.*

We generally believe that people's lives are good enough for them to be 'worth living', so Premise 4 has intuitive appeal. (I will, however, consider two objections to it in Section 5.)

Premise 6: *Policies that increase the number of people who undergo cryonics would not violate any moral constraints or result in too much harm.*

I will consider, in Section 4, whether CC would violate the moral constraint against wrongful interference with autonomy, and in Section 5, I consider potential harms related to population ethics and financial cost.

If the above premises are true, the argument's conclusion—*It would be morally good to implement policies that increase the number of people who undergo cryonics*—would follow.

This conclusion, if correct, would plausibly carry great moral force. We place a very high value on protecting human life, and think that protecting life is so important that, in general, it ought to take precedence over other concerns. Furthermore, the moral reason we have to implement CP policies may be *many times stronger* than the usual reasons we have to extend or save lives, given that cryonically extended life might be (a) far happier and (b) far longer than ordinary lives. Typical cases of saving a life enable someone to live, at most, a few decades longer than they would have, often in declining physical health. But a cryonically revived person could live for hundreds or thousands of years, or longer,<sup>9</sup> in full health,<sup>10</sup> and, potentially, in posthuman bliss.<sup>11</sup>

<sup>6</sup>See e.g. Dworkin, R. (1993). *Life's dominion: An argument about abortion, euthanasia, and individual freedom*. New York, NY: Random House.

<sup>7</sup>See e.g. Nagel, T. (1970). *Death*. *Noûs*, 4(1), 73–80.

<sup>8</sup>Best, B. P. (2008). Scientific justification of cryonics practice. *Rejuvenation Research*; Kaufman, J. (2011). *How likely is cryonics to work? LessWrong*. Retrieved from: <https://www.lesswrong.com/posts/NEpZGLNMGc447ez34/how-likely-is-cryonics-to-work>

<sup>9</sup>Minerva, op. cit. note 1.

<sup>10</sup>Alcor. (n.d.) What is cryonics? Retrieved from <https://alcor.org/AboutCryonics/>

<sup>11</sup>Bostrom, N. (2008). Why I want to be a posthuman when I grow up. In *Medical enhancement and posthumanity* (pp. 107–136). Dordrecht, Germany: Springer.

Policies of CP might include: public service announcements (highlighting the potential benefits of cryonics, and instructing people on how to sign up), and subsidizing the cost of cryonics (in part or in full). Making cryonics compulsory might increase uptake more than non-compulsory policies alone<sup>12</sup>—and, in the next section, I will examine three forms that compulsory cryonics could take. (The argument would also apply, *mutatis mutandis*, to *individual actions* that would increase the number of people who undergo cryonics, such as encouraging one's friends to sign up. Such recommendations would be more appealing than CP to those concerned about governmental overreach.)

### 3 | THREE WAYS THAT CRYONICS COULD BE COMPULSORY

There are three types of possible cryonics policies that could be considered 'compulsory'.

First, there could be a general requirement for people to be cryopreserved, but a process by which one could apply for an exemption. (Such a policy would not qualify as 'compulsory' as the term is often employed in the philosophical literature,<sup>13</sup> but could qualify as compulsory as the term is used in public policy discourse.<sup>14</sup>) The ease of obtaining an exemption could range from very difficult (as with conscientious objector status to military service) to very easy (simply 'opting out').

Second, there could be a requirement that anyone below a certain threshold of mental competence be cryopreserved, regardless of any preferences that they or their guardian(s) express.<sup>15</sup>

Third, there could be a rule that everyone—even those above the competence threshold—be cryopreserved when they die, with no exceptions.

It should be acknowledged that instituting any sort of CC policy would not be politically feasible, at present, but it is still an interesting philosophical question to ask whether such a policy *ought* to be implemented. Furthermore, public attitudes towards cryonics may *thaw* in the future—as attitudes towards new technologies tend to do—so the answer to this question may be of more than mere philosophical interest.

<sup>12</sup>Whether CC would be more effective than non-compulsory policies at increasing cryonics uptake would depend on the future political climate in which it was implemented. If CC were perceived as too extreme, then implementing it could result in significant backlash, leading to the policy being overturned, and hindering future efforts to promote cryonics.

<sup>13</sup>Feinberg says that one is compelled to take an action only if one's alternatives are 'so unreasonable that it is as if '[one] has no choice' but to opt for [that action]'. Feinberg, J. (1989). *Harm to self: The moral limits of the criminal law* (p. 151). New York, NY: Oxford University Press USA.

<sup>14</sup>Policies of 'compulsory vaccination' usually include mechanisms for exemption for those with religious and personal objections (Diekema, E. (2013). Personal belief exemptions from school vaccination requirements. *Annual Review of Public Health*, 35, 275–292). And, in the case of compulsory voting, penalties for non-voting are minor or non-existent, in some countries (Singh, S. (2011). How compelling is compulsory voting? A multilevel analysis of turnout. *Political Behavior*, 33(1), 95–111).

<sup>15</sup>Unless they had previously been competent and left an advance directive.

### 4 | THE AUTONOMY OBJECTION TO CC

Even the strongest supporters of cryonics may fiercely oppose CC, on the grounds that it violates autonomy (contra the 'moral constraints' clause in Premise 6). We tend to think that individuals' autonomy should be respected when it comes to their self-regarding choices. While part of the reason that we value autonomy is instrumental—individuals are often better judges of their own wellbeing than the state—part of the value we place on autonomy is intrinsic. Assuming that cryonics would benefit a person, it may still seem, intuitively, wrong to *compel* them to undergo cryonics. As Feinberg writes:

*Respect for a person's autonomy is respect for his unfettered voluntary choice as the sole rightful determinant of his actions except where the interests of others need protection from him. Whenever a person is compelled to act or not to act on the grounds that he must be protected from his own bad judgment even though no one else is endangered, then his autonomy is infringed.*<sup>16</sup>

The 'voluntary' in 'choice' should be emphasized. Feinberg holds that only individuals' reflective, informed choices must be respected; non-voluntary choices can be interfered with in order to protect a person's best interests.

Whether and to what extent autonomy is threatened by CC may depend on which of the three types of CC policy we are considering.

#### 4.1 | Autonomy under the first type of CC policy (general requirement with exemptions)

The first CC policy I considered was a general requirement for people to undergo cryonics, with a process by which one could obtain an exemption or opt out.

For some, the decision not to sign up for cryonics—under the status quo, where cryonics is something that you would have to sign up for to receive—is a reflection of inertia, rather than of voluntary choice. The first type of cryonics policy would not threaten their autonomy, under Feinberg's account.

Of course, many people do have a strong preference not to be cryopreserved. But they would be able to obtain an exemption, or opt out, under this policy. Thus, their autonomy would be preserved as well.

There is one category of people on whose autonomy this policy might impinge: those who have a preference against cryonics, but whose preference is weak, such that they do not feel that it is worth the trouble of applying for an exemption. However, because the strength of their preference is only slight, the moral badness involved in violating their autonomy would be slight as well.<sup>17</sup> Furthermore, if CC were not implemented, and people had to sign

<sup>16</sup>Feinberg, *op. cit.* note 13.

<sup>17</sup>On variations in the severity of autonomy violations, see Scoccia, D. (2007). In defense of hard paternalism. *Law and Philosophy*, 27(4), p. 372.

up if they wanted cryonics (as they do under the status quo), then there would be a symmetrical violation of autonomy, because some people have a slight preference to undergo cryonics, but their preference is not strong enough to motivate them to sign up. Moreover, if one subscribes to the type of anti-paternalist theory that holds that what determines whether a policy wrongly violates autonomy is not just the policy itself, but also the rationale invoked to justify it,<sup>18</sup> then we could offer the rationale that, in the case of those with a slight preference against cryonics, we are imposing CC not for their sake, but for the sake of those who have a preference in favour of cryonics, and of those who have no preference.

#### 4.2 | Autonomy under the second type of CC policy (compulsory for those below a competence threshold)

The second CC policy I suggested was the requirement that anyone below a certain threshold of mental competence be cryopreserved, regardless of any preferences that they or their guardian(s) express.

One potential problem with this policy is that the mental competence threshold could be set too high, enforcing cryonics on people who have competently decided that they do not want it. But let us set the practical difficulty of selecting a mental competence threshold to the side, and consider whether it is *in principle* possible to have a competence-threshold CC policy that is compatible with autonomy. Consider a case where it is clear that the individual in question is not mentally competent—they are an infant, let's say.

In such a case, CC for the infant would not violate the infant's autonomy, because the infant is not capable of making any autonomous choices at all. A choice must be made *for* them, one way or the other, whether they are to be enrolled in cryonics or not.

One view could be that the decision should be made by the infant's parents. However, the deference that we give to parents to make decisions on behalf of their children should not be regarded as absolute—especially in cases where deferring to parents could expose a child to serious harm or death. For example, children ought to be given life-saving blood transfusions, even when their parents object on religious grounds (as some judicial decisions have affirmed<sup>19</sup>). Parental opposition to cryonics might be an analogous case.

#### 4.3 | Autonomy under the third type of CC policy (CC for everyone, no exemptions)

The third type of CC policy was the requirement that everyone be cryopreserved when they die, with no exceptions. Even if you agree

with my analysis of the previous two types of CC policies, surely, you might think, this third type of policy would be a serious violation of autonomy.

If the third policy is indeed a grave violation of autonomy, it might still—it should be noted—be all-things-considered justified, provided that the moral reason in favour of it—the importance that we attach to cryonically extending people's lives—is sufficiently strong. (Some anti-paternalists, like Feinberg, would deny this, holding that 'autonomy ... is a moral trump card ... always and necessarily taking moral precedence over ... [other] considerations'.<sup>20</sup>)

However, we need not even concede that the third policy is at odds with respect for autonomy. John Stuart Mill, a champion of autonomy, famously defended prohibitions on selling oneself into slavery, on the grounds that a person's autonomous choice may be overridden in order to protect their ability to autonomously choose for the rest of their life.<sup>21</sup> In other words, a small violation of a person's autonomy might be justified if it promotes their autonomy overall. Following Mill, I would argue that we may sometimes *compel the deferral* of a person's autonomous decision until a later time when that person is more autonomous (i.e. when they possess more decision-relevant information and/or improved reasoning skills).

If a cryonics patient is revived, and decides that they do not want to continue to live, then they could choose to end their life—as philosophers have noted before.<sup>22</sup> So long as suicide is a feasible option,<sup>23</sup> the third CC policy would not remove, from individuals, the decision of whether they want to continue living their lives. It would just defer this decision (if cryonics is successful) until after their revival.

There are two reasons why a cryonics patient is likely to be more autonomous after they are revived than they were before their 'death'. First, they would be more informed; they would know what the 'future' was like, because they would be living in it. Second, they might be more rational, because they could access advanced cognitive enhancement technologies that were unavailable in the past. With more information and stronger reasoning powers, people would be able to make a more autonomous choice, post-revival, about whether they wanted to continue living. So considerations of autonomy seem to *support*, rather than to undermine, the case for implementing the strictest of the CC policies.

But the following *reductio* might be raised. The argument that I have given might also seem to justify policies that we consider to be impermissible instances of paternalism.

For example, it would be wrong to force competent adults to undergo medical treatments that they expressly reject—even in cases

<sup>18</sup>See Begon on whether this rationale needs to be what, in fact, motivated policymakers, or merely a rationale that one could give. Begon, J. (2016). *Paternalism. Analysis*, 76(3), pp. 361–365.

<sup>19</sup>Woolley, S. (2005). Children of Jehovah's Witnesses and adolescent Jehovah's Witnesses: What are their rights? *Archives of Disease in Childhood*, 90(7), 715–719.

<sup>20</sup>Feinberg, op. cit. note 13, p. 26.

<sup>21</sup>Mill, J. S. (1859). *On liberty*. London, United Kingdom: John W. Parker and Son. p. 184.

<sup>22</sup>Shaw, op. cit. note 1, p. 517; Moen, op. cit. note 1, p. 679; Minerva, op. cit. note 1, p. 39.

<sup>23</sup>Committing suicide, though, might very psychologically or physically difficult (or even impossible—an issue I return to in Section 5.4).

where the treatment would save their life (as in the case of adult Jehovah's Witnesses who refuse blood transfusions).

It is true that the argument I have given for CP implies that there is a *pro tanto* moral reason in favour of these types of paternalistic interventions. But I do not think that this is a particularly controversial proposition. Many anti-paternalists would be happy to recognize the existence of such a moral reason—they would just argue that it is outweighed or overridden by the importance of respecting autonomy.

In the case of CC, I argued that the moral reason we have to extend lives (that are worth living) is not outweighed or overridden by considerations of autonomy—because the autonomy of cryonics recipients would be *enhanced* overall: post-revival, they would be able to make a more informed and cognitively enhanced choice about whether they wanted to continue living. However, in (many of) the intuitively impermissible instances of paternalism, there would be no particular reason to think that the person in question—if we save their life now—would have more decision-relevant information or better reasoning powers in the future. (And to the contrary, for end-of-life patients, we would have reason to expect their cognitive abilities only to decline.)

But the *reductio* can be revised. Although my arguments would not justify *all* life-saving paternalistic interventions, perhaps they would justify any such interventions that were coupled with providing information and education to the person in question that would enable them, in the future, to make a more autonomous choice about whether they actually wanted to die. It might also seem to follow, from what I have said, that we would be promoting people's autonomy by interfering with even trivial decisions that they wanted to make, in order to force them to do more research or deliberate for a longer period of time. Their eventual decision, after all, would be 'more autonomous'!

However, I think that it is possible to distinguish these types of interventions from CC, and to explain why an autonomy objection could render impermissible the former but not the latter. We can appeal to the following two conditions, which seem jointly sufficient for it to be permissible, from the perspective of autonomy, to compel the deferral of a person's choice. First, the deferral would have to, in expectation, *drastically* improve a person's ability to make the decision in question (by affording them access to highly decision-relevant information, and/or by greatly enhancing their reasoning ability). Second, the stakes of the decision would need to be high.

These two conditions cohere with our intuitions in Mill's famous bridge case:<sup>24</sup> if a person is just about to cross a bridge that you know is rotten, you may intervene to prevent them from crossing, in order to inform them of the bridge's dangerous state. In this case, the stakes are high. The person will plunge to their death if they cross the bridge, and the information that you provide would drastically improve the autonomy of their decision—almost certainly, they were unaware of the bridge's dangerous

state, and almost certainly, they would choose not to cross it once they acquired this information.

In (many of) the intuitively impermissible examples of paternalism, however, one or the other of the two conditions is not met. Interference with trivial decisions would not satisfy the 'high-stakes' condition. And in life-saving cases, the '*drastic improvement* in decision-making' condition (at least if we set the bar for drastic improvement high enough) would be difficult to meet. It is hard to improve a person's cognitive abilities by much through more education<sup>25</sup> (especially if they have already completed many years of it), and it is unclear what pivotal piece of information we could provide someone with that would change their mind about wanting to die. In the case of cryonics, though, cognitive enhancement technologies of the future could, very plausibly, produce drastic improvements in reasoning ability. And the new information that a revived person would gain—about what living in the 'future' was actually like—would be extremely relevant to their decision about whether they wanted to live in it.

So, while concern for autonomy seems, in many cases, to override the *pro tanto* reason we have to promote people's best interests, in the *extraordinary* case of CC, it would not. We may deny individuals the choice to refuse cryonics, in order to drastically improve the autonomy of their high-stakes choice on whether, ultimately, they wanted to live.

Thus, the autonomy objection fails to undermine any of the three types of CC policies.

## 5 | THE CASE AGAINST CP

While the autonomy objection was raised only against CC, other objections would apply to both compulsory and non-compulsory policies of cryonics promotion.

### 5.1 | Cost

One reason against CP might be its cost; perhaps the money that is used to pay for CP policies (or money that individuals spend on cryonics as a result of being enticed, by CP, into signing up for the procedure) would have otherwise been spent in better ways. (Such an objection would challenge Premise 6's 'harm' clause.) However, the cost of cryonics compares favourably with some types of current medical spending, such as intensive care units,<sup>26</sup> and, as the cost of cryonics comes down in the future, it may even be competitive with the most cost-effective programmes, according to some calculations.<sup>27</sup>

<sup>25</sup>See Ritchhard, R., & Perkins, D. (2005). Learning to think: The challenges of teaching thinking. In K. Holyoak & R. Morrison (Eds.) *The Cambridge handbook of thinking and reasoning*. New York, NY: Cambridge University Press.

<sup>26</sup>Minerva, *op. cit.* note 1, p. 30.

<sup>27</sup>Various commenters. (2013). Cryonics and effective altruism. *LessWrong*. Retrieved from <https://www.lesswrong.com/posts/bb7FiySyRgjXptAww/prize-essay-content-cryonics-and-effective-altruism#2dYoNBurxgDE2pBgC>.

<sup>24</sup>Mill, *op. cit.* note 21.



## 5.2 | Population

Another objection to CP is that cryonics patients might displace new people from coming into existence, assuming limits on the carrying capacity of Earth (and of any other planets that are settled in the future). Perhaps it would be better to bring a new person into existence than it would be to extend the life of someone who has already lived their 'fair share' of life.<sup>28</sup> (This is again an objection to the 'harm' clause in Premise 6, though the harm, in this case, would be impersonal.)

The first thing to note about this objection is that it is, *at most*, an argument for restricting CP in scope; only the young, who have not yet lived a fair share of life, should be encouraged or required to be cryopreserved if they die. (Perhaps those who had lived a life that was normal in duration but especially low in quality, owing to some hardship that they faced, could also be targets of CP.)

Second, the view that it is better to bring a new person into existence than it is to extend the life of an existing person is counterintuitive. Most people have the intuition that it is better to 'save' the life of a living person than it is to create a new person, other things being equal.<sup>29</sup>

But even if we grant that it would be better to bring the new person into existence, the objection still does not succeed. This is because it is not certain that overpopulation will be a problem in the future. If it were a problem, then future society could choose not to revive cryonics patients at that time, or to place limits on the number of people who were revived. So, while population-based considerations might justify the decision to refrain from reviving cryonics patients, it seems like a poor justification for refraining from cryopreserving people in the first place—condemning them to certain death for the sake of a concern that may never materialize.

So it seems that neither cost nor population ethics considerations can ground a successful objection to CP.

We might instead object to CP by challenging Premise 4's claim that the lives of revived cryonics patients would be, in expectation, worth living.

## 5.3 | Boredom

A common objection to radical life extension is that life would eventually become boring. Williams argued that an indefinitely long existence would become tedious because one would eventually satisfy all the desires that give one reason to live.<sup>30</sup> And Kagan likens immortality to eating an excessive amount of chocolate: 'things that are good for you in limited quantities can become bad for you if you get more and more and more of them'.<sup>31</sup>

In response, many have denied that a long existence would necessarily be a boring one. For example, Fischer points out that certain pleasures seem 'repeatable' (that is, while they are 'completely satisfying [in] the moment', one would 'wish to have more ... at some point in the future'),<sup>32</sup> and Temkin suggests that neurointerventions such as "selective memory' pills' could help long-living people to evade boredom.<sup>33</sup>

However, *even if* we accept the boredom objection, we need not reject Premise 5. That is, even if a very long existence would likely, or certainly, become unbearably boring, the post-revival portion of life that a cryonics patient would live could still be, in expectation, worth living.

Several considerations show why this is the case. First, the period of time between (a) revival and (b) the point at which a person's life would become boring—which could be quite a long period indeed—would be worth living, in expectation. So long as the value of the boring period of a person's life was neutral or only mildly negative, the cryonically extended portion of their life, as a whole, would still be net-positive. Second, even if we thought eventual boredom likely, we may still think that there is at least some chance that a person's life would never become boring (and might, to the contrary, be glorious<sup>34</sup>). In expected-value terms, it seems worth risking a neutral (or mildly negative) outcome in exchange for the possibility of an intensely positive one. Third, a revived person might die—of natural causes, or by being killed—before they reached the boredom point. And fourth, if they did not, they could commit suicide just before, or shortly after, their life reached that point (a recourse that Minerva, Moen and Shaw all note<sup>35</sup>).

## 5.4 | Dystopia

While Premise 4 is able to survive the boredom objection, I will now raise an objection that I believe poses a graver challenge: that those who revive the cryonically preserved might inflict suffering upon them, and deny them the recourse of suicide.

Dystopian revival scenarios like this are generally dismissed as implausible,<sup>36</sup> and have received almost no attention in the philosophical literature (though Minerva<sup>37</sup> and Southan<sup>38</sup> are important exceptions). I will explain why this worry may be less implausible than it seems, and anticipate and respond to two sceptical replies.

There are two reasons that suffering might be inflicted on the cryonically preserved post-revival. First, the revivalists might *want*

<sup>28</sup>See Lewis, G. (2018). *How much life does a man need? Why life extension is immoral*. Working Paper.

<sup>28</sup>See Lewis, G. (2018). *How much life does a man need? Why life extension is immoral*. Working Paper.

<sup>29</sup>See Broome, J. (2004) *Weighing lives*. Oxford, U.K.: Oxford University Press, p. 108.

<sup>30</sup>Williams, B. (1973). The Makropulos case: Reflections on the tedium of immortality. In *Problems of the self*. Cambridge, UK: Cambridge University Press.

<sup>31</sup>Kagan, S. (2012) Immortality. In *Death*. New Haven, CT: Yale University Press, p. 236.

<sup>32</sup>Fischer, J. M. (1994). Why immortality is not so bad. *International Journal of Philosophical Studies*, 2(2), 257–270.

<sup>33</sup>Temkin, L. S. (2008). Is living longer living better? *Journal of Applied Philosophy*, 25(3), 193–210.

<sup>34</sup>Bostrom, op. cit. note 11.

<sup>35</sup>Op. cit. note 22.

<sup>36</sup>See e.g. More, M. (2013). Cryocrastination. Cryonics. Retrieved from <http://www.alcor.org/Library/html/cryocrastination.html>

<sup>37</sup>Minerva, op. cit. note 1, p. 38

<sup>38</sup>Southan, R. (2019). Should we care which side of history we're on? *Icelanded*. Retrieved from <http://icelated.com/post/183945421149/should-we-care-which-side-of-history-were-on>

to inflict suffering on cryonically preserved persons. Second, the revivalists might want to use cryonically preserved persons for some purpose, and be *indifferent* to their suffering.

In response to the first possibility—that the revivalists might inflict suffering deliberately—one might point to the trend in moral progress over time<sup>39</sup> as evidence that future people will be morally enlightened—not evil—and would not want to cause cryonics patients to suffer gratuitously. However, even if we assume that the apparent trend in moral progress will continue, it might be a rogue actor or group, whose values do not reflect the enlightened values of their society, who decides to revive those who are preserved. Or perhaps it is precisely *because* our descendants will be so morally enlightened that they would want to punish us for practices that, though widely accepted today, are viewed as morally horrific in the future. (Southan offers the example of eating meat.<sup>40</sup>)

One response might be to doubt that anyone would choose to incur the cost of reviving a cryonically frozen person for the sole purpose of causing them to suffer. Yet, many people do value retribution, even when it comes at a cost. Further, the cost of revival might be low. And even if it were high, people—and the institutions they set up—are often willing to waste extraordinary amounts of money on causing others to suffer, with the modern U.S. prison system<sup>41</sup> being a prime example.

Alternatively, the revivalists might not *want* revived persons to suffer, but they might want to use them for some purpose—such as labour or scientific experimentation<sup>42</sup> or entertainment—and be indifferent to any suffering that was caused. The treatment of animals in factory farms is an analogy: it is not that our present society *wants* animals to suffer, just that people do not *care* enough to stop the suffering. One reason that future people might be indifferent to our suffering—and view us in a manner similar to that in which many humans view animals—is that their superiority in intelligence might be comparably vast. Or, perhaps their perception of us as moral monsters would explain why they would not mind if we suffered.

These possibilities should make us less confident in the premise that cryonically extended lives would, in expectation, be worth living—upon which the case for CP depends.

Of course, the mere *possibility* that a cryonically extended life might contain net suffering would not be sufficient to undermine the case for CP; analogously, if we passed by a stranger who was drowning, the non-zero chance that their life is irremediably miserable would not be a good reason to let them drown. The difference, though, is that, in ordinary cases of life-saving, we can be confident that the people we rescue have lives that are very likely well worth living.<sup>43</sup> But when it

comes to revival in an unknown and distant future, this is a less sure bet. Perhaps it is better to rest in peace than to be revived in peril.

## 6 | CONCLUSION

Recent work by pro-cryonics philosophers has defended the claims that signing up for cryonics is a prudential and morally permissible choice. I considered a bolder thesis: that we should actively encourage others to pursue cryonics, by implementing policies of cryonics promotion. One such policy is CC, and I argued that CC would enhance, rather than violate, autonomy, by forcing the deferral of an individual's decision on whether to end their life until a time when they were smarter and more informed. However, a serious challenge for any policy of CP, I argued, is the possibility that those who revive the cryonically preserved might—whether because of ill will or indifference—cause them to suffer. Further academic work should be done on forecasting the probability of such dystopian scenarios, and on how the risk of a frightening future should be weighed against the possibility of a fantastic one. Until then, on the question of whether cryonics should be promoted, we should *cryonically suspend* our conclusions.

## ACKNOWLEDGEMENTS

For helpful comments on drafts, I thank Tom Douglas, Julian Savulescu, Alberto Giubilini, and Jonathan Pugh. For valuable discussion, I am grateful to the attendees of the Bioethics Spring School at Vrije Universiteit Amsterdam and the Oxford Uehiro Prize Presentations in Practical Ethics.

## CONFLICT OF INTEREST

The author declares no conflict of interest.

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**How to cite this article:** Thau T. Cryonics for all?. *Bioethics*. 2020;00:1-7. <https://doi.org/10.1111/bioe.12710>

<sup>39</sup>Pinker, S. (2011). *The better angels of our nature: Why violence has declined*. London, United Kingdom: Penguin Books.

<sup>40</sup>Southan op. cit. note 37.

<sup>41</sup>McLaughlin, M. (2016). *The economic burden of incarceration in the U.S.* Working Paper No. CI072016. Washington University in St. Louis.

<sup>42</sup>Minerva, op. cit. note 1, p. 38.

<sup>43</sup>End-of-life patients in great pain may be an exception.