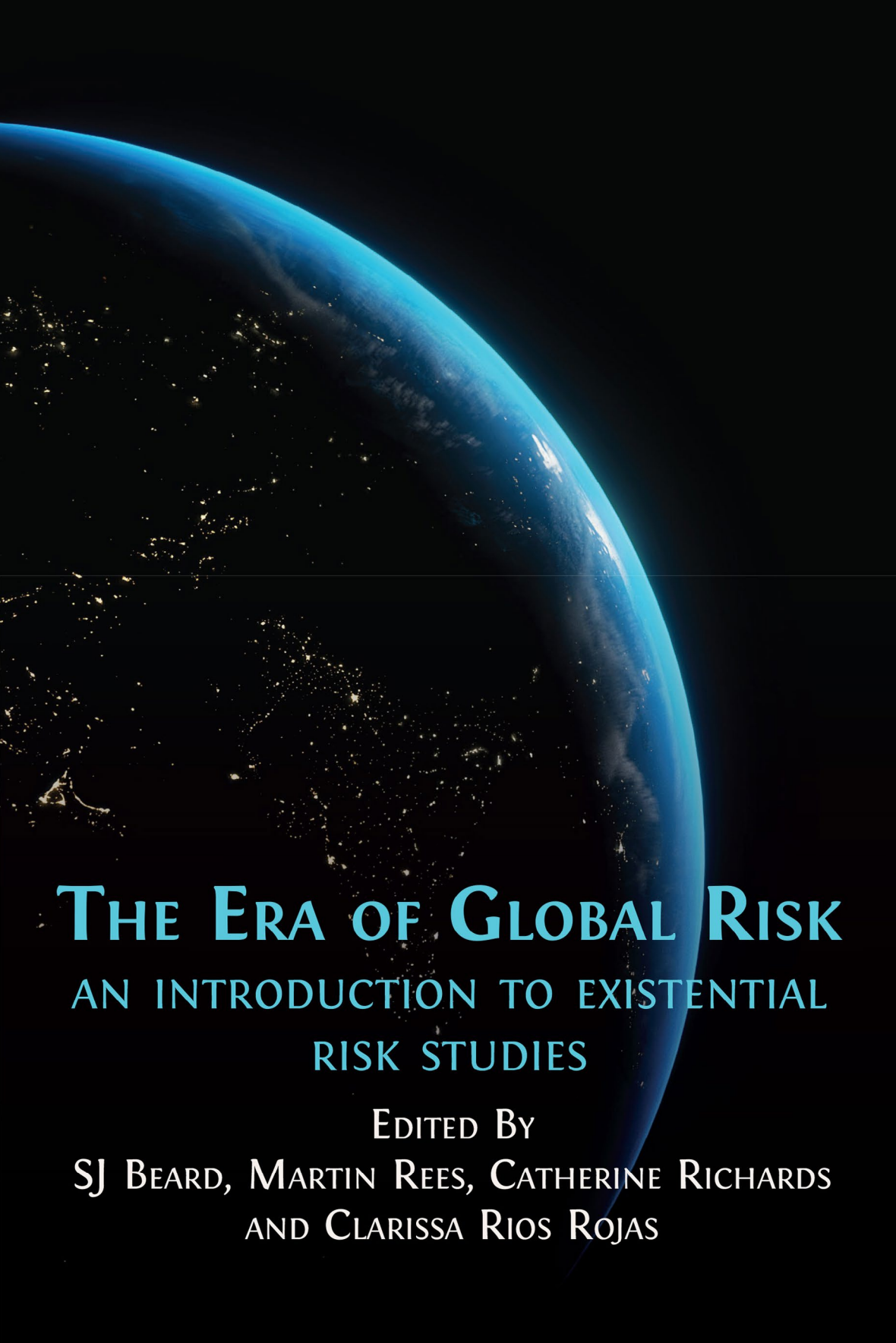

The Era of Global Risk

An Introduction to Existential Risk Studies

Edited By
SJ Beard, Martin Rees, Catherine Richards and Clarissa Rios Rojas

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5. We Have to Include Everyone: Enabling Humanity to Reduce Existential Risk

Sheri Wells-Jensen and SJ Beard

Humanity is facing multiple, overlapping challenges in the 21st century with the potential to bring about human extinction or the collapse of civilisation. Given this, it can be tempting to believe that we should 'play to our strengths' by relying on the most able to take responsibility for understanding and mitigating these risks. This would be a terrible mistake. Far from being merely vulnerable and unable to help, disabled people—and others who are marginalised or excluded within our societies—have a lot to contribute to managing risks, up to and including on a global scale. Moreover, diversity and inclusion are vital sources of creativity and resilience. In this chapter, we show how both the field of Existential Risk Studies and the wider community of people concerned with reducing the level of global risk would benefit from championing inclusive futures and paying more attention to disabled people and other marginalised groups.

A common narrative about disability and risk

At a local high school, the theatre class was poised for an afternoon of improvisation. The stage was set and the scene was given: "You and a blind companion are in the living room. There is a fire!" Each team had three minutes to prepare, and the scenes were played out in rapid succession. With the *joie de vivre* characteristic of such events, the kids

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took off. Mostly, the fire was evaded or extinguished but, every once in a while, the whole house did burn down. Sometimes marshmallows were roasted, and the occasional textbook was 'accidentally' incinerated. The banter was witty, the political allusions were hot, and the school administration came in for a liberal dose of good-natured ribbing. And, in every case, the blind person was *rescued*.

While the students took this all in stride, Sheri, as a blind person visiting the class, found the situation deeply troubling. Even when the blind characters in the scene were part of the fun, exchanging quips and contributing to the commentary, they were never part of the solution. In living room after living room, the blind people did nothing but consent to being saved from the flames. They were led out, carried out, and occasionally hilariously dragged out, but in every situation, they were passive. Even though a blind adult was right there in the room and had just been talking to them about inclusion and social justice, the reflexive reaction from all groups was that the blind characters were in charge of exactly nothing.

We tell this story not to disparage these young thespians; they did not create (and probably would not even approve of) the cultural stereotypes they enacted. If Sheri had stopped to point out what had just happened, we are sure they would have been appalled, but she let it go, mostly to give herself time to think. They were staging what they had been taught, playing out on the stage the values of their community — of our community. At a different school, in a different country, SJ had very similar experiences. Across many cultures, some people (in this case, disabled people) are cast *a priori* as vulnerable recipients of societal welfare. These individuals are not co-creators of change or solvers of problems. They are the rescued, not the rescuers, and because this is so ingrained in human society, it underpins everything we do, including good-natured amateur impromptu theatre. And it feels logical.

Challenging this accepted narrative

But logic *per se* actually points in a very different direction in situations like this. In a serious fire indoors, electric lighting may well fail, throwing the disaster scene into darkness, while thick, eye-stinging smoke makes vision one of the least reliable resources. Logically, the blind person—accustomed to moving about freely without reliance on

eyesight—would be the consummate rescuer, reassuring and guiding others to safety. But that is not what happened in these scenarios.

Still, it does (or, at least, it did) seem natural, almost archetypal, that some people—children, the disabled, women, the elderly, anyone who is pregnant, and those without physical or economic capital—are vulnerable, and protecting them is viewed as a moral imperative. Any responsible disaster plan needs contingencies for this, and it is almost certainly true that such contingencies have saved hundreds of thousands, if not millions, of lives. Getting everyone out of danger is the priority, and since some groups require different kinds of assistance or intervention, we increasingly design disaster interventions with this in mind. There should be wheelchair ramps on evacuation vehicles, sign language interpreters at public briefings, and electronic or braille information readily available while we ensure that those who rely on electrically powered equipment have access to a generator or reserves of batteries. Failure to consider these things has, and does, cost us many lives during and after disasters.[1] More intangibly, we have recently seen how, in responding to COVID-19, authorities needed to give special attention to the plight of sick and elderly people who had to isolate at home—even if this attention was not always given.[2] In the wake of global catastrophe, such attention, care, and adjustments may be even more important. There is a rule of thumb that natural disasters will leave around three times as many people injured as dead, while for conflicts it is often assumed that the number of injured will be around nine times the number killed (although empirical data suggests these ratios are highly variable and may be increasing over time).[3] It would follow that a global catastrophe with the potential to kill 10% of humanity might injure somewhere between a third to 100% of those it leaves behind. This would make it significantly harder for humanity to recover from such a catastrophe, unless we take steps now to ensure that these injuries do not prevent people from playing a full role in rebuilding our shattered world. However, important as it is, such care and attention misses the fact that every human is more than a body in need of rescue—they are also minds, hearts, hands, and friends who are willing and able to help out as well.

The problem we want to address here is certainly not that people are taking steps to overcome barriers in dangerous situations. The problem is that this comes from a desire to 'protect vulnerable people' that often

presupposes the belief that these people cannot also be counted among those who can give aid. This presupposition of helplessness in one situation generalises to impose marked inequality for disabled people in others. Their social capital, particularly their access to education and employment, is systematically limited, and they receive (often on a daily basis) the message that they are not needed on the front lines of solutions. This chapter is our attempt to answer that message by putting the case for why disabled people can—and do—have very significant contributions to make to the field of Existential Risk Studies and its worthy aim of reducing some of the most extreme threats facing humanity as a whole.

One way of describing this problem that is popular amongst disabled people is the difference between a 'medical' and 'social' model of disability. In the medical model, disabilities are 'deficiencies' in individuals that prevent them from 'functioning' in the ways that 'normal' people can. To be disabled is inevitably to be less than what one might have been if 'able-bodied', and the only hope for disabled people is to 'cure' them of their impairments, with efforts to make the world more accessible to disabled people seen as a stop-gap measure to reduce their disadvantage until this can happen. In the social model of disability, however, such impairments are generally reclassified as mere 'differences'. There is, in fact, no normative standard for what humans should and should not be able to do, so any apparent impairment does not imply a deficiency *per se*. These differences become disabilities only because society is set up in ways that assume that people are able to do certain things, such that an inability to meet these arbitrary standards prevents people from being enabled to take a full role within society.[4] On this model, then, the urgent need to change society so that it can accommodate people's differences is no mere kindness towards the disabled, but rather an urgently needed correction to their unjust disablement, and a way in which society can gain access to the many good things disabled people would bring to the table, if only they were not excluded.[5]

Disability and existential risk

Problematic narratives of disablement and risk are not merely to be found at the level of small-scale disasters. In a famous novel about

existential catastrophe, *Day of the Triffids* by John Wyndham, humanity is weighed low by the species of ambulant venomous plants[6]—except that it is not the hazard posed by these plants that causes the disaster (in the story they had been around for several years beforehand), but rather vulnerability created by widespread blindness induced by unexplained astronomical phenomena. The book sets a harrowing scene where loss of sight causes widespread violence, suicide, infanticide, and insanity—and only a few sighted survivors are left to battle the triffids on their own. One of the main plot lines of the book concerns conflict between those survivors who focus on eradicating triffids as their sole priority (with whom the reader is encouraged to sympathise) and those who are more interested in helping those who have lost their sight survive (but who are portrayed in the story as little more than slave masters who exploit their disabled charges). Those who were blind before the incident and were thus already adapted to this new state are only given a passing mention—as more valuable than the newly blind for the purposes of domestic service and breeding!

Day of the Triffids is a hugely problematic book that shows many signs of the era it was written in. However, it remains popular to this day, while the apparent tension it describes between disaster mitigation and bearing the burden of helping the most vulnerable is merely the same tension we have just described writ large.[7]

Yet such discomforting narratives of burden and exclusion are certainly not the only stories of how people with disabling differences can relate to catastrophic risk. Recent widely acclaimed tales such as Alexis Wright's *The Swan Book*,[8] Nnedi Okorafor's *Binti*,[9] and N.K. Jemisin's *The Fifth Season*[10] (all published in 2015) tell very different stories about how outsiders burdened by their physical and psychological differences and vulnerabilised within their own societies are able to come to terms with (if not necessarily overcome) catastrophe and offer responses inaccessible to their 'normal' peers.[11] In *The Swan Book*, Oblivia Ethylene, a mute woman affected by sexual trauma, disease, and pollution, draws on her unique gifts and limitations to lead both Australians and refugees through a world devastated by climate change. In *Binti*, the titular character uses gifts of her apparent neurodiversity—a form of intellectual self-stimulation she calls 'treeing'—together with her unique position as a member of the indigenous Himba people who has left to attend a prestigious university, to act as a 'master harmoniser'

who can negotiate a peace between the alien Meduse and the Khoush, the dominant group of humans who look down on her and her people. Finally, in *The Fifth Season*, a group of Orogenes—a hated minority marked by their ability to control heat and the movement of the earth, but also the difficulty they have controlling this ability, leading them to inadvertently harm themselves and others—grapple with society's simultaneous need for and hatred of them and the relationship between this and the catastrophes that periodically strike their world.[12] While combining science fiction with elements of fantasy and horror (if those are even appropriate categories to use for such path-breaking stories) they paint pictures of what is lost when we overlook the abilities of those amongst us who have been disabled by differences and divergence from the norm. Indeed, the exploration of how disabled people might build positive futures in apocalyptic and post-apocalyptic scenarios is starting to become something of a genre of its own, with recent anthologies such as *Defying Doomsday*[13] and *Rebuilding Tomorrow*[14] focusing specifically on this subject.

However, our focus in this chapter is not on apocalyptic fiction *per se* but on how such narratives play out in the reality of existential risk, and the contributions disabled people can make to reducing it. We offer here three small but concrete examples of such contributions, sticking only to areas we ourselves have worked on and contributed to.

Futures, foresight, and horizon scanning

One area where we perceive the absence of disabled people as problematic is in the area of foresight. Foresight is a potentially unfortunate name for the process of seeking to understand what may happen in the future in ways that are more rigorous than science fiction. The name is unfortunate because it links this creative process to a particular individual sense—vision—producing the idea that some people are literally able to see into the future.[15] However, this is not what good foresight entails. One of the most well-known versions of foresight is called superforecasting, and it employs individuals known as superforecasters. Yet these superforecasters are not successful because they have 'superior' senses or intellects, but rather because they display traits such as active open-mindedness, a growth mindset, and acceptance of the role that chance plays in life outcomes.[16] As far as we are aware, neither the originators

of the superforecasting process nor its critics have explicitly considered whether these traits are more likely to be found amongst people who have experienced disablement, although its creators have been keen to point out that they are often lacking amongst those who identify as 'experts' in a given field. However, we would contend that such traits are very much in line with the kind of humility, adaptability, and realism that one would expect to find in people who deviate from the norm and are used to living in a world that is not designed for their benefit.

And even if disabled people are, in fact, no better suited than anyone else to foresight, there are other reasons why they need to be actively included in foresight and horizon scanning, because good foresight requires diversity in order to work. Superforecasters work best in teams where they can share diverse perspectives, rather than when working alone, while many forecasting techniques explicitly require a diversity of perspectives to function at all, since they are based on the idea of combining different viewpoints into a single collective judgement.[17] Among the benefits of diversity to foresight include the generation of new ideas, recognising the full range of valid perspectives, disruption of networks that can lead to path dependency and group think, and testing outputs against a wider set of potential critics.[18] Such diversity is generally assessed in relation to things such as different fields of expertise, types of affiliations, cultural backgrounds, organisational functions, and personal values.[19] However, it is important to note that, to achieve this valued diversity, we need to engage in more than a box-ticking exercise but actively seek out and promote a plurality of perspectives and opinions, even though we recognise that this may lead to disagreement and conflict. We would contend that achieving this goal requires both the inclusion of people who have differences in ability and social inclusion, and also engagement with the substantial issues of disablement and exclusion that create and perpetuate these.

While there is still much to be done in this area, we believe that the field of Existential Risk Studies may already be benefiting from the inclusion of disabled people within it. Anecdotally, SJ has found that their neurodiversity,[20] while presenting many challenges, has helped them to be a creative and productive partner in a very wide range of projects, and has spoken to others who felt the same,[21] while at least one informal survey found that neurodiversity and mental health issues seem to be unusually common amongst certain parts of the community

that studies existential risk.[22] Similar points have been made by Greta Thunberg, who has been diagnosed with autism, which she describes as a superpower. For instance, she notes how "a lot of people with autism have a special interest that they can sit and do for an eternity without getting bored", which can be a very useful ability in research, and notes that many autistic people have become climate activists because they feel a compulsion to tell the truth.[23] Unfortunately, despite the field of Existential Risk Studies benefiting from people with such traits, the topic of disability is seldom mentioned in existential risk circles and it is widely acknowledged that the community suffers from perfectionism, imposter syndrome, and burnout, all of which disproportionately impact disabled people.

Space colonisation

Another area in which disabled people could play a beneficial role is in the mitigation of risks on this planet through the colonisation of space. This has often been promoted as a good insurance policy against planet-level threats (like asteroids and volcanic super-eruptions), a means of increasing our species' resilience more generally, and even a necessary step to avoid the existential threat of 'stagnation'.[24] Traditionally, space has been viewed as an area in which access for disabled people is seen as too difficult to achieve. However, the reality is that in virtually all (earth-side) scenarios, it is increasingly understood that diversity strengthens working groups, meaning that such homogeneity of perspective and ability could well be working against the goals of space programmes.[25]

There are also some quite specific reasons to think that disabled people should be included in efforts at space colonisation. For one thing, the environment of space is itself both disabling and enabling, with low and zero gravity, altered and extreme light conditions, cramped spaces, and highly mechanised environments producing both limitations and opportunities that are not found on Earth. Every astronaut has to go through a process of extreme adaptation upon entering space, and it may be that people with physical and sensory disabilities—whose strengths and weaknesses are different to begin with and who are more used to adapting to hostile environments—would find this easier and be able to more completely adapt to life in space than others. This advantage may be increased in the unfortunate event of something going wrong, since

as we have noted already, conditions that can be extremely difficult for most people may represent no additional burden to the disabled, like loss of light for a blind person.

Finally, even ignoring their personal advantages, merely thinking about how to include disabled people in space missions could be advantageous to everyone. While many people think of the accommodations needed for including disabled people as requiring the addition of 'accessible' features that would otherwise not be necessary, they can also be thought about in terms of 'universal design', the design of products and environments to be usable (to the greatest extent possible) by people of all ages and abilities/disabilities, whereby such accommodations increase functionality for everyone.[26] For instance, controls whose function can be determined by touch as well as sight are accessible to the blind, but they also allow everyone to use them more quickly, accurately, and in a wider array of circumstances.[27] These points have been largely ignored in space exploration, but recently projects like *Mission: AstroAccess* and the European Space Agency's *Parastronaut* project are beginning to explore them further.[28]

Bioethics

A final area relating to the study and management of existential risk where disabled people have an especially valuable contribution to make is in the field of bioethics. The possibilities for bio-enhancement and other transformative technologies are a topic of great interest, both as potential causes of and solutions to existential risk.[29] Understanding these technologies requires grappling with the complex ethical challenges they pose. This is not only because they could have a profound impact on our understanding of human dignity, human flourishing, and even humanity itself, but also because their impact will be greatly determined by how they interact with other aspects of society, and this, in turn, will depend upon how they are ethically understood. However, the community of existential risk research has tended to stay out of such supposedly controversial discussions and prefers to leave such grappling to others, in many cases uncritically assuming a moral position closely aligned with the 'transhumanist' project of overcoming the perceived limitations of human biology, according to which human enhancement has intrinsic value as a necessity for achieving this goal.[30]

Transhumanism is only one view we might take about these technologies, and it can be seen as one of the most extreme and controversial positions at that, especially as it has historical associations with the legacy of 20th century eugenics.[31] Disabled people, in particular, have had strong reasons to be concerned about some of the arguments made within transhumanism and have also developed alternative proposals for how humanity might collectively enhance our abilities, through social modifications that allow everyone to contribute more to solving our problems. After all, it is a near universal law of nature and human societies that diversity promotes creativity and innovation and facilitates adaptation and resilience. When we seek to erase our differences, in an effort to eradicate disability or promote perfection through enhancement, this can have the effect of making societies weaker and less adaptable, and depriving them of the unique perspectives and gifts disabled people might otherwise contribute through their lives and works. In particular, disabled people are often experts on adapting and overcoming barriers and vulnerabilities, as they know (in ways that can be inaccessible to other people) the costs that society places on itself by not being more inclusive in its design of technologies, systems, and institutions.

In addition, disabled people have also had strong reasons to fear the transhumanist project. It is, after all, *their* differences that are perceived as most limiting and thus will likely be the first to be eliminated; and while it can be easy to see this as an attempt at sparing people from the burden of impairment, many disabled people say that they do not want to be spared, but rather respected and accommodated for who they are. It is not hard to imagine that in its pursuit of human 'perfection' this point of view risks implying that their own lives are less important or valuable due to their 'imperfections', or that any resistance they might make to being enhanced against their will is irrational and dangerous.[32] However, this doesn't imply that disabled people are conservative in their approach to technology or enhancement *per se*—far from it. Just as there is a social model of disability, there is also a social model of enhancement, according to which more inclusive and varied opportunities for people to create value for themselves and others can enable more and more people to play an enhanced role in society. Some of the key differences between these two approaches to enhancement include:

- whether enhancement is seen as increasing people's innate abilities or increasing their opportunities to use their abilities to flourish and help others;
- whether enhancement is about transcending our embodied humanity or exploring and developing it; and
- whether enhancement implies controlling who will live in the future or creating opportunities for more people to live well.[33]

These alternative perspectives are not limited to biological enhancement, but have also been extended to AI and other technologies with transformative potential.[34] We believe they are worth exploring, and that bioethics and Existential Risk Studies have a lot to benefit from closer engagement with challenges of disablement and injustice.

These are but three small examples of what is clearly a much larger phenomenon, where openness to considering disability and the contributions of disabled people can (and does) add to our thinking about existential risks and our ability to reduce them. These examples do, however, point to a number of broader themes: the inherent value of diversity, the benefits of universal design, disabled people's unique experience of vulnerability and adaptation, and the extent to which focusing on individual perfection and performance can lead us to ignore the social forces that disable both individual people and society as a whole. That there has been so little research on these themes is regrettable, and a testament to the broader exclusion of disabled people from this field. There is a need for much greater research in all of the areas we have mentioned here.

Wider needs to challenge the common narrative

However, we also need to consider the still wider implications of the exclusion of people who are disabled on humanity's collective ability to grapple with the pressing challenges we face. The global unemployment rate for disabled people is at least two to three times higher than their able-bodied peers and, although the numbers are better in industrialised countries as compared with unindustrialised countries, some areas of the world report an unemployment rate of over 90% for disabled citizens.[35] Meanwhile, the Global Partnership for Education estimates that 90% of

children with disabilities in low- and middle-income countries do not attend school.[36] And the problem is not small. Some estimates place the number of disabled people at 20% of the world's population—that is, wherever five people are gathered in a burning living room, one could be expected to be disabled. As the current world population now exceeds eight billion, the number of disabled people living today is thus around 1.6 billion. That is a lot of people to consign to the rescue list!

Employment and education statistics are cultural and economic—rather than natural—artefacts. They reflect how society has chosen to treat disabled people, rather than how disabled people could live if things were different. Just as we now understand world hunger as a wholly solvable social problem,[37] this systematic exclusion of disabled people from full participation is entirely avoidable, and, in fact, constructing physical and cultural environments to accommodate disabled citizens benefits non-disabled citizens as well.[38] Yet this exclusion continues, and society loses out tremendously as a result. It would, of course, be impossible to trace all the ways in which this loss of human potential and social capital impacts our societies in the 21st century. However, it is undeniable that a great many of these will have consequences that relate directly to the creation of, and failure to mitigate, existential risks.

One impact is in the field of technology, where disabled people have long been the drivers of innovation and creativity. Text-to-voice, voice-to-text, home automation, drive by wire, and self-balancing scooters were all first developed for disabled people for instance, and yet disabled people are rarely, if ever, given the opportunities to be innovators in their own right, or even given much control over the technologies being developed on their behalf.[39] Other impacts may be more mundane; however, from tackling food insecurity and adapting to climate change to education, culture, and (dare we mention it) care,[40] disabled people, just like anyone else alive right now, have a lot to contribute to making our futures better and safer.

Still, some people in higher-income countries argue that disabled people no longer face the kinds of discrimination that would exclude them from playing a valuable role in society. They occasionally cite the mere existence of people like us, as disabled scientists and other professionals, as irrefutable evidence that such discrimination is a thing of the past. They also present us with a set of extraordinary disabled people whose contributions to humankind have been remarkable. There

are the usual suspects, such as Beethoven,[41] Helen Keller,[42] and Stephen Hawking,[43] but the list sometimes contains lesser-known figures such as 19th-century blind writer and explorer James Holman.[44] These are certainly impressive figures, and the world would be a sadder place without them, but these luminaries exist within the cultural trope of disability as dependency. They are the exceptions that highlight the rule.

It is, after all, their accomplishments '*despite*' their disabilities that add the extra sparkle to their success, and those successes only carry the rest of us so far. That is, Stephen Hawking may have been a brilliant astrophysicist, who coincidentally helped establish the Centre for the Study of Existential Risk and was one of its first scientific advisers, but his success has not magicked the standard college classroom into a welcoming place for other disabled instructors,[45] and currently only 2% of PhDs in the STEM fields are earned by disabled candidates.[46] At the same time, Hawking's story is inspirational precisely because he was afforded the accommodations he needed to carry on working despite growing physical impairment, a rare instance of disability not being a barrier to potential—which could be seen just as easily as showing us how much humanity is missing out on, not how much we have achieved. As Hawking himself put it:

> [W]e never really know where the next great scientific discovery will come from, nor who will make it. Opening up the thrill and wonder of scientific discovery, creating innovative and accessible ways to reach out to the widest young audience possible, greatly increases the chances of finding and inspiring the new Einstein. Wherever she might be.[47]

Including everyone

We have focused in this chapter on the issue of disability. In part, this is because we are both disabled ourselves. Both Sheri and SJ are visually impaired; Sheri is fully blind while SJ is legally blind (but still has some usable vision) and neurodivergent. However, while in many other respects we are both privileged— we are both white, for example—this is not the only marginalised group to which we belong. For instance, Sheri is a woman while SJ is gender non-binary. More importantly, while the topic of disability in existential risk is important, we are aware that many of the points we mention here could also be made about other groups whose marginalisation is harming the future of our species. People of

Colour, religious minorities, Indigenous peoples, women, poor people, and those from the Global South, members of the LGBTQ+ community, military veterans, and migrants all experience different challenges but the same processes of marginalisation and exclusion. These are not all groups of people who need accommodation during a disaster, but if you look around laboratories, board rooms, and government buildings, these are often the faces you will miss.

We will now offer just a few brief vignettes of what these absences have cost us. Alan Turing was not only a pioneer of AI and computing, but someone who understood the potential negative impacts of the technology he was working on well.[48] In 1951, Turing gave a lecture on BBC Radio in which he argued (responding directly to the pioneering work of Ada Lovelace) that computers could think and that humanity faced great "danger and humiliation" were they to become superior at thinking to humans, a danger he believed to be "remote but not astronomically remote".[49] Sadly, for him and humanity, Turing faced a danger and humiliation far less remote when only a few months later his flat was burgled and the police proved less interested in the burglary than the fact that two men appeared to be sharing a flat with only one bed. This set off a chain of events that led to his death in 1954. Reflecting to his friend Norman Routledge about these events, Turing expressed his worry that:

> the following syllogism may be used by some in the future.
> Turing believes machines think
> Turing lies with men
> Therefore machines do not think[50]

Even more briefly, Rachael Carson faced tremendous barriers in publicising her ground-breaking work on our ecological catastrophe because she was a woman, was single, and was suffering both the debilitation and stigma of cancer,[51] while many who went on to make extraordinary contributions to nuclear safety and governance (such as Eugene Rabinowitch, Leo Szilard, and Joseph Rotblat) were kept away from much of the Manhattan Project because they were European refugees.[52]

This is clearly not only a disgraceful waste of human capital on the personal level; it also places the global community in danger by eliminating sources of insight, support, and hard work. The world is

in dire need of innovative perspectives, and our policies of exclusion—conscious or unconscious, well-intentioned or otherwise—put us in danger. This volume has demonstrated in stark detail the reality that we in the 21st century cannot afford to overlook any source of aid. Inclusion is not a kindness bestowed upon the vulnerable; it is a necessity for the survival of the species.

It is often said that "The future is already here—it's just not very evenly distributed".[53] This quote is generally applied to specific technologies, like virtual reality, that are seen as representing the future and the benefits it will bring. However, it also applies to the risks that humanity is facing from these technologies and other sources. The experts on climate change adaptation, for instance, may not be found in elite universities, in temperate parts of the world that have the strongest reputation for studying such things, but rather on the front lines of climate change, in the Arctic, the tropics, and on small islands around the world. Those who best understand the downsides of AI and other technologies may not be 'technical experts', but rather people who are incarcerated or whose lives are impacted by wars that have already seen the deployment of lethal autonomous weapons. And so on, and so on. We need to understand what marginalised people in these situations already do to address such risks, and make use of their experiences if we want to build a safer world.

What is to be done? Certainly, internationally, people who prepare for crises and who create accommodations so that preparedness systems are accessible to all must also begin to leverage the resources available from all minority group constituents. But, deeper and more wide-sweeping than this, we need a steady, deliberate undermining of the systems that keep people from active and eager participation in everything the world has to offer. This requires more inclusive futures across the range of possible outcomes for our species.

And when it comes to risk mitigation, this means working, before a crisis strikes, to strengthen public schools, mental health systems, civil rights organisations, and campaigns for the health of children and the elderly. It means fighting with fierceness against racism, ableism, poverty, sexism, homophobia, and all other systems of oppression. It means recognising that we cannot afford to tolerate transphobia, antisemitism, or ultra-nationalism.

We must do this, not only out of compassion or a moral imperative, but out of pragmatic calculation. The more people we have working on the problems that face us, the more chances we have of discovering and implementing the solutions that will save us. The struggles for social justice of different groups are not the same, just as the barriers facing us and the gifts we bring are not the same either. However, we do have a common cause in building more inclusive futures and, when those futures are also likely to be safer, that common cause can and should extend to everyone.

It is thus incumbent upon international, national, and local entities to examine not only crisis preparedness strategies, but the equity of feeder organisations such as schools and universities, hospitals, and training centres for first responders to make sure they are encouraging all kinds of people to work for and with them. And it is incumbent upon these agencies to check their own policies and procedures to ensure they are recruiting all kinds of people. In the end, though, it also falls to individuals both to express and understand words like 'diversity', 'inclusion', and 'welcome' and to back those words up with actions. In our own work, we have sought to use diversity to improve the fields of space exploration and existential risk. However, for marginalised people such efforts can all too often be seen as a 'special interest', while for the non-disabled it can feel like a 'worthy cause'; we hope we have convinced the reader by now that the truth could not be more different.

Small changes also matter: the shopper who refuses to patronise a store until it is made accessible, the restauranteur who gives unneeded food to the homeless, the teacher who emphasises literacy and science and makes sure all students are included, and the parents who widen their circle of friends to include more kinds of people and teach their children to think carefully about their choices. In the end, what is done at the highest levels of preparedness is nourished by—and ultimately flows from—the grassroots. Each of us has, in our social and professional lives, daily opportunities to sabotage the edifice of exclusion.

What we do, starting in our individual living rooms, will be the force that saves the planet.

Notes and References

1 Stough, Laura M. and Ilan Kelman, 'People with disabilities and disasters', in Rodriguez, H., W. Donner, and J. E. Trainor (eds), *Handbook of Disaster Research*. Springer (2018), pp.225–42.

2 At the same time, far less was said about the knowledge and experience of these same sick and elderly people, who are also the most likely to have relevant experience or to have actually lived through similar pandemics and other disasters.

3 For a more detailed assessment of the size of these trends see Wyss, M. and G. Trendafiloski, 'Trends in the casualty ratio of injured to fatalities in earthquakes', in Spence, R., E. So, and C. Scawthorn (eds), *Human Casualties in Earthquakes: Progress in Modelling and Mitigation*. Springer (2011), pp.267–74; Murray, Christopher J.L., Gary King, Alan D. Lopez, Niels Tomijima, and Etienne G. Krug, 'Armed conflict as a public health problem', *BMJ*, *324*(7333) (2002), pp.346–49.

4 For example, take the situation where a wheelchair user approaches a building. She has every right to be there: it might be a public facility, an entertainment venue, or perhaps her new place of employment. When she arrives, she finds herself confronted by a short flight of stairs leading from the sidewalk to the front door. In this scenario, where does the problem lie? According to the medical model, she (or, perhaps more precisely, her body) is the problem. If she had been born in a different body, or if medical science had 'corrected' the body she has now, she would be able to enter without incident. According to the social model, however, the problem is not hers: it is the stairs'. If there were a ramp instead, she (and everyone else) would be able to enter easily. Her disadvantage, then, is located in the environment, or rather in the social conventions that use stairs where ramps would be equally workable.

5 For more on the social model of disability, see the foundational work Oliver, Michael, *Politics of Disablement*. Macmillan International Higher Education (1990).

6 Wyndham, John, *The Day of the Triffids*. Michael Joseph (1951).

7 *Day of the Triffids* was, in fact, the first book that SJ ever read on the theme of existential risk and it was recommended to them precisely because of its theme of blindness.

8 Wright, Alexis, *The Swan Book*. Giramondo (2015).

9 Okorator, Nnedi, *Binti.* Tor Books (2015).

10 Jemisin, Nora K., *The Fifth Season*. Orbit (2015).

11 Vulnerabilisation refers to the active process through which a person's vulnerabilities are constructed by their interaction with specific institutions and social contexts. We owe this use of the term to the philosophers Shelley Tremain and Havi Carel.

12 For more about these and other inclusive futures and what they have to teach academic disciplines such as Existential Risk Studies, see Hall, Melinda, 'What future people will there be? Neurodiverse heroes for a changing planet', *MOSF Journal of Science Fiction*, *15* (2019); and Mitchell, Audra and Aadita Chaudhury, 'Worlding beyond 'the' 'end' of 'the world': White apocalyptic visions and BIPOC futurisms', *International Relations, 34*(3) (2020), pp.309–32.

13 Dolichva, Tsana and Holly Kench, *Defying Doomsday: Stories of Fear, Hope, and Survival*. Twelfth Planet (2016).

14 Dolichva, Tsana, *Rebuilding Tomorrow*. Twelfth Planet (2020).

15 Nor is this association accidental. One of the oldest and most commonly used foresight tools is known as the Delphi Technique, explicitly linking it to the famous Greek oracle Pythia.

16 Tetlock, Philip E., Barbara A. Mellers, and J. Peter Scoblic, 'Bringing probability judgments into policy debates via forecasting tournaments', *Science, 355*(6324) (2017), pp.481–83.

17 For a discussion of a wider range of forecasting methods used in the study of existential risk, see Beard, S.J., T. Rowe, and J. Fox, 'An analysis and evaluation of methods currently used to quantify the likelihood of existential hazards', *Futures, 115* (2020), 102469 and Rios Rojas, C., C. Rhodes, S. Avin, L. Kemp, and S.J. Beard, *Foresight for Unknown, Long-Term and Emerging Risks: Approaches and Recommendations.* Centre for the Study of Existential Risk (2021), https://doi.org/10.17863/CAM.64582.

18 Könnölä, Totti, Ville Brummer, and Ahti Salo, 'Diversity in foresight: Insights from the fostering of innovation ideas', *Technological Forecasting and Social Change,* 74(5) (2007), pp.608–26.

19 Könnölä, Totti, Ahti Salo, Cristiano Cagnin, Vicente Carabias, and Eeva Vilkkumaa, 'Facing the future: Scanning, synthesizing and sense-making in horizon scanning', *Science and Public Policy 39*(2) (2012), pp.222–31.

20 Neurodiversity refers to variation in the human brain regarding sociability, learning, attention, mood, and other mental functions and includes differences such as ADHD, autism, dyslexia, and Tourette's.

21 For a description of some of the positive and negative ways in which SJ's visual impairment and neurodiversity affected their research career up to the early stages of their PhD, see Beard, S.J., 'It's not what you see, it's how

you see it', *Journal of Inclusive Practice in Further and Higher Education, 4*(1) (2012), pp. 91–93.

22 The only information we are aware of about the prevalence of disability among people who study existential risks is the readership survey for the popular *Slate Star Codex* blog, which is widely read amongst existential risk researchers and those they often work with, such as members of the rationalist and Effective Altruism communities. This only looked at neurodiversity and mental health but found unusually high representation for a range of disabling differences including depression, anxiety, autism, and ADHD amongst others. See https://docs.google.com/forms/d/e/1FAIpQLSd4I-x9oArWW1Tz5mEK4uHmxcJzVKGA28RfKPsDvW8hzZNViw/viewanalytics.

23 Hattenstone, Simon, 'The transformation of Greta Thunberg', *The Guardian* (25 September 2021). It is worth noting that, until recently, conditions such as autism, OCD, and mutism would have been seen only as opportunities to institutionalise people and exclude them from mainstream society—see, e.g., Silberman, Steve, *Neurotribes: The Legacy of Autism and How to Think Smarter About People Who Think Differently*. Atlantic Books (2017). The fact that, only a few decades after gaining the right to mainstream education, some like Greta Thunburg found ways of using that right to draw attention to a pressing global crisis, is testament to the courage and intelligence possessed by many who society had formerly dismissed as beyond hope.

24 See e.g. Bostrom, Nick, 'Existential risk prevention as global priority', *Global Policy,* 4(1) (2013), pp.15–31 and Armstrong, Stuart and Anders Sandberg, 'Eternity in six hours: Intergalactic spreading of intelligent life and sharpening the Fermi paradox', *Acta Astronautica, 89* (2013), pp.1–13 but see also Torres, Phil, 'Space colonization and suffering risks: Reassessing the "maxipok rule"', *Futures, 100* (2018), pp.74–85 for reasons why space colonisation might pose an existential risk of its own.

25 Rock, David and Heidi Grant, 'Why diverse teams are smarter', *Harvard Business Review, 4*(4) (2016), pp.2–5.

26 For more about universal design, see Steinfeld, Edward and Jordana Maisel, *Universal Design: Creating Inclusive Environments*. John Wiley & Sons (2012). It is worth noting, however, that while universal design is often talked about, it is surprisingly little studied or practised, and much of the cited literature in this field is over a decade old, highlighting this as an area in desperate need of further research.

27 If that seems like rather a strong claim, consider perhaps how two little raised dots on the F and J keys of a QWERTY keyboard do not only make it

accessible to many blind people but facilitate touch-typing for many more people.

28 This section was largely drawn from Wells-Jensen, Sheri, Joshua A. Miele, and Brandie Bohney, 'An alternate vision for colonization', *Futures, 110* (2019), pp.50–53. For more on *Mission: AstroAccess* see https://astroaccess.org.

29 See e.g. Rakić, Vojin and Milan M. Ćirković, 'Confronting existential risks with voluntary moral bioenhancement', *Journal of Ethics and Emerging Technologies, 26*(2) (2016), pp.48–59 and Demko, Megan, Katina Michael, Kennedy Wagner, and Terri Bookman, 'When brain computer interfaces pose an existential risk', in *2020 IEEE International Symposium on Technology and Society* (*ISTAS*). IEEE (2020), pp.112–14.

30 For more on the important role transhumanism played in the establishment of Existential Risk Studies, see Beard, S.J. and P. Torres, *Ripples on the Great Sea of Life: A Brief History of Existential Risk Studies.* SSRN (2021).

31 For a critique of the role that eugenical ideas have played—and may continue to play—on the field, see Harper, T., 'Elites against extinction: The dark history of a cultural paranoia', *Los Angeles Rev*iew *of Books* (2021), while for a more positive view about how the field may be able to (and indeed already has) positively engage(d) with this history, see Mannheim, D., 'Noticing the skulls, longtermism edition', *EA Forum* (2021). https://forum.effectivealtruism.org/posts/ZcpZEXEFZ5oLHTnr9/noticing-the-skulls-longtermism-edition

32 Suffan, Sandy and Rosemarie Garland-Thomson, 'The Dark Side of CRISPR', *Scientific American* (2021).

33 Hall, Melinda, *The Bioethics of Enhancement: Transhumanism, Disability, and Biopolitics*. Lexington Books (2016).

34 Shew, Ashley, 'Ableism, technoableism, and future AI', *IEEE Technology and Society Magazine, 39*(1) (2020), pp.40–85.

35 UN Department for Economic and Social Affairs, *'Disability and Employment' Fact Sheet 1 on Persons With Disabilities* (2007). https://www.un.org/disabilities/documents/toolaction/employmentfs.pdf.

36 Mizunoya, Suguru, Sophie Mitra, and Izumi Yamasaki, *Towards Inclusive Education: The Impact of Disability on School Attendance in Developing Countries*. UNICEF (2016).

37 Kent, George, *Ending Hunger Worldwide*. Routledge (2015); Moore Lappe, Frances and Joseph Collins, 'World hunger: Ten myths', *Food First* (2015), https://archive.foodfirst.org/publication/world-hunger-ten-myths/.

38 Hamraie, Aimi, *Building Access: Universal Design and the Politics of Disability*. University of Minnesota Press (2017); Barclay, Linda, *Disability With Dignity: Justice, Human Rights and Equal Status*. Routledge (2018).

39 Hawking, Stephen, *Brief Answers to the Big Questions*. Bantam (2018); White, J.J., 'Artificial intelligence and people with disabilities: A reflection on human–AI partnerships', *Humanity Driven AI*. Springer (2022), pp. 279–310.

40 As with risk, disabled people are often seen as the subjects of care, but in our experience generally also perform more than their fair share of caring responsibilities—in part because they have a greater sensitivity to the needs of others but also because they may be seen as 'having nothing better to do'.

41 Swafford, Jan, *Beethoven: Anguish and Triumph: A Biography*. Houghton Mifflin Harcourt (2014).

42 Kleege, Georgina, *Blind Rage: Letters to Helen Keller*. Gallaudet University Press (2006).

43 White, Michael and John Gribbin, *Stephen Hawking: A Life in Science*. Abacus (1992).

44 Roberts, Jason and John Curless, *A Sense of the World: How a Blind Man Became History's Greatest Traveler*. Recorded Books (2007).

45 Dolmage, Jay T., *Academic Ableism: Disability and Higher Education*. University of Michigan Press (2017).

46 Booksh, Karl S. and Lynnette D. Madsen, 'Academic pipeline for scientists with disabilities', *MRS Bulletin*, 43(8) (2018), pp.625–32.

47 Hawking (2018).

48 For some thoughts about where Turing's views would fit within current thinking about AI safety, see Proudfoot, Diane, 'Alan Turing and evil AI', *The Turing Conversation #2* (2018). https://www.turing.ethz.ch/the-turing-conversation/contribution-2.html. For a historical account of the development of AI safety work from Turing to the present day, see Chapter 9 of this volume.

49 While no recording of this broadcast exists any longer, a transcript is printed in Copeland, B. Jack (ed), *The Essential Turing*. Clarendon Press (2004), and the broadcast has also been recreated at https://aperiodical.com/2018/01/ive-re-recorded-alan-turings-can-computers-think-radio-broadcasts/

50 Hodges, Andrew, *Alan Turing: The Enigma*. Princeton University Press (2014). The letter to Norman Routledge is reproduced, and read by

Benedict Cumberbatch, at https://lettersofnote.com/2012/06/23/yours-in-distress-alan/

51 For an account of these barriers, and how Carson overcame them, as well as those faced by other queer and female scientists, see Popova, Maria, *Figuring*. Vintage (2019).

52 Such scientists tended to be posted to the metallurgical laboratory in Chicago, rather than more sensitive sites such as Los Alamos and Oak Ridge. As discussed in Chapter 1, this was one of the main reasons for the naming of *The Bulletin of Atomic Scientists of Chicago*.

53 This quote is generally attributed to science fiction author William Gibson, but see https://quoteinvestigator.com/2012/01/24/future-has-arrived/