



PERSPECTIVE ESSAY

Moral equality and rerogenetic autonomy in the genomic era

Ozan Gurcan

California Institute of Technology, Pasadena, CA, USA and University of Ottawa, Ottawa, Ontario, Canada
Email: ogurcan@caltech.edu

Abstract

In this paper, I question the argument from human dignity found in the Universal Declaration on the Human Genome and Human Rights (UDHGHR) and in the recent views of the International Bioethics Committee (IBC). I focus on what this argument says about the permissibility of two broad categories of rerogenetic choices that may be available to prospective parents in the genomic era. The argument from human dignity holds that non-medical genetic selection and somatic enhancements ought to be prohibited because they violate the principle of human dignity. I argue that human dignity need not be violated by the enterprise of human genetic selection/somatic enhancement if reasonable social safeguards are established. In particular, I argue that respecting the rerogenetic choices of the decision-maker is paramount within the boundaries of (i) prohibiting the infliction of a shortened lifespan or pain upon the child; (ii) prohibiting the actualization of demeaning beliefs or intentions such as viewing certain groups as inferior; (iii) prohibiting the choice resulting from an expression of unwillingness to love and care for the child; and, with respect to somatic gene enhancements in particular, (iv) the potentially unjustified effects of the enhancement on others, if any, are reasonably addressable (and addressed) via social modifications so as to ensure the enhancement no longer risks adversely affecting them. With these limits, rerogenetic autonomy cannot be said to undermine the dignity of humans by creating unjustified harms or expressing demeaning ideas.

Keywords: basic moral principle of equality; reproductive autonomy; genetic enhancements; human dignity; inclusion of disability; social change

Introduction

Given the ongoing genetic revolution and emerging genetic possibilities, it is prudent to revisit foundational arguments, and guidelines on human genetic technologies to assess their alignment with these novel possibilities. In this context, to promote inclusivity while also respecting (reproductive) autonomy—two fundamental tenets of present-day society—policymakers will have to consider how to balance these values. This paper aims to demonstrate how such a balancing act may take place and proposes what future ethical frameworks on genetic technologies ought to consider. An example of a guiding instrument in the social response to the advancement of genetic technologies has been the Universal Declaration on the Human Genome and Human Rights (UDHGHR). The declaration, ratified by UNESCO, holds that the “human genome” gives rise to the fundamental unity of all members of the human family, all of whom possess inherent “dignity” that ought to be protected (UNESCO, 1997). Human dignity is said to be violated through germline editing,¹ somatic enhancements,² and

¹Germline editing is the process where gene editing takes place in reproductive cells which will develop to become the eggs and sperm. They are heritable. Safety and efficacy are assumed.

²Somatic editing is the process where gene editing takes place in body cells. They are non-heritable. Safety and efficacy are assumed.

non-medical genetic selection procedures,³ but not violated or implicated when it comes to “medical uses” of genetic technologies on somatic cells, including for preventative purposes (IBC, 2015). Hence, the International Bioethics Committee (IBC) and the UDHGHR oppose the development and use of genetic technologies to edit germline cells, for enhancement, as well as for the use of genetic selection procedures for non-medical purposes (IBC, 2015; UNESCO, 1997).

Regarding scope, this paper examines the argument from human dignity found in the UDHGHR and, more recently, by the IBC (2015) as it applies to somatic gene enhancements and non-medical genetic selection procedures only.⁴ I collectively call these two categories of genetic technologies, “somatic enhancement and reprogrammed trait selection” (SERTS). Generally speaking, any prescriptions on the use of these technologies already assume their prior safety and efficacy,⁵ but it is well worthy to reiterate the point. A well-functioning system for reprogrammed technologies must include clear and well-defined regulatory frameworks and enforcement mechanisms. Even prior, comprehensive pre-clinical and clinical research must be conducted according to established standards of research ethics and involve independent review. Moreover, the mechanisms by which these preconditions are satisfied must ensure that only somatic cells will be targeted by any gene editing procedure, meaning that if gene editing is ever to take place during the earliest stages of embryonic development, it must be guaranteed that germ cell differentiation has already occurred. There are many other technical and ethical questions that will surely be necessary to address to know how to move forward, such as the ethics of long-term follow-ups and the potential use of non-human animals in this kind of research,⁶ but these important questions are beyond the scope of this paper.

With my scope defined, I can begin to articulate my arguments. My central thesis is that the impermissibility of SERTS does not follow from the argument from human dignity. I propose revisions for future bioethics frameworks, aiming to strike a more appropriate balance between autonomy and inclusivity.

The traditional argument from human dignity, which I will challenge, is structured as follows:

- P1. The principle of human dignity is a morally justified premise.
- P2. Human dignity should not be violated in society.
- P3. SERTS violate human dignity.
- C. SERTS should not be permitted in society.

This paper does not challenge P1, and only makes brief remarks on P2. The idea behind P2 is that “human dignity” is a neutral value that all can endorse. Questioning the supposed neutrality of a particular conception of human dignity (as understood by the past President’s Council on Bioethics and IBC), I argue that a reconceptualization is needed in order for P2 to be upheld. The main focus of this paper is on P3. Here, I argue that SERTS do not inherently violate human dignity or the basic moral principle of equality (henceforth “moral equality”). The key points regarding P3 are as follows. First, the concept of “posthuman dignity” is invoked to demonstrate that there is no reason why humans who have had SERTS involved in their conception should be said to “lose” their dignity or equal status. Next, it argues that if one’s social context is unjust (discriminatory society) yet plays a part in the derivation of a

³Non-medical genetic selection procedures could include sex selection and selection based on polygenic scoring to detect features commonly associated with the pursuit of “designer babies” such as height and intelligence.

⁴Even though the arguments presented in this paper may equally apply to germline editing/enhancement, my focus here is strictly on somatic editing for enhancement, and non-medical selection procedures. To reach the same kind of conclusion regarding germline editing, points such as irreversibility, risks to a large group of beings, unintended and unpredictable consequences would need to be considered more directly within that context and I simply do not do this here.

⁵It is well known that gene editing tools may have unintended, off-target effects leading to adverse outcomes.

⁶Even though I do not have the space here, I would be inclined to argue that, generally speaking, the use of non-human animals would be wrong in the context of research for human enhancement purposes. Of course, it is an interesting question if the particular application being considered is likely to have benefits for non-human animals with respect to how we generally treat them.

negative meaning of a particular reprogenetic choice, then it should be questioned whether it can be said that it is the *genetic choice* that is violating dignity or moral equality. Thirdly, it argues that artificially created genetic inequalities, like naturally created ones, need not inherently violate dignity or moral equality because there is no moral imperative to sustain a specific set of genetic variances. Finally, it highlights the plausibility of implementing social changes to address potential concerns regarding dignity or moral equality violations. Since choices and actions take their meaning within social contexts, reasonable social responses that mitigate the concerns should be considered as viable policy options, all while permitting the use of certain SERTS.

The declaration on the human genome and human rights and the IBC

The UDHGHR is structured into seven distinct parts, with the initial five sections being particularly relevant to this paper.⁷ These sections cover the topics of “Human dignity and the human genome,” “Rights of the persons concerned,” “Research on the human genome,” “Conditions for the exercise of scientific activity” and “Solidarity and international cooperation.” Notably, the declaration emphasizes the impermissibility of genetic discrimination—the differential treatment of persons based on their genetic makeup—and endorses research only aimed at treating and preventing genetic diseases (UNESCO, 1997). A key statement from the declaration highlights the importance of human dignity: “Dignity makes it imperative not to reduce individuals to their genetic characteristics and to respect their uniqueness and diversity” (UNESCO, 1997, article 2b). This principle is foundational to the UDHGHR’s stance on genetic technologies, including SERTS.

In 2015, the IBC—an advisory body to UNESCO and authors of the UDHGHR—presented new reflections on the intersection of the human genome and human rights (2015). The IBC states that “we are human because of the interplay of many biological, historical, and cultural determinants, which preserve the feeling of our fundamental unity and nourish the richness of our diversity. This is why the human genome is one of the premises of freedom itself and not simply raw material to manipulate at leisure.” (2015, p. 4). The committee takes a firm stance against somatic enhancements and non-medical genetic selection, asserting that they “jeopardize the inherent and therefore equal dignity of all human beings” (2015, p. 26). Such a position is rooted in the belief that it is necessary to preserve human dignity, and that somatic enhancements, through the modification of the human genome, fundamentally alter the human form and essence, thereby violating human dignity (Charo, 2018).

A few remarks are warranted on the relevance and usefulness of the UDHGHR and IBC to the field of bioethics, in general, and to this paper, in particular. The UDHGHR (and IBC) is (or is “seen as” or “purports to be”) a guiding entity in global bioethics that is meant to represent the common views of the international community. Whether it does so well or whether it should have such a role is not a primary concern for this paper. The primary concern of this paper is on the soundness of the argument from human dignity, and so the main reason for making use of the UDHGHR simply becomes that it is a well-known representation/symbol of the argument I am interested in and because it makes the argument in a valid way. The more general views on the usefulness of the declaration are mixed (Feeney, 2024; Gaydarska et al., 2024). In 1999, the chair of the IBC, for example, characterized the UDHGHR as “... a vital part of the intense standard-setting activity that characterizes bioethics today.” (Lenoir, 1999, p. 538). Yet others have criticized the IBC’s recommendations for their lack of societal import and/or generality, for example, because they do not ensure or specify how they will be applied on the ground (Gaydarska et al., 2024). Even though nearly all nations are members of the UDHGHR; and it is expected that signatory countries develop domestic regulations in accordance with the declaration, the reality is that it does not have the force of law, which happens to be a problem with international law in general

⁷The Declaration clearly states that it is not a standalone declaration as “nothing in this Declaration may be interpreted as implying for any state, group or person any claim to engage in any activity or to perform any act contrary to human rights and fundamental freedoms...” (UNESCO, 1997, article 25). Hence, when this paper engages with the contents of the Declaration it makes *prima facie* arguments.

(Charo, 2018). Still, content wise, the IBC gets several things right—such as the importance of “genetic non-discrimination” and the “just distribution of the benefits of genetic sciences”—which is encouraging. Harmon (2005), while recognizing the declaration’s important limitations, expresses appreciation of the need (and difficulties) in finding and interpreting commonalities between diverse cultural, religious, political, and socioeconomic considerations for the development of guidelines (p. 43). And it is in this sense that I, too, appreciate the declaration’s aims. At the very least, such guidelines can be useful to the same extent that “ideas” in general are useful.

Human dignity

“Human dignity” plays a significant role in public discourse and is regularly invoked in discussions on genetic technologies (Raposo, 2019; Segers & Mertes, 2020; Gregg, 2022; Wang et al., 2022). It is meant to signify a level of moral worth of those who possess it (UNGA, 1948). The term “human,” for obvious reasons, is seen as an essential component of human dignity since it is meant to represent the notion that it is only found in or ascribed to human beings, not other animals. For humans, then, the principle of human dignity embodies the idea that we intrinsically possess special moral worth and possess it equally with all other humans—that is, all humans are due respect and protection and are deserving of them equally regardless of their race, ethnicity, sex, abilities, economic status, health status, political ideas or religion, among other things (Andorno, 2009; Waldron, 2017). The principle of human dignity has been widely criticized over the years for not having a determinate meaning, being “ballooned,” begging the question, and being exclusionary (Charo, 2018; Griffin, 2008; Perry, 2023). Without expanding on these well-known arguments, I will make a few remarks on the overall justifiability of the principle of human dignity.

Suppose for argument’s sake that the principle of human dignity, as traditionally understood (high level of moral value possessed by humans for being human), is a morally justified premise. Does it follow that the violation of human dignity can serve as a reason to limit a liberty in society? I argue in the negative; even if belief in “human dignity” is a part of individuals’ truths and worldviews, it is the case that living in society with others changes the context in an important way. Collective decisions in a pluralistic society in the form of public policies ought to rely on reasons that can be endorsed by all reasonable persons, irrespective of their individual moral, religious, or otherwise philosophical beliefs (Boggio et al., 2019; Quong, 2010).

Roduit, Baumann, and Heilinger (2013), for example, criticize the use of (a particular conception of) human dignity as a seemingly “neutral,” non-sectarian concept. Discussing the role of enhancements in society, they explain how, for people like Leon Kass and the past President’s Council on Bioethics, human dignity is closely tied to the “natural human condition”, including its limitations and vulnerabilities and how we cope with and find meaning within these limitations (Roduit et al., 2013). Kass and the Bioethics Council make the argument that the use of enhancement technologies would change our understanding of what it means to be “human,” thereby tying their supposed “pursuit of perfection” and “attempt to master our nature” with the notion of “undignified lives” (Roduit et al., 2013; Kass, 2003; President’s Council on Bioethics, 2003). Andorno (2011), a prominent defender of the idea of human dignity, says something similar in claiming that enhancements blur the boundary between humankind and nature, thereby objectifying humanity itself. Hence, “genetic essentialism”—the idea that our genes determine our essential human nature—is what generally leads one to the conclusion that the alteration of the human genome would fundamentally alter “what” or “who” we are (Charo, 2018; Gregg, 2022). And if one believes that human dignity is connected to an essential human characteristic, and that genes (at least partially) determine this essence, then it can be seen why SERTS would be perceived as threatening human dignity (Charo, 2018).

But Roduit *et al.* (2013) argue that this bioconservative position is not actually “neutral,” but one that relies on a distinct, substantive conception of “what a human ought to be” that others can reasonably reject. They interpret the Council on Bioethics as saying that the ideal human “... has to accept, and live within, the limits of embodiment and death, which gives meaning to how a good life should be lived.

Without these limits, human life itself becomes meaningless, because mortality and the vulnerability (or limits) of the human body enable us to experience real happiness, meaning and agency” (Roudit et al., 2013, p. 26). But why choose or accept the present human limits and finitudes, as opposed to other ones? From the transhumanist perspective, for instance, human nature, if there is such a thing, is flexible, dynamic, and open to improvement (Bostrom, 2005).

This discussion raises two important points. First, the conception of human dignity presented by Kass and the Council on Bioethics (or other genetic essentialist conceptions, including the views of the IBC) is not a neutral, non-sectarian conception, casting doubt on the idea that it can be used as a reason in society to prohibit something that violates it. Second, we may have no good—forget political—basic *moral* justification for exclusively tying “human dignity” to the traditional understanding of human nature; imposing a view on an individual regarding what being human (i.e., themselves) is supposed to mean treats them paternalistically not only as a fellow citizen but also as a human.

But it would be too soon to disregard the argument from human dignity altogether, for there are alternative ways of conceiving human dignity that can be considered. I take it that there is good reason to explore these possibilities because “human dignity” has been an important term in the history of humanity, and it does not seem as though it will go away anytime soon (or necessarily obvious that it should be). Retaining that which is essential to it (i.e., its moral status-granting value; or in other words, respect for the “moral worth of humans”) and remaining neutral (non-exclusive) on what a human should be or what it is that gives us this worth, can save its political justifiability. This is because it would allow for the possibility for multiple different views to reach the same general principle regarding the importance of the moral worth of humans, each using their own reasons, from within their own values. Call this the “dignity of humans” view. That the moral worth of humans should not be violated is certainly a principle that can limit a liberty in society. Those who have a connection to the language of human dignity, for example, could find a connection to the importance of the moral worth of—not a particular conception of “human nature” or of the “ideal human”—but rather to *all* “human natures” or all reasonable “ideals that a human can value and strive towards”. These could include respect for the basic moral principle of equality (Singer, 1989), autonomy (Macklin, 2003), normative agency (Griffin, 2008), non-discrimination (Moreau, 2020), and even posthuman dignity (Bostrom, 2005).

Do SERTS necessarily violate the dignity of humans?

Posthuman dignity

Bostrom (2005) is one thinker who has argued that enhancements can be compatible with human dignity. He uses the concept of “posthuman dignity” to make the point. As other transhumanists have also maintained, we can change our biology and natures in accordance with human values, and these changes can and should be interpreted as expressions of valuable human interests; overcoming unnecessary suffering and enhancing certain abilities, for example, are ways people can realize their human interests and equal status (Bostrom, 2005; Porter, 2017). Bostrom challenges us to consider how our current phenotypes and ways of living are already almost completely different than the first humans; it seems apparent that these first humans would view us in the present day as “posthumans.” Yet, he contends that the changes we have gone through have not dehumanized us (Bostrom, 2005).

Perhaps those who will be dehumanized are not the ones who have had SERTS used on them but rather those whose parents chose not to or could not afford to (leading to something like “unequal rights”) (Buchanan, 2009). But if being dehumanized will mean different things to different people, how will we know whether SERTS violate human dignity, and that they, therefore, ought to be prohibited? I argue that SERTS may only violate the dignity of humans if they necessarily unjustifiably harm or demean *other* individuals. The moral principle of equality captures this point nicely and shows us a way forward. The basic moral principle of equality (moral equality) holds that all moral patients (e.g., all sentient beings) ought to have their interests considered equally; “each to count for one and none for more than one,” as expressed in Bentham’s famous dictum. The way we action this principle and respect

persons' moral equality is by considering *their* interests in our decisions as a constraint on what decisions we permit ourselves to reach.⁸ From the point of view of the state, the process of considering interests entails that different reasonable conceptions of human dignity are balanced against each other. Moral equality, as a normative ideal prescribing how people should be treated, does not inherently favor a genetic essentialist view. However, it respects the perspectives of those who adhere to that view, ensuring they are not harmed or demeaned by the differing views of others. In the remainder of this paper, I will argue that the dignity of humans/moral equality need not be violated by the use of SERTS because there may be social measures that could be employed to protect the dignity of persons, meaning that SERTS cannot be prohibited on the basis that they necessarily violate the moral worth of humans.

Reproductive autonomy and impairments

The International Bioethics Committee raises several important points about the impact that genetic technologies may have on societal values and persons' equal status (2015, p. 9). One such point is the concern that genetic enhancements, along with existing technologies like preimplantation genetic testing and polygenic scoring used in reproduction "weaken the idea that the differences among humans, regardless of the measure of their endowment, are exactly what the recognition of their equality presupposes and therefore protects" (2015, p. 27). For example, Hrouda (2016) points out that, according to critics, it is difficult to see how a technology that comes with the possibility of creating new forms of discrimination and stigmatization could ever be shown to respect the dignity of humans. The IBC expresses concern about a societal shift towards a form of eugenics, driven by individual reproductive choices that, when considered collectively, may have serious impacts on persons with disabilities (2015). They state, "the adding up of a lot of individual choices in non-invasive prenatal testing to the 'acceptability' of aborting or selecting certain kinds of embryos or fetuses brings forward a societal phenomenon, which resembles a kind of eugenics in the search for a 'perfect child'" (2015, p. 23). Moreover, the IBC says that if genetic screening for the prevention of disability is primarily motivated by cost reduction for care and accommodation, it sends the message that such persons are not welcome in society (2015, p. 22). An example of this phenomenon is observed in the medicalization of deafness, where members of Deaf culture generally feel as though their lives are incorrectly perceived as undesirable by the rest of society (Chadwick & Levitt, 1998; Sparrow, 2011; Wallis, 2019).

It may be criticized at this point that the IBC makes a logical mistake in equating parental intentions to ensure the health of their offspring with an unethical search for the perfect child. At first glance, we can see a distinction between "seeking health" and "seeking perfection." Seeking health in the context of genetic technologies generally refers to the absence/treatment of known genetic disorders, and "seeking perfection" entails going beyond health by, for example, introducing novel traits or enhancing those traits that are typically considered unrelated to health such as height or super-intelligence. However, it is also true that as society and genetic technologies continue to change, the values of different "traits" may similarly change, blurring the boundary between health and perfection. For example, in a society where intensity and competition dominate, being lazy may be seen as a problem with the individual.⁹ The IBC is likely being

⁸Phrasing this point in such a way was inspired by Velleman from his interpretation of Kant.

⁹The blurry line between health and perfection can be demonstrated in other ways too. For example, interventions that aim to extend life or health-span could be seen as therapeutic by preventing age-related diseases, however, they can also be perceived as "enhancement/perfection" because they extend life beyond typical human lifespans, in which an individual is given additional years of experiences. Or consider vaccines: vaccines are generally classified as therapeutic interventions as they prevent diseases by enabling the immune system to recognize and combat pathogens, thus maintaining normal immune function and preventing illness. Yet vaccines can also be conceived as seeking perfection because they enhance a person's biological capabilities by making them immune to new infections, potentially beyond what is necessary in present-day society or typical in the natural effects of pathogens on humans, in terms of health security, longevity. So, the debate between viewing an intervention as therapy versus enhancement involves an examination of our assumptions about health, normalcy, and the goals of medical intervention. It challenges us to consider how advancements in medical technology can shift our baseline expectations for health and what implications this has for societal notions of moral equality.

cautious regarding these possibilities as socially mediated traits have been interpreted very badly in the past (e.g., state eugenics). So, even though it may not make sense to equate health and perfection on paper, it is the case that, in the context of reality, politics and human biases can lead to what logic would not lead to.¹⁰ And these outcomes may include harms that justify being more cautious in the present. In other words, the IBC's role cannot assume the full rationality of humans and understand that what non-ideal (real) society sees as normal, however illogical it may be, can negatively influence the world. I take this possibility seriously as well, but I will not argue that the only or the best way to prevent such harm from arising is always through prohibiting SERTS. There may be a range of possibilities, for example, where the reproductive choice ought to be respected, and where the potential harm or the expression of a demeaning message is prevented by improving general social protections.

MacKellar (2021) is one thinker who has strongly objected to the general societal attitudes toward disabilities and the negative expressions arising from trait selection. He says that “choosing between possible future persons is an outward expression (revelation) of a discriminatory value system of a person or a whole society already in the real existing world” (MacKellar, 2021, p. 24). Such a value system is said to accept an inequality of worth (dignity), implying that already living persons with disabilities should not have existed (MacKellar, 2021). So, just like the IBC, MacKellar also believes that reprobogenic trait selection would be incompatible with the belief that all humans, despite their differences, are of equal worth and value, which is the “very basis of a civilized and genuinely inclusive society...” (2021, p. 25). He argues that society should uphold the belief that individuals with heritable biological impairments or differences are inherently equal to others by prohibiting trait selection and that the focus of the state ought to be on the provision of social resources to prospective parents so they do not come to view the process of caring for a “different” child as a burden (MacKellar, 2021).

Still, in recognition of the importance of reproductive liberties, the IBC holds that it is important to develop “a framework that on the one hand acknowledges the right of an individual to make autonomous choices, and on the other hand ensures what is enshrined in articles 6 and 2 of the UDHR: that no one shall be subjected to discrimination based on genetic characteristics and that individuals should be respected in their uniqueness and diversity” (2015, p. 23). But if MacKellar is right that a civilized, pro-equality, inclusive society would not provide ability-selective reproductive procedures,¹¹ does this mean that parental choices arising from their values or preferences have no weight here? A revision of MacKellar's position is warranted to account for this gap.

John Harris (2001) accepts that all persons are equal to one another; that no disability implies lesser moral or political status; that persons with disabilities must be free from discrimination of any kind; and that individuals and societies must take all steps that are necessary to ensure that this free and equal status can be enjoyed with equal facility by all persons. Yet, he contends that “choosing to repair damage or dysfunction or to enhance function does not imply that the previous state is intolerable or that the person in that state is of lesser value or indicates that the individual in that state has a life that is not worthwhile or not thoroughly worth living” (Harris, 2001, p. 383). So, Harris and MacKellar (as well as bioliberals and disability rights advocates, in general) are using the same premises, 20 years apart, to reach opposing conclusions.

Harris is convincing in one particular regard. He states, “If I say ... that I would prefer not to lose ... a hand, that it would be better for me if I did not lose one of my hands, that I would be better off with both

¹⁰Consider the way in which the euthanasia debate is now playing out in Canada. See Lemmens (2023) and Coelho *et al.* (2023).

¹¹What MacKellar exactly says is that it is unacceptable to provide ability-selective reproductive procedures to “non-inclusive parents” or a “society that does not make any effort to accept all children as being equally valued” but I am not sure what the precise value is in including these specifications since it seems as though an “inclusive parent” or a “just society” would not involve themselves with ability-selective reproductive procedures. I, on the other hand, do think that it may be possible for inclusive parents and a just society to involve themselves in such procedures, and perhaps MacKellar thinks so too, and if he does, it would be helpful to clarify so that one could see whether it is an ideal or non-ideal moral judgement that MacKellar is making. My interpretation of it is that he is saying society should not allow such procedures.

hands and so on, I am not committing myself to the view that if I did in fact lose a hand that I would therefore, automatically become less morally important, less valuable in what I call the “existential sense,” more dispensable or disposable than you.” (2001, p. 386). This seems right. His weaker point, however, is regarding the view that an impairment is *necessarily* a harm. To Harris, that very point is actually the strength of his position as he believes that defining disability as a “harmed condition” relative to alternative possibilities is better than defining it in relation to what is typical or normal for such beings (Harris, 2001, 2007). He holds this view because he thinks that one can be harmed by a trait even if that trait is species-typical: “The deaf are unable to hear whatever their social environment and are therefore disabled relative to those who can hear (whether or not hearing is species typical) and not relative to their environment.” (Harris, 2001, p. 383). It is ethical, Harris says, “...to prevent the births of people with disabilities because it is right to prevent needless harm” (2001, p. 387).

But an important question arises: if individuals with an impairment do not view this impairment as a harm (and perhaps identify with that way of being) and have a community of people like them, is it not wrong to publicly view (and perhaps enforce on them genetic selection policies that imply that) their impairment is a harm? Yet, the opposite may also be true. It can be said that perhaps the prospective parents do not view the impairment as a harm, but the potential, future person may. Is it not similarly paternalistic/wrong for parents to impose this impairment on a to-be individual (or to bring about a state of affairs where one starts off with a disadvantage when another could have started off without such a disadvantage)?

An objective account of unjustified harm is necessary to advance the debate on ability selection. If Harris can show that an impairment would still be a harm no matter what kind of reasonable changes are made in society, then the stronger argument would be on the side of prohibiting the selection of a child with an impairment, who would by definition start off with an unnecessary disadvantage. But if MacKellar can show that an impairment is only a harm in an ableist society, then it remains open to what parents should do. But when it comes to public policy, can you imagine the state prohibiting a socially disadvantaged group from making children, citing as their reason that being a part of this group in this society would harm the child due to the unjustified discrimination present in that society? Similarly, it would be equally wrong to have a policy that says only children who can be a part of that group can be brought to life, citing as the reason that otherwise the choice would express a negative message about members of that group, or that this is what is needed as a matter of justice. So, I argue that laws on ability selection should be on the side of allowing each to make their own reproductive choice regarding abilities that do not involve a shortened lifespan or pain. The decision to select a hearing child over a deaf child is not inherently wrong, even if it might be perceived by some as ableist (implying a demeaning message). This stance is not predicated on the belief that the ability to hear is the only “natural” way to be, but rather accepts that deafness can also be conceived as being natural. Instead, the justification lies in the principle of (reproductive) autonomy, which allows individuals to have personal preferences in reproduction (Lemoine & Ravitsky, 2020). I argue that these preferences should be acceptable as long as they are not rooted in demeaning beliefs about others and do not result in harm such as a reduced lifespan or pain.

What constitutes a “demeaning” message is contested, so it is crucial to define what I mean. A choice or preference is demeaning if it is based on the belief that the alternative choice is intrinsically inferior or otherwise “bad” (e.g., racism, sexism). However, it becomes important to recognize that not all decisions that lead to the same outcome are driven by the same intent. A preference may simply stem from a personal liking for something without implying that the alternative option is negative or undesirable. Certainly, people ought to be wary of what their actions may mean within a historical context (Dean, 2018; Hellman, 2003; Kaposy, 2023; Narayan, 1988). But, if the choice need not be demeaning; and it is not the individual’s intent to demean; and the individual is not publicly advocating that the choice is what everyone ought to do, it would be incorrect to say that there is a wrong present.

Consider the following. Scully says, “I may want to use PGD [pre-implantation genetic diagnosis] to have an audiotologically deaf child, but not want it enough to undergo medical intervention ... It would be quite possible for a Deaf couple to hold a very strong preference for a deaf child but at the same time feel it

would be wrong to do anything about it, if they believe that their preference is outweighed by their parental obligation to accept a child unconditionally.” (Scully, 2022, p. 119). Or, she says, one may have a preference for a particular trait, yet decide not to engage in selecting for it (or against the opposite) because they perceive it to be necessarily unjustifiably discriminatory (racist, sexist, etc.) (Scully, 2022). Yet, others may still believe they could love the resulting child all the same and not consider it wrong, thereby both meeting a preference and fulfilling their parental obligations.

Hellman’s account of wrongful discrimination is relevant here. She argues that an action within an unjust context is wrong if it amplifies the effects of prior wrongdoing; and takes the prior injustice or merely its effect as a reason for action (Hellman, 2018, p. 113). Hence, it seems to Hellman that it is not enough for an agent to not intend a wrong; they must also consider how their action may objectively contribute to an existing wrong in society. This means that the individual must perceive their planned action as though it were any other person conducting it. Could this action be done by a person who intends to discriminate? If yes, Hellman would say, they ought to avoid it. But this expectation ignores the importance of the individual, and their intent. As Buchanan has put it in another context: “To attribute to a person’s moral account everything that he or she does not prevent but could prevent seems incompatible with recognizing and respecting the fact that we each have one life to live, that we are each separate persons who are entitled to give our own projects a certain preference, and who accordingly require a substantial moral space within which to pursue our own conceptions of the good” (1995, p. 113).

So, expecting individuals to avoid actions that could be interpreted as demeaning by others or by society as a whole can be overly restrictive and tyrannical. What can be reasonably expected, however, is for parents to not intend an injustice, which, in this case, is measured via their reason for action. If the intent is merely to meet a reasonable preference in itself (i.e., a preference that would not be problematic in a just world), it should be an acceptable choice at first glance. While it can be criticized that the influence of an unjust society on the seeming “preference” of prospective parents is a valid concern (Scully, 2022), this would not justify the claim that the person’s choice is invalid as a matter of sacrificed autonomy or that we ought to compel or otherwise direct them to choose or avoid choosing. Rather, what it does justify is that this societal bias against disability, for example, ought to be corrected. One way to do this is for genetic counselors to remain unbiased; counselors should avoid conveying the notion that deafness is inherently undesirable so that prospective parents can make an informed decision.

What is vital to emphasize here is that while choosing a hearing child is an acceptable choice, it does not mean that this is the only acceptable choice available to parents. The argument allows for the possibility of multiple acceptable choices in reproductive decisions. So, using genetic technology such as PGD to select a deaf embryo, in scenarios offering a choice between a deaf or hearing embryo, can also be considered a respectable decision, despite potential perceptions of the choice as being harmful.¹² As mentioned above, these reproductive preferences are acceptable as long as they are not based on demeaning beliefs about others and do not lead to real-life harms such as a reduced lifespan or pain. This time, the main concern is that of “harm” since deafness is generally viewed as a harmed condition (Harris, 2007) or an atypical functioning, implying there is a problem with the biology of the individual (Buchanan et al., 2000). The concept of “unjustified harm” often includes societal conditions that could adversely impact a child’s life. For example, a child, due to the inability to hear, may face serious barriers

¹²Those who are against a Deaf family bringing to life a deaf child but okay with a Deaf person choosing to remain deaf give as their reason for the difference in opinion that the child is not the one making the choice. But this view necessitates that they think deafness is undesirable since they would not make such a claim were the choice in question was one of selecting greater soccer ability versus greater basketball ability. So, this must mean that they think the adult deaf person is free to make the choice to remain deaf because they are autonomous to make “undesirable” choices, as long as it does not affect others. Hence, I can see why MacKellar would view such a stance as incompatible with equal respect. If all persons are equal and none are less equal than others, after all, why should we think it to be an undesirable choice for one to remain deaf? Does this position not express that there is something wrong about deafness and, for a deaf person, something wrong about them, especially since they are choosing it? One can respond by saying that negative expressions are not sufficient to affect public policy on reproductive liberties. Another response would be to say that the parents should choose a hearing child as matter on non-ideal theory (e.g., least harm principle), while society improves conditions.

when looking for a job (Chadwick & Levitt, 1998; Ha'am, 2017). However, parents should have the discretion to assess and interpret potential negative aspects of the real world, especially in contexts where societal accommodations for disabilities are expected (i.e., accommodations that would exist in a just world) (Ha'am, 2017; Robinson, 2023). It is problematic to assume atypical functioning as an unjustified harm simply based on what is "natural" or "normal," for if societal changes can mitigate the impact of an impairment, and the impairment does not inherently involve a reduced lifespan or the infliction of pain upon the child, it should not be categorized as an unjustified harm warranting prohibition. Ha'am (2017) argues that

equating deafness with unjustified harm "reduces the capability of a person to hearing, whereas "an individual's capabilities are best understood as a 'joint product of her internal endowments, her external resources, and the social and physical environment in which she lives'" (Riddle, 2014, 66). Oversimplifying hearing to be the primary qualification of capability is a fundamental error, as the case of the bi-lingual community on Martha's vineyard has shown that the Deaf lacked no capacity if and when social environment was inclusive and not excluding. (Groce, 1985, p. 84)

On Martha's Vineyard (island in Dukes County, Massachusetts) in the 18th and 19th centuries, a high incidence of inherited deafness led to a community where both deaf and hearing residents used sign language, effectively eliminating communication barriers and integrating deaf individuals into social and economic life.

Or consider what Dean says about how society can accommodate some neurodiverse individuals as a way to address the problems they may face in daily life:

...one could imagine that schools uniformly incorporated the types of changes recommended by neurodiversity advocates, that employment opportunities for autistic adults were maximized, that whatever support and medications PAs [people on the autism spectrum] or their families desired were widely available, that autistic styles of social interaction and behavior were not stigmatized, and that individuals were usually allowed to control their own types and level of social interaction. (2018, p. 119)

The state, rather than limiting the reproductive choice (or more generally, trying to change "differences") should aim to improve social conditions for all, including those with disabilities. Here, too, genetic counselors have a responsibility; this time, to inform parents about the realities and challenges their child may face. Yet, it is ultimately the parents who should have the final say. Such a position acknowledges the plurality of acceptable choices within the scope of reproductive liberty, affirming the autonomy of persons to make decisions that align with their reasonable values and beliefs.

A further point of clarification is warranted on harm and autonomy. It may be said that there is a connection between being able to hear and an autonomy that may be greater than in the case of someone not able to hear. Even though that may end up being true, I argue that this does not follow from mere inability to hear. Primarily, there are many cases where Deaf persons have developed/gained other skills or benefits because of their deafness (e.g., enhanced visual and vibrational qualia experiences) and who lead fulfilling lives within culturally and linguistically Deaf communities and within broader society with or without accommodations (Wallis, 2019). Still, even if we were to deem their autonomy as lesser, I argue that it is generally above the lower limit we should accept (which is pain or a shortened life). The correct stance—as from the point of view of the state—must be to ensure sufficient autonomy, rather than to try to maximize it. Here, "sufficient autonomy" could be defined as having the capability to make decisions, pursue plans, and interact with the world in meaningful ways. This can exist in both deaf and hearing individuals.

It appears counterintuitive to say that selecting/creating a deaf embryo could be an acceptable decision when there is an option to select a hearing embryo, as it seems that this would be a harm—deliberately confining their life experiences and opportunities compared to a hearing individual—that

can be avoided. Even though the autonomy linked with hearing might lead to easier navigation (lesser harm) in a world designed for hearing individuals, what I am primarily challenging is the idea that society should not also design a world that is also for deaf individuals. To decline to consider the option of making social changes, deafness must necessarily be a harm, and I do not think it is. This perspective recognizes deafness not as a harm but as a difference, with its own attributes, underlining the idea that “harm” can be subjective and culturally constructed; thus, what might be perceived as harm in one context (e.g., hearing society) might not be seen the same way in another (e.g., Deaf culture). In other words, “the desire of the hearing to impinge their own image is no justification for negating the essence and choice of others.” (Ha’am, 2017, p. 84). So, when it comes to public policy, it is essential to distinguish between necessary harms (such as a life-threatening condition) and cultural/identity-based choices that do not impede an individual’s ability to lead a fulfilling life. Yet, none of this entails that one cannot argue that in “this” world (or in “this particular case”), deafness would be a harm. This argument is stronger. If we are not yet at such a world where an individual with this difference can lead a sufficiently autonomous life (for example, because the necessary social structures are not in place), this would be a strong moral reason for why we can prohibit the choice. That the world should be inclusive (ideal) does not, after all, mean that anything that would be justified in that ideal world is automatically justified in the here and now; sometimes there will be moral costs that are relevant and important to balance against what would ideally be justified. But even when the harms are too great, and so the action is prohibited, the prohibition ought to be accompanied by other actions that are meant to bring us closer to the realization of this inclusive world. Otherwise, the genuineness of the prohibition might be questioned.

In summarizing the analyses above, we can distill them into two main principles: respect for diversity and respect for choice. The principle of respect for diversity says we should not restrict parental choices unless those choices are intended by the parents to undermine diversity itself. Moreover, choices motivated by a positive view of diversity—and not by negative intentions such as a desire for a child to suffer—should be accepted by society. This acceptance should be extended as far as possible, provided that the choices do not lead to a reduced lifespan or pain. Thus, respecting and facilitating the autonomy of the decision-maker is paramount within the boundaries of (i) prohibiting the infliction of a shortened lifespan or pain upon the child; (ii) prohibiting the actualization of demeaning beliefs or intentions such as viewing certain groups as inferior; and (iii) prohibiting the choice resulting from an expression of unwillingness to love and care for the child. With these limits, choices cannot be said to undermine dignity/moral equality by creating unjustified harm or expressing demeaning ideas.

Notably, this emphasis on “respect for reproductive autonomy” does not mean that the range of options for parents ought to be maximized. Instead, it simply means that permitting different reasonable choices is in alignment with and/or arises from respect for autonomy. As observed above, having a preference need not equate to ableism or to being an unloving parent who intends something negative upon their child. In the case of deafness and hearing, for example, since neither choice inherently involves a harm or a demeaning message, neither side can justifiably demand a restriction on the other’s choice, even if individuals can ultimately be restricted from that choice (if it unjustifiably harms or demeans). Therefore, the role of the state should be to allow both choices at the level of policy while focusing its efforts on improving social structures and conditions to support all individuals. This approach fosters a society that is inclusive and respects the diversity of its members.¹³

Why are “natural” and present genetic inequalities okay?

If the “mere difference,” disability position presented above is a reasonable position and has substantive argumentative weight, I argue that it would thereby also allow enhancement of certain abilities. It seems the transhumanist and disability position may have more in common than it appears; both give due

¹³This is a prima facie argument on policy. Perhaps it will be impossible to determine who is intending to demean/harm, and we will judge that it is overall better to not allow a choice than to take the risk of allowing it. But there is no reason to assume that this is what will happen.

weight to respect for diversity and autonomy, and place emphasis on making changes to society to accommodate or otherwise include different individuals. Among the first of these social accommodations is to guarantee the dignity of all despite the reality that people possess many different traits and abilities, and at varying degrees. The major difference between a disability and an enhancement is that one is a “natural” difference, and the other “human-made.” But why should diversity be more valuable when it is natural? If I landed on an unknown island and saw hundreds of different people, would I need to find out that the differences are natural before I decide whether to respect them as my equal?

In addition, what is so special about precisely the *current* genetic inequalities between people that they are judged as the (only) ones that ought to be preserved?¹⁴ Why is it that these existing genetic inequalities, if and when they become problematic, can be adequately addressed via social means, but not the newly created ones? If there are no adequate answers to these questions, as I suspect, then the argument for allowing somatic enhancements is as strong as the argument for allowing current genetic differences, including disabilities.

Consider the basketball player. The way we address the potential dangers of inequality in height of the basketball player and the person of typical height, such as earning a better income and having better access to health care, is not by redistributing genes to achieve an “acceptable” level of genetic variance. Rather, it is done by ensuring that those who are not as tall are not denied their equal status in society, and perhaps redistributing some other social resources and income (Buchanan, 1995). In fact, the UDHR does not promote the idea of genetic equality either. Instead, it promotes “genetic non-discrimination”; “everyone has a right to respect for their dignity and for their rights regardless of their genetic characteristics” (UNESCO, 1997, article 2a). In other words, the declaration accepts that the presence of natural inequalities need not imply inequality in dignity or treatment. Similarly, I argue that “new” genetic inequalities should not be assumed to be problematic either. Of course, certain variations will be problematic because they will necessarily lead to consequences that violate certain moral standards,¹⁵ but this is different from assuming a problem from the start (Resnik, 2000). This insight on genetic variance is important because it suggests that we ought to consider whether social changes can be implemented to nullify any negative consequences, and whether these social changes would be reasonable. If so, the focus of our efforts should be on developing social safeguards for the protection of everyone’s equal status, rather than on enforcing an “acceptable” level of genetic variance. Otherwise, there seems to exist a eugenic aim that is magnified by this social inclination towards limiting autonomy to enforce a set level of genetic variance. Let us now take a closer look at the role of society.

Social changes to address the worries over the violation of dignity/moral equality

The IBC says that somatic enhancements and non-medical genetic selection introduce the risk of new forms of discrimination and stigmatization for those who cannot afford such technologies or simply do not want to use them (2015, p. 27). The worry that enhancements may create a social divide and exploitative relationships between those who have enhanced capacities and those who have not is a legitimate worry, but one that can be addressed through social means. Bostrom (2005), for example, explains how the promotion of acceptance towards those who are different from us, and the creation of inclusive social structures, policies, and accommodations can ensure that the advent of enhancements do not yield a social divide between those who are enhanced and un-enhanced. Afterall, dignity is something

¹⁴This is the status quo bias.

¹⁵For example, the child’s sense of self will be negatively impacted once they learn they were “pre-programmed.” Charo (2018), among others, have written about how such consequential concerns have generally been exaggerated in the past: when IVF was first introduced, it was viewed as unnatural; there were concerns that it would harm the parent–child relationship and that such children would be categorized as “test-tube babies.” Yet these potential possibilities did not occur and being a test-tube baby did not become a socially salient identity. Perhaps the establishment of social measures and protections played a part in not allowing these possibilities to manifest, but that is exactly the point. For example, Charo states how the American with Disabilities Act was passed around the time that genetic screening was beginning to be used to detect genetic causes of impairments (2018).

that is socially protected, meaning that the following are all possible social responses that can address the potential for unjustified discrimination, stigmatization, social division, and exploitation:

1. Level of social protections for all are made more extensive.
2. Bans are put in place for enhancements that will necessarily unjustifiably harm others such as an enhancement that will create a permanent undesirable gap between initial users and those who would only have access at a later time.
3. Universally desired enhancements are subsidized.

In fact, the UDHGHR is itself an example of how a social measure can be used to address issues related to potential violations of dignity. The Declaration states, “No one shall be subjected to discrimination based on genetic characteristics that is intended to infringe or has the effect of infringing human rights, fundamental freedoms and human dignity” (UNESCO, 1997, article 6).

The IBC applies this principle to the present-day use of genetic tests and says that “high sensitivity and attention as well as effective measures to prevent and promptly fight ... [discrimination and stigmatization] are necessary” (2015, p. 9). One particular worry about the use of genetic tests in society is regarding the formation of social expectations from individuals to “live healthy” once they come to learn about their genetic predispositions from genetic tests (IBC, 2015; Resnik, 2014). Blameworthiness, denial of care or insurance, social pressure, and incentives in the form of discounts and rebates can all be used to encourage health-promoting behaviour, and this, according to the IBC, could result in discrimination and stigmatization of those who do not live a health-promoting lifestyle (2015, p. 9). The worry is heightened given that genetic information is known to be erroneously perceived as overly deterministic (IBC, 2015, p. 9). Yet, despite these justified worries, the IBC does not deny the value of persons having access to their genetic information to help them make lifestyle decisions. Instead, they encourage “...the international community, governments and researchers to address the very complex issue of the looming conflict between the right to have access to scientific knowledge [e.g., one’s genetic information] and other relevant principles” (2015, p. 9).

Some reasonable social responses that would address the problem of undue social expectations are the creation of oversight bodies to minimize the possibility that service providers treat individuals’ genetic information erroneously; to work towards improving health literacy within the general public; and to provide basic universal health and life insurance to all citizens. Moreover, if insurance incentives are actually effective in reducing chronic, lifestyle diseases, then the state could also make it a priority to ensure that the incentives are available to all who meet the criteria; that the criteria themselves are not unjustified, and that none are unjustifiably withheld from being able to do what is needed to meet the criteria to be eligible for the incentive. Do people have access to healthy foods and other resources to be healthy, for example? Regardless, basic insurance premiums, without any such incentives, should already be affordable to all, whether through the state ensuring that the cost on the market is reasonably priced (through laws or subsidies), or through the direct public provision of something like universal basic insurance (O’Neill, 2006). In this context, willing individuals could still benefit from incentives on the private market, and this would not amount to a kind of “individual genetic responsibility policy” that holds persons politically/socially responsible for their genetic risk factors (Resnik, 2014). After all, if health is so important that respect for autonomy still allows one to be unhealthy (and rightfully so), then respect for autonomy should also permit one to be more than healthy (i.e., benefit of insurance of health *plus* the benefit of the incentive). With social measures in place, there is no reason why unjustified discrimination, stigma, and infringement of dignity should ensue from the use of genetic tests or incentives.

In the context of SERTS, there can also be negative social expectations and discriminatory attitudes that manifest. As in the case of genetic tests, however, social measures can similarly address worries over discrimination and stigma. For example, there should not be something like a “right to enhance” unless it can be ensured that it is only for an enhancement that is universally desired; unproblematic in itself; and that this is the only way to guarantee that people who want to make use of it can access it. There would be no need to establish a positive right if those who want to make use of a desirable, unproblematic

enhancement can already do so. In this way, we avoid creating a pressure to enhance, which would make people worse off even if they end up deciding what is best for them given the choice. Admittedly, avoiding the establishment of a positive right to enhance would not completely eliminate a potential social pressure to enhance, but these would be less powerful and easier to counteract via social mechanisms.

The societal decision to permit certain genetic enhancements would also come with the possibility of changing common social standards over time (e.g., public services requiring the ability to use a certain kind of information technology; public spaces designed for the average citizen who may now be one who has a particular enhancement; expectation of taking fewer sick days, etc.; Buchanan et al., 2000). The state ought to monitor such trends and ensure that individuals are not excluded from the dominant cooperative scheme. As the UDHGHR itself states, making the benefits from research concerning the human genome available to all can contribute to respect for the dignity of all (UNESCO, 1997, article 12a). The development of biomedical technologies is a case in point. Buchanan et al. say that “if technology is designed with reference to “normal” abilities, then it may restrict rather than widen opportunities for some, and this is true regardless of whether those who do not have “normal” abilities suffer from genetic or other impairments or are simply too poor to afford the interventions that set a new level of “normality” with reference to which new technologies are designed” (2000, p. 298). Many others have emphasized the importance of including persons with disabilities in the design of biomedical technologies (Goering & Klein, 2020; Hansson, 2017; Stramondo, 2022).

Notably, Michael Wee (2022) opines that it will initially be those with enhanced capacities who are likely to be negatively affected by economic, cultural, and physical structures, which are designed for those with typical human range. He gives the following examples: “If... a small number of people were able to extend their lifespan by 50 years, would they find adequate family and social structures able to support and accompany them in their extended longevity ... Would someone with greatly enhanced cognitive abilities be able to function well in a regular work environment, for instance, or would they instead be disabled by the speed at which things progressed relative to their own mental powers?” (Wee, 2022, p. 20). Accommodations that would be needed for people in such scenarios ought to be checked for whether they are reasonable. If unreasonable (e.g., undue hardship), an accommodation request could be denied, but this would not mean that the person ought to be prohibited from making the choice to enhance that capacity in the first place.¹⁶ Instead, such information should be disseminated to individuals.

Future bioethics guidelines should more directly and centrally discuss how social changes can be used to counteract the potential for unjustified discrimination, pressure, indifference, or disrespect arising from the use of SERTS. For example, below are some of the points that something like the UDHGHR can include as an addendum:

- Those with genetic enhancements for a particular ability and those without are equals.
- States shall ensure that all can be participants in society. They shall implement and enforce anti-discrimination laws that specifically address potential biases against those who have (or have not) made use of genetic technologies, in employment, education, insurance, and other parts of social and political life.
- States shall enact laws that protect individuals from being coerced into using enhancements, whether by employers, educational institutions, or through more general societal pressure.
- States shall consider providing subsidies for, and only for, enhancements that are universally desired to ensure they are accessible to all who would like to make use of them.
- States shall ensure that individuals are not excluded from opportunities due to changing societal demands for goods, services and required skills, by appropriately meeting the basic needs of all.

¹⁶As with any minority, discriminatory views can also be formed against persons with enhanced capacities. Adequate social responses would be necessary to address them.

Conclusion on human dignity: Implications and steps forward

Somatic gene enhancements should be viewed much the same way that other enhancements are, meaning that they should not be viewed as inherently problematic. This stance necessitates abandoning the notion of “genetic exceptionalism”—the idea that genetic technologies are uniquely dangerous or morally distinct from other forms of medical or other technologies. Consider the European Commission’s 2021 SIENNA project (stakeholder-informed ethics for new technologies with high socioeconomic and human rights impact),¹⁷ which affirms “... a set of ethics guidelines for human enhancement that is now included in the ethics review guidance for one of its funding programs [called *Horizon Europe*]” (Erden & Brey, 2022, p. 835). These guidelines are based on the principles of well-being, autonomy, informed consent, equality, justice, and responsibility. Erden and Brey, two of the researchers involved in SIENNA project, warn, as I have in this paper, that even though enhancements could improve existing inequalities, they may also:

- (i) cause new inequalities, by providing individuals and groups with superior abilities not possessed by others;
- (ii) exacerbate existing social inequalities and engender new ones, by creating new social identities and challenging or reifying existing conceptions of identity, including what is considered “normal” or typical, unusual or deviant; and/or
- (iii) put pressure on unenhanced persons to enhance themselves (2022, p. 837)

To address these related concerns, Erden and Brey (2022) assert that no work or educational requirement should directly or indirectly require or make reference to an enhancement. They recommend that “human enhancements that are internal to the body or are irreversible should not be specifically developed for workplace or education applications ... [such as through] normalizing human enhancement for employment prospects, career progression and development, or education, and thus creating undesirable social pressure for it to be used.” (Erden & Brey, 2022, p. 838). These anti-discrimination measures can broadly be recognized as social responses for the protection of persons who have not or could not make use of a human enhancement.

But due to present-day legal restrictions, these SIENNA guidelines do not apply to “genetic” enhancements. Yet, based on the analysis in this paper, we should question why this is so, especially since the way to address the three concerns identified by Erden and Brey—the creation of new inequalities, worsening of existing inequalities, and the formation of undesirable social pressures—are no different than those that would be needed to address somatic gene enhancements, which may be equally desirable as other enhancements. Most certainly, negative consequential worries that have a strong likelihood of occurring are sufficient to reject the pursuit of SERTS. However, we should recognize that such worries do not directly or indirectly necessitate that dignity is or will be violated. Social means can be viewed as a viable option to address the worries since social context plays a fundamental part in the meaning and effect that actions can have. The precautionary principle, which has been a popular default approach, advocates for erring on the side of caution in the face of potential risks. While this principle is valuable for preventing potential harm, it can also fundamentally interfere with persons’ reproductive autonomies if it is not informed by possible social structural interventions.

The argument presented in this paper acknowledges that not all possible social changes required to address a concern of dignity violation will be reasonable. For example, it is possible for society to turn into a police state to reduce the likelihood of discrimination from occurring, which could multiply as a result of the availability of an enhancement. But if that is the only way to address the issue, the reasonable option here would be to not permit the enhancement, even if it can be addressed by a police state. Not

¹⁷This research project considered existing ethics guidelines including the Declaration of Helsinki, the World Health Organization Standards and Operational Guidance for Ethics Review of Health-Related Research with Human Participants, and the Oviedo Convention; as well as insights from philosophical ethics and international declarations and treaties such as the Universal Declaration of Human Rights and the Charter of Fundamental Rights of the European Union (Erden & Brey, 2022).

even a reasonable social change, within all the possible changes, should necessarily be the one that is implemented because there may be more than one reasonable option. Such decisions are to be made by citizens and their representatives through democratic processes.

The prevailing notion that society should strive toward broad societal consensus regarding how, if at all, such genetic technologies should be used underscores the need for dialogue (The National Academies of Sciences, Engineering, and Medicine, 2023). In fact, recent emphasis in bioethics has been on how to better (or more fully) realize democratic decision-making through practices such as inclusive public and stakeholder engagements (Iltis et al., 2021; Lemke & Harris-Wai, 2015; Sugarman et al., 2023), global/citizen deliberative processes (Dryzek et al., 2020; Garrison et al., 2021), consensus conferences (Meltzer et al., 2014), and so forth. Yet, there are still ways in which these democratic processes can yield morally questionable outcomes such as the establishing and upholding of discriminatory policies. This is due to the challenges closely tied to democratic decision-making, including susceptibility to populist manipulations, the tyranny of the majority, and the short-termism of electoral cycles. Numerous actions can be taken to address these concerns. Primarily, substantial emphasis must be placed on ensuring the public is informed and has sufficient factual knowledge on a given topic of discussion.¹⁸ But even an informed public can support discriminatory policies (e.g., because a powerful majority is not willing to soften the views that arise from their comprehensive doctrines). This then highlights the importance of a constitution, and of judicial review (which are themselves criticized by some (Waldron, 2024) as undemocratic). Another pursuit is to build trust between the state, experts, and the public, which involves creating a culture of transparency where conflicts of interest are openly disclosed (Ryan, 2017; Walzer, 1983). Public trust is contingent on demonstrating that expert recommendations do not unduly favor corporate or elite interests over the public good (Ryan, 2017). Researchers (especially those whose work relates to public policy) should be honest and clear about their values, biases, and the limits of their knowledge (Resnik & Elliott, 2016; Ryan, 2017).

There is still much value in these consensus-building exercises and other democratic processes to work together with more abstract normative ideas and moral reasoning. As I have presented in this paper, one can outline the kinds of considerations that are morally relevant to determining the limits of reprobogenic technologies; and then say whether a particular argument that is prominent in the policy debate seems reasonable. It would be unreasonable, I argued, for citizens and public policymakers to come into the debate with the assumption that SERTSs are inherently contrary to respect for the dignity of humans. If, after evaluating the argument, one or many agree with its conclusions and implications, then these can be viewed as guiding ideals rather than strict rules. Certainly, the possibility of public opinion gradually favoring the use of certain somatic enhancements, combined with the influential role of commercial interests, could hasten the emergence of related policy questions for which we should be prepared.

An important part of this preparation, I argued, is that society should place effort into identifying and considering the development and improvement of social safeguards as a pre-emptive response to the emergence of desirable genetic enhancements. This would serve to uphold everyone's equal status in society while also respecting the autonomy of persons to make use of somatic enhancements. In other words, such a policy would ensure that those who may not have access or those who are not interested in making use of a somatic gene enhancement would not be negatively affected, and so would not pose a reason to prohibit their use in otherwise unproblematic cases.

¹⁸Even the value/criterion of being “informed” raises important questions because different facts may mean different things to different people. The issues surrounding “mistrust”, between the state, experts/scientists and the public, worsens the problem even further. Regardless, the general intent behind “informing” the public is a good thing. These informing/education related activities should include robust mechanisms for transparency and accountability, particularly in the face of potential corruption and undue influence on decision-making (Ryan, 2017). It can also include the development of critical thinking skills which can elevate the quality of democratic engagement and to foster an electorate capable of discerning the values at stake in policy discussions (i.e., a public that can deliberate without veering into blind trust or cynical skepticism) (Ryan, 2017).

Such societal efforts may include tailored measures to address problems that may arise from persons having differences in particular abilities. For example, the state can consider the provision of auditory/visual technology for individuals who have not genetically enhanced their capacity for superior hearing/vision in areas where these enhancements may provide a distinct advantage; or it may consider creating proportionately/equally desirable areas where these enhancements would not afford a distinct advantage. If these are not feasible, it may be a reason for prohibiting that particular somatic enhancement. But even more generally, numerous changes can be implemented to mitigate the risk of genetic discrimination, particularly in key areas such as employment and insurance (Adjin-Tettey, 2021; Farrelly, 2021).

I argued that there is a strong presumption that a desire for somatic enhancement should be respected and that prohibition need not be the only way to protect the moral equality of all. Going forward, below are a few of the important considerations that may favor one particular approach over another. Primarily, the intent for the enhancement in question must be neutral or good, not motivated by prejudiced views of others. For example, enhancing memory function to better perform in academic or professional settings could be justified as an option for what can be permissible, provided it does not stem from a negative view of less naturally capable individuals. Sometimes, the enhancement in question will not be of the nature to have an impact on the way others are perceived, and subsequently treated (such as via restrictions on opportunities) either because its value will not be dependent on others' inability to access and use it (e.g., an enhancement of the ability to "live in the moment") and other times because the level of social protections in the present-day will already be sufficient and stable, going forward. Other times, there will be concerns for others, but the costs will be so low to avoid the problem that it will be cost-effective for society to invest in such societal protections, while permitting the use of the somatic enhancement in question. There may also be a particular enhancement that is universally desirable and can be made accessible to all in a just way (e.g., subsidized), without creating unjustified pressures to enhance. And the broader the demand for a somatic gene enhancement, the stronger the argument's force may be in the public realm for permitting its use. Prioritizing research/investment on truly universally desirable somatic gene enhancements, and in establishing general societal protections (such as a comprehensive genetic non-discrimination law) would be prudent as they would avoid generating stigma from making salient social accommodations for only particular groups.¹⁹ And, of course, if the cost of the necessary social changes to protect others exceeds a certain threshold, prohibition would be justified. Surely, the details of these considerations must be worked out further. Still, the approach presented in this paper for how dignity could be protected in a world with SERTS already challenges our current perspectives on reprogenetic technologies in an important way.

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¹⁹In the context of genetic testing, for example, Asch and Wasserman (2015), emphasize this message, arguing that "a policy that gave no special status to disabilities, that did not treat them as providing a presumptively stronger basis for selection than any other trait or variation, would "send the message" that disability did not give prospective parents a privileged reason to screen out embryos or terminate a pregnancy, that disabilities were just some among the myriad variations that might be relevant to some prospective parents in deciding whether to bring a child into the world" (2014, p.426).

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