



Climate Change – How Might it Rank in Importance as a Global Catastrophic Risk and an Existential Risk?

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Introduction

Aim: To locate climate change within the set of risks known as global catastrophic and existential risks.

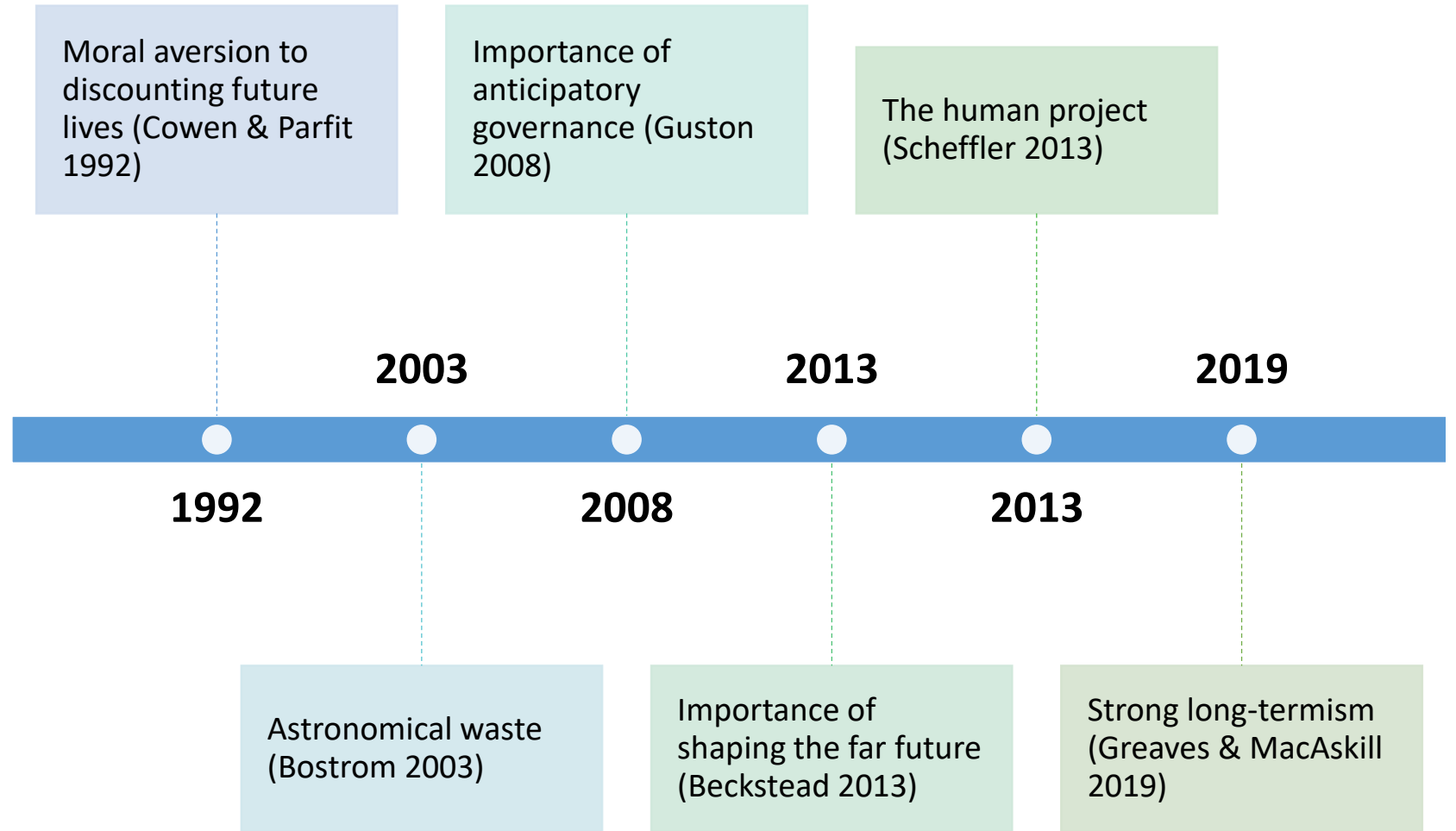
- Define global catastrophic, existential, and extinction risks
- Outline ethical arguments for the importance of these risks
- Identify what risks might plausibly be included in this set
- Rank them by annualised consequence in expectation
- Consider specific co-benefits with addressing climate change risks

Existential & global catastrophic risks (GCRs)

Humanity faces many major risks – needs to prioritise its responses

- **Existential risks** – threaten the entire future of humanity (Bostrom 2013). Includes extinction risks (all of humanity is eliminated) and risks where humanity's potential is permanently curtailed eg, unrecoverable collapse/dystopia (Ord 2020, p37)
- **GCRs** – so disastrous they affect one or more systems critical to humanity and spread to affect the entire planet (Avin et al, 2018). Rule of thumb – GCRs are those that might kill >10% of the human population

Ethical arguments generally thought to favour the prioritisation of existential risk reduction



Ethical underpinnings of existential risk reduction

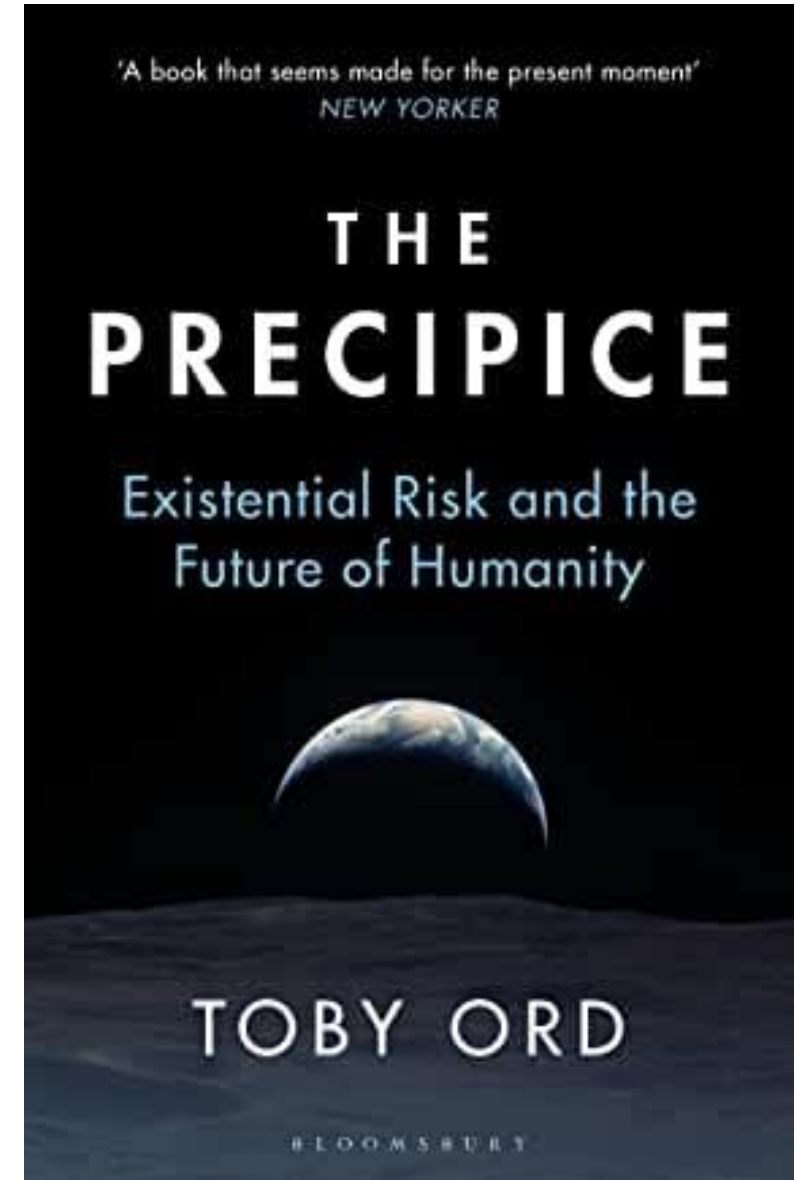
Nick Bostrom ('astronomical value' thesis)

A total utilitarian perspective, that considers humans (intelligent beings) to be carriers of value (hedonic, preferencist, etc)

“To calculate the loss associated with an existential catastrophe, we must consider how much value would come to exist in its absence. It turns out that the ultimate potential for Earth-originating intelligent life is literally astronomical” (Bostrom 2013)

Ethical underpinnings of existential risk reduction

Toby Ord considers that existential risk, by definition, (and possibly some GCRs), put at risk humanity's entire future. This is the main reason why they might be considered one of our highest priorities (Ord 2020, p35)



Ethical underpinnings of existential risk reduction

Longtermism works from the assumption that we should be *impartial* in our moral care. Someone's value is equal whether they exist now, 10 or a 1000 years in the future (Cowen & Parfit 1992; Beckstead 2013; Greaves & MacAskill 2021)

Positively influencing the long-term future is a key moral priority because there could be very large numbers of future people, and that what we do today can affect how well or poorly their lives go. See also MacAskill – forthcoming book 'What we owe the future'

General convergence upon the importance of existential risks from other moral theories & arguments

- Arguments from virtue ethics (Ord 2020)
- Duty & obligations (Bostrom 2013)
- Intrinsic value of humanity (Adams 1989; Scheffler 2013)
- Preference satisfaction (Ord 2020)
- Democratic (Bostrom 2013)
- Cosmic significance (Ord 2020)

Rejecting
longtermist
arguments –
traditional risk
analysis still
favours a focus
on GCRs &
existential risks

Risk	Prob 100 yr (extinction)	p_annual* (extinction)	deaths	annualised
Unaligned artificial intelligence	0.1	0.001	8 billion	8,000,000
Engineered pandemic	0.033	0.000333	8 billion	2,666,667
Unforeseen anthropogenic risk	0.033	0.000333	8 billion	2,666,667
Other anthropogenic	0.02	0.0002	8 billion	1,600,000
Nuclear war	0.001	0.00001	8 billion	80,000
Climate change	0.001	0.00001	8 billion	80,000
Environmental damage	0.001	0.00001	8 billion	80,000
All natural disasters (not x-risks)	1	1	60,000	60,000
Supervolcano	0.0001	0.000001	8 billion	8,000
Natural pandemic	0.0001	0.000001	8 billion	8,000
Large asteroid impact	0.000001	0.00000001	8 billion	80
Stellar explosion	0.000000001	1E-11	8 billion	0

* Annual probability may be lower/higher at t = 0, and rising/falling by risk

Comparing GCRs & existential risks

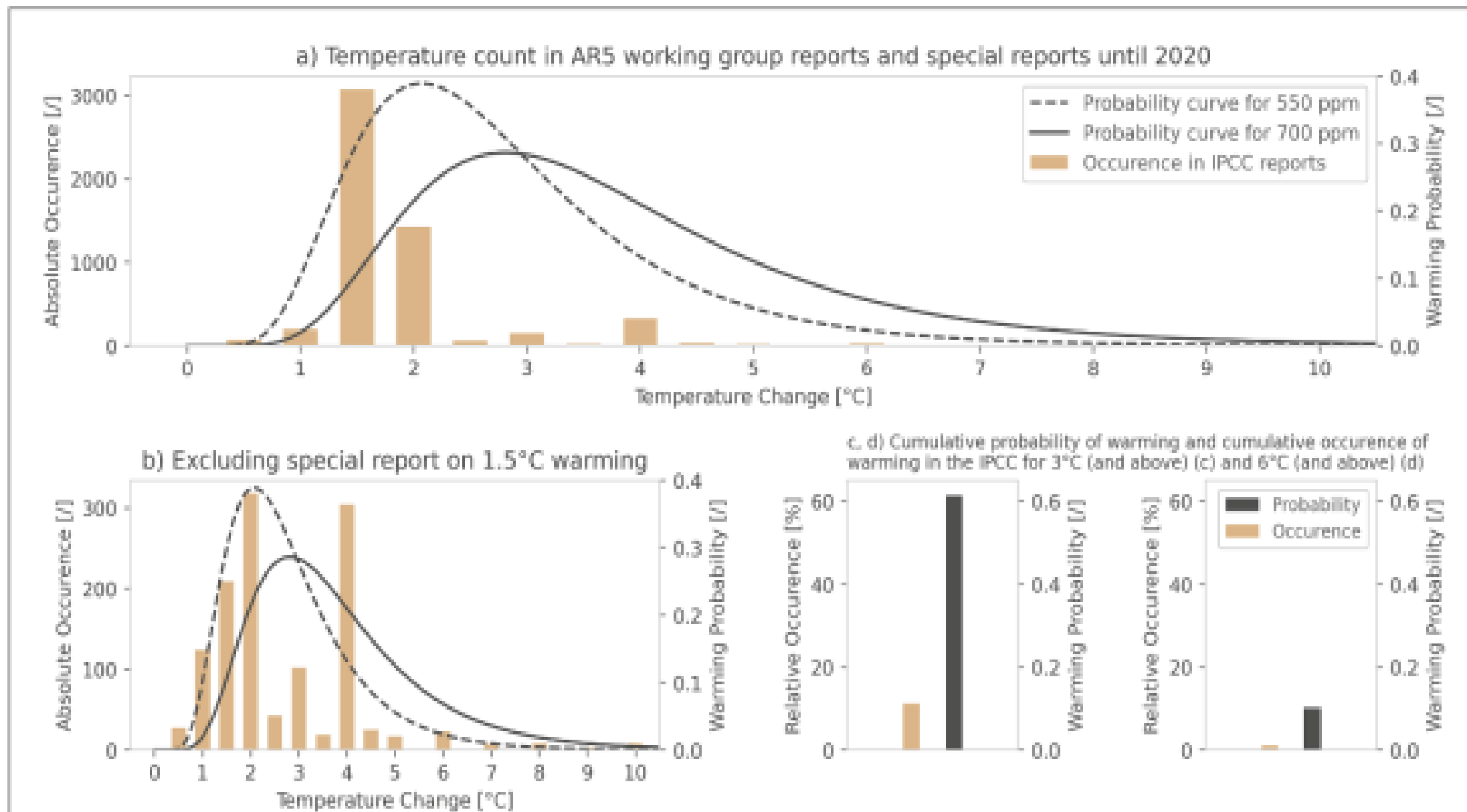
So when considering annualised impact in expectation:

- Some GCRs and existential risks seem higher than climate change (eg, unaligned AI & engineered pandemics) – albeit very high uncertainty around some of these
- Some risks also much higher than for all “natural” disasters combined
- So these GCRs and existential risks seem to be greatly neglected
- Covid-19 highlighted the neglect of pandemic preparedness

Climate change (CC) as a GCR/existential risk

- CC – likely to be among the 5 greatest specific GCRs
- Also neglected as an existential threat (scenarios that see >6 degrees warming, accounting for 10% of the distribution of probable temperature rise, are greatly neglected in IPCC reports [Jehn et al 2021])
- While CC seems unlikely to directly threaten human extinction, it could still cause an unrecoverable collapse of civilization (within existential risk definition)
- CC could also increase the risk of other GCRs eg, great power conflict, global agricultural shortfall

Climate change temperature-probability curve superimposed with occurrence in IPCC reports (Jehn et al 2021)



Addressing climate change – more tractable?

- Many **cost-saving interventions** eg, ending fossil fuel subsidies or clean energy that reduces air pollution (7-9 m deaths / year)
- **No major new technology required** – if a mix of solar/wind/batteries/grid upgrades are used (usually cheaper than coal)
- **5 countries produce 58%** of global CO2 emissions; top 10: 67%
- Rogue countries can have **carbon tariffs** applied to their exports
- But **still big challenges**: vested interests, war in Ukraine, short time horizon of many governments, generally poor response to air pollution harm by governments

Other co-benefits of responding to CC

- International cooperation on CC → cooperation/treaties to reduce the risk of nuclear war, bioengineered pathogens & unaligned AI
- Cooperation on climate → more resources to Global South → reduced poverty & more resilience to other GCRs
- Larger shifts to plant-based diets (lower emissions) – then more capacity to manage global agricultural shortfalls (eg, from pandemic/war disruptions, volcanic disaster)

Conclusions

- CC poses both a GCR and an existential risk and is therefore of great ethical importance
- This ethical importance can just leverage off protecting people alive now (not critical to consider longtermism)
- While a few other GCRs and existential risks might be even more important than CC (although large uncertainty exists) – all are important & action can foster global cooperation
- Addressing CC may have particular co-benefits & favourable benefit-cost ratios (eg, short-term benefits of reducing air pollution, cheaper renewables)