Genetic engineering is going to be one of the most prominent technologies of the medical field in the near future. Currently, the means of genetically engineering a child are limited, but once developed, the possibilities are endless. Yet, not everyone believes genetic engineering is a positive occurrence. This controversial issue has sparked numerous articles and debates over the ethicality of it. The bioethical principle distributive justice, along with the allocation of scarce resources, causes some to negate the possible positive uses of it and brings to light some negative consequences. Genetic engineering can be used in both positive and negative ways, depending heavily on the ethical allocation of scarce resources.

**Review of Literature**

**Disability Genetic Engineering**

The first possible use of genetic engineering is to engineer a child so the individual does not possess the genes that cause deformities, disease, or other negative traits. Hammond (2010) believes that if these technologies become available, then it is a parental duty to take advantage of them. She says “a parent who could provide adequate genetic inputs, but fails to do so, is guilty of ‘genetic neglect’” (p. 161). Hammond (2010) states that if the parent are aware of a serious disability, while in utero that their child might have, they are morally obliged to use genetic engineering as a means of preventing this defect. While Hammond views this type of genetic engineering as a duty, Brassington (2010) struggles to define exactly what a duty is. He first refutes the proposition that an enhancement is strictly something that makes a change for the better. Brassington (2010) argues that since “there is an indefinitely long list of things that might count as an enhancement…it is hard to sustain the idea that providing those enhancements might be a matter of duty” (p. 398). Basically, there are far more changes that can be made to a person than ever possible; therefore, it is
improbable that genetic engineering be seen as a duty. He argues that no matter what is done, there is always going to be something more that can be done. Hammond boldly states that society as a whole, based on the argument of seeing genetic engineering as a duty, can agree that moral wrong is done when parents decide to have a severely disabled child when they could have prevented or done otherwise.

There are concerns about this usage of genetic engineering. Hammond points out that those already disabled most likely would not favor it. It possibly could make those disabled at a greater disadvantage than before. If people are more focused on trying to prevent disabilities, than the disabled might be shoved to the back of people’s minds. Currently, since disabled people constitute a large portion of society, there is pressure on society to make places accessible and usable for them. This would not be the case if genetic engineering to prevent disabilities became dominant. Not only does it hurt them in that aspect, but it also demonstrates that society as a whole does not accept or support disabled people.

**Trait Genetic Engineering**

The second possible use of genetic engineering is to engineer a child so the individual possess certain qualities seen as favorable, such as intelligence or certain eye or hair colors. This type of genetic engineering is seen as plausible, even though it is further in the future than the other type. One view is that parents can modify their children’s environment, which could possibly have an effect on the intelligence, creativeness, etc. of the child, so it is also acceptable to modify characteristics. Brassington (2010) challenges this type of usage. He questions the limit and scope of this kind of genetic engineering, saying that “…we could always be a little bit cleverer, faster, better looking, or more creative” (p. 399). He raises a valid question: when would enough be enough? How is society to collectively place a limit on the amount of superficial enhancement? One can only be so intelligent and so clever. Bhuiyan (2010) also worries about this limit, and how it will affect human
nature and dignity. According to him, in the future a divide will take place between those with genetically engineered traits and those without them. Bhuiyan (2009) fears that “…the complex diversity of human ends and purposes may be reduced to just a few categories such as pain and pleasure or autonomy” (p. 831). If humans share less and less traits, then human dignity would almost be insignificant.

Opponents of using genetic engineering for human characteristics use the argument of unconditional love. Davis (2008) discusses unconditional love and selection drift: that the standard for acceptable children is increasing because of the ability to select potential genes. Those who call upon the unconditional love objection claim “just as we should love existing children unconditionally, so we should unconditionally accept whatever child we get in the natural course of things” (Davis, 2008, p. 259). They also say that by choosing genes for a child, one is putting conditions for love on a child. Davis (2008) rejects these claims wholeheartedly and states that as parents, one already loves child their based on conditions, such as the condition that the child is one’s own child. The endowment argument, created by Davis (2008), highlights four main points that support this type of genetic engineering. They revolve around the fact that parents should want the best for their children and be as well-endowed as possible, which potentially could involve the use of genetic engineering. Glover (1999) explains that parents enjoy seeing some of their own characteristics in their children, and it helps the parent-child relationship develop. If genetic engineering was to get in the way, it could possible hurt the growth of this relationship.

There are risks inherent within this kind of genetic engineering. Glover (1999) argues that it is impossible to not have some fallout or loss resulting from it. He says, “we are bound to pay a price somewhere else: perhaps the more intelligent people will have less resistance to disease, or will be less physically agile” (1999, p. 538). There will ultimately be some form of trade-off. Glover (1999)
substantiates this claim further, explaining that if it was possible to become more intelligent without diminishing other characteristics of a human, natural selection would have already done it.

**Risks & Consequences**

There are consequences prevalent for both types of genetic engineering, as Glover (1999) readily points out. He suggests that in the future, there is a chance of producing people that could be dissatisfied with the results produced by genetic engineering. When humans take control of modifying genes, they might produce unwanted results. There is no definite method to find out to what gene every gene is linked to in the human body. If society’s lack of knowledge does produce unwanted results, society has to live with them. For example, if it was the aim of one to produce people that were very creative, but failed to realize by doing so they would also be violent, then society has to live with these very violent people. While this idea might be more farfetched than realistic, Davis (2008) says “…they might like the way they were and reject, in characteristically violent fashion, our explanation that they were a mistake” (p. 540). So, if genetic engineering of this sort became a reality, many regulations would have to be made with great caution.

Glover (1999) realizes that if genetic engineering advances in the future, society will need to decide who is in charge of it and its multiple facets, particular the consequences. Rules and boundaries will have to be set. Genetic engineering would pose a large threat to society if it ever became uncontrolled. Deciding who will be in charge is a problem in of itself. Glover (1999) considers that people might not be happy with just one group of people controlling this huge task, as people might question “what right do they have to decide what kinds of people there should be?” (p. 541). This is one of the many questions that arise when discussing genetic engineering and merits much discussion and planning before acted upon.

Glover (1999) is also concerned about humans playing God. He uses a scenario, the possibility of raising an intelligent quotient by fifteen points to detail his apprehensions. If humans decide to do
so, then they are playing God because they are choosing what level an IQ should be. Glover (1999) stresses that the line between playing God and trying to better someone’s life is a slippery slope, because of medicine and environmental changes are sometimes viewed the same way. A reasonable answer to this, Glover suggests, is that genetic alterations can be viewed as God-like because they are drastic, irreversible, and sometimes not needed to live.

Another downside of genetic engineering, as detailed by Agar (1998), is that it potentially could interrupt or compromise personal life plans. He proposes that a person’s life plan is being modified and develops when a person decides what to improve for him or herself. Genetic engineering is an external force, not internal, so it compromises life plans. Agar (1998) believes that “the genetic engineer is forced to act in a way that ignores the individual’s life plan” (p. 178).

Genetic engineering is usually categorized in two ways: genetic engineering that could prevent disability and genetic engineering that could give people certain traits or characteristics. While there are both supporters and objectors of these two kinds, it is universally understood that many issues arise regarding genetic engineering that would need to be addressed, such as the limits and controls of such technology.

**Bioethical Principle**

**Distributive Justice and the Allocation of Scarce Resources**

The bioethical principle that most closely relates to genetic engineering is distributive justice. It involves another bioethical principle, the allocation of scarce resources. Distributive justice revolves around the question “whom should we treat and what justifies our decision?” (Harris, 1985, p. 365). Scarce resources are a large, growing health care issue because populations are increasing, people are living longer, and more numerous treatment options are available. It is more challenging to decide who receives the scarce resources. The consequences of these decisions, made at higher levels, affect
even those on the bottom. There are numerous views on the answer to the question of who receives these resources.

Gruskin and Daniels (2008) believe that no matter what decision is made, there always are winners and losers. They explain that there is no one right answer to this question. For example, there is not always one answer when determining if fewer resources should be given to many or a greater amount to few. There are a few approaches to this distribution, one being the human rights approach. This approach offers a process that analyzes the populations positively or negatively affected by specific interventions. The opportunity based approach analyzes and gives reasons to support all of the proposed options. Lastly, the accountability for reasonableness approach is based off of the idea that those similar-minded people with ideas about distributive justice can work together, even when resources are limited, to make sure the health needs are met fairly.

Harris (1985) discusses the significance of age when deciding how to use scarce resources. The anti-ageist argument refuses to even consider age or life expectancy as an issue when making this decision. Those who support the fair innings argument say that there is an amount of years that constitute a practical life, or fair innings. Everyone should get the chance to live that number of years, but once reached, they have lived out their entitlement. Resources should be given at a greater quantity to those who have not reached their entitlement. Harris (2003) states “the rest of their life is the sort of bonus which may be cancelled when this is necessary to help others reach the threshold” (p. 367).

Another prominent issue is extra life-time versus extra lives. For example, should five sixty-year olds or one ten year old be saved? A respected answer is that one should favor the situation where the total number of lives produces a larger contribution to total amount of lifetime saved, which is the premise of utilitarianism. Falk and Chong (2008) discuss the utilitarianism theory of justice, in
which resources are used for programs that “provide the greatest good for the greatest number” (p. 3).

Bioethical Principle Regarding Genetic Engineering

In relation to genetic engineering, Agar knows that the principle of justice must be utilized when rationing out resources. He notices this “…when we note how the allocation of goods to one potential life plan can impact on other potential life plans” (2003, p. 178). Fox (2007) asserts that genetic engineering violates a fundamental assumption of distributive justice: “that goods are to be allotted among antecedently existing persons with particular given inequalities in natural assets” (p. 712). The key word here is natural. By Fox’s definition, distributive justice does not apply to genetic engineering because it is not natural. He offers four reasons for why native endowments might be omitted from the theory of distributive justice. The first is that the DNA with which one is born constitutes the dignity of that person, so it should not be altered, no matter how much it adds for the greater good of society. The second reason is that people are unable to consent to these endowments because they are received prenatally. As a result, they are unable to reverse whatever effects may occur from the usage of genetic engineering. The third reason Fox (2007) gives for this exclusion is that the usual difference in the natural talents of one seems to be made no more equal for any individual when genetic engineering is used. Lastly, there is an assumption that social and economic goods are external and transferable, “…thereby susceptible to human intervention, while natural assets are not” (Fox, 2007, p. 713). For this reason, only the economic and social goods can be switched to make an individual’s situation worse, not natural assets. Even though Fox (2007) chronicled these reasons, he also makes a point to question why the scope of distributive justice should be constrained if genetic engineering becomes prevalent. Just as social and economic goods create inequalities, so would genetic goods. This merits the same response of distributive justice as does the economic and social disadvantages.
Fox asserts that a decision needs to be made in regards to what advantages and disadvantages the principle of distributive justice would cover. He talks of a sort of currency—“…whether resources, opportunities, or capabilities…” (2007, p. 714). This currency would face two significant restrictions. The first is that state sponsorship of genetic engineering in general would spark argument over which traits are the most desirable. There would be many different opinions, and it would likely take a while to agree on them. Second, even if it were possible to agree on said traits, it would cause controversy and exemplify to society what traits are the best to have.

Fox (2007) discusses the manner these goods should be distributed. For this, he addresses four principle classes of distributive principles that usually are more advantageous for the less-well off. The first is a principle of flat equality, which decreases the disparities between the better or worse off. Secondly, there is the luck egalitarian principle. This principle favors the disadvantaged because of no fault of their own are they in the disadvantaged; it is because of luck. Proponents of this principle believe that goods should be distributed equally between all, regardless of social situation. Thirdly, prioritarian principles also service the worse-off, because “the currency of justice is thought to be of greater value divided up among a larger number of worse-off individuals than concentrated in the hands of a smaller number of better-off individuals” (Fox, 2007, p. 716). Lastly, the sufficientarian principle states that the worse-off need more resources or aid because it is unjust for them to pass below a line of equality.

Distributive justice and the allocation of scarce resources are heavily tied in with genetic engineering. Numerous individuals offer ideas on how to distribute goods equally, especially those that are rare. The main question with genetic engineering is if scarce goods should be used for genetic engineering, and how distributive justice can affect the circulation of said resources.
Personal Reflection

I hold different views on genetic engineering based on which type it is. Genetic engineering to deter deformity or disease, I believe, is reasonable. In society today, it is harder to be accepted if one has a disability or deformity. The struggles that one might face as a result of a disability would be great and often insurmountable. If an opportunity arose to prevent people from having certain disabilities, I think it should be taken. It seems inhumane to allow someone to be born with a substandard quality of life, if it was known about beforehand. Engineering a child so that it does not have disabilities can greatly improve one’s quality of life, possibly even the length of it. Even though consent technically is not obtained directly from the child before the procedure is done, it can be assumed that consent would have been given. For this reason, this usage of genetic engineering is helpful and can be justified.

On the other hand, I do not agree with genetically engineering a child to possess certain traits or characteristics that are seen as desirable. Even though this most likely will not be possible until sometime in the far future, it still is not ethically right. Choosing certain traits for one’s child helps to determine their children’s future, not letting them choose it for themselves. I also believe that parents should love their children regardless of their appearance or personality. Only parents who care about superficial qualities would choose to engineer their child in this manner. It is unacceptable, in my opinion, to choose for your child what they might act like or act like as a result of these potential traits. For this reason, genetic engineering of desirable traits is not right and, in my eyes, cannot be justified.

A main reason of why all cases of genetic engineering cannot be justified is because of the allocation of scarce resources. I can see using an allotted portion of scarce resources to prevent disabilities, but I cannot agree with using these resources to cosmetically correct or change traits or characteristics. Some may argue that if one has the money, the individual should be able to spend it
however they want, and if this means choosing traits for their child, then it is their right to do so.

While it technically is their right as a human being, the price for this kind of genetic engineering should be set incredibly high to preserve scarce resources. Distributive justice is not being practiced with this kind of genetic engineering because there are so many other more important uses of these scarce resources, such as to help find a cure for cancer, or a better vaccine for various deadly diseases. As a society, we should not be so concerned with superficial traits like eye or hair color so much that people now want to choose them for their child instead of letting nature take its course. These resources could be better used, and for more vital reasons. This is why, overall, I believe that genetic engineering is useful to prevent disability, but a waste of resources when used to affect human traits and characteristics.

**Conclusion**

In the future, society is going to see the advancement of genetic engineering of both kinds. The bioethical principle of distributive justice, which is tied closely with the allocation of scarce resources, is scrutinized in relation to this technology to determine if genetic engineering is ethical. For example, is it ethical for resources to be used to engineer a child’s eye color versus used to help find a cure for cancer? Nonetheless, the usage of genetic engineering is growing greatly and will continue to do so in the future, no matter what it is used for.
References


