Cloning benefits and issues research paper examples

Science, Genetics

Cloning

1. 0 Historical Background

During mammalian reproduction, the sperm fuses with the egg. During this process, both the egg and the sperm contribute half of the genetic material resulting into a genetically unique individual. On the other hand, cloning involves the development of an organism or cell that has identical genetic materials to the parent. Thus cloning can be defined as producing a copy of DNA, cell or organism asexually. This definition is not a clear reflection of what people considers cloning to be thus raising perennial and heated debate on the ethics and morals of cloning. However, it worth noting that it is the cloning of humans that has raised profound and significant ethical and moral debate.

The first cloning of whole mammalian organism was carried by Ian Wilnut and colleagues who employed a technique known as gene transfer to create a sheep they named Dolly. In this technique, scientists isolate one cell from an animal and fuse it with an enucleated egg-cell (a cell whose nucleus has been removed). Since the egg lacks DNA, the resulting embryo contains DNA from one source. As a result, the developing embryo will be an exact physical replica of the cell from which the DNA was obtained. Due to the debate surrounding cloning, the definition of cloning is very diverse, depending on the ethical theory involved.

Before Dolly’s creation, it was believed that gene transfer was only possible using embryonic cells since all genes were active. It was strongly believed that mature cells could not be used in this process because some genes were active while others were inactive. However Wilmut and his colleagues

found a way to make the adult cells behave like embryonic cells. In their work they fused 277 nuclei from adult Finn Dorset ewes onto enucleated egg cells which were taken from Scotish Blackface Ewes. Of the fused eggs, 30 developed into embryo and only 29 were successfully implanted into the Blackface Ewe. Only one of these pregnancies was successfully carried to term resulting to the birth of a lamb, Dolly, who was an exact physical replica of the adult from which the cell was obtained from. Dolly then became a physical proof that gene transfer using adult cells and by extension cloning adult mammals was possible. However scientists admit that since only one sheep out of the 29 was born, it is not appropriate to draw such conclusion. For cloning technique to be considered successfully, this experiment should be reproduced by another independent researcher. It has been suggested that similar cloning experiment attempts should be done using rabbit, sheep and cattle. Cloning, as stated earlier, has elicited a lot of heated debate in regard to moral and ethical issue. Before addressing the ethical theories it is vital to consider the merits and demerits of cloning.

2. 0 Merits and demerits of cloning

Suffice to say that cloning has been used for centuries to solve some of the human challenges. Bacteria cloning, which involves cloning of bacteria with the aim of obtaining a generation of bacteria identical to the initial bacterial, has been used to produce medical products. A case in point is the mass production of insulin through recombinant DNA technology. Cloning, in this case, plays a role in reproducing the useful bacteria. This technique is employed in recumbent DNA testing and in one DNA testing. There are some potential benefits of cloning that have been fronted by the proponents of

cloning, namely:

- Possibility of reproducing damaged cells or organ in the laboratory

- Identical individuals produced by cloning for organ transplants would reduce incidences of organ rejection and thus save life

- Understanding cellular biology can be enhanced by cloning

- Cloning could help sterile parents get children with either parent’s genetic pattern

On the flip side, cloning of humans could have many deleterious outcomes because the technology is not well developed. The technology could therefore result in unprecedented harms. Given that the cloning of Dolly was done in 277 trials and only one was successful, the failure rate of mammalian cloning is very high. Cloning could also lead to the loss of genetic diversity and variation and thus compromise individuality. There is also the possibility of the development of illegal trade of organs and fetuses with desirable attributes.

3. 0 Ethical Theories

Three ethical theories will be considered; consequalism and deontology have something in common and thus will be considered together while Utilitarianism will be considered independently. By understanding these theories we will be in a position to comprehend why one will say a particular type of human cloning is acceptable.

Consequalism and deontology

This theory subscribe to the belief that the results of an action primarily bears the moral value. This means that an action is deemed good if and only

if the results are good and the vice versa is true. Thus, this is an intuitive position for which people can bare their moral decision so to speak. However it is important to point out that action are not the only things that can be used for moral evaluation. Virtue theorist and Aristotle believe that individual characteristic is the primary object for moral evaluation. In the light of this, what is important for a virtue theorist is the kind of a person doing the action and not the action itself. It is this kind of ethical system that gave birth to the famous Hippocratic Oath. On the other hand, deontology theory state that moral worth of our action depends on the motive (our intention). According to this theory, neither characteristic of a person or the result of the action counts.

Utilitarianism

As stated earlier this theory is based on the result of an action. Mill a great philosopher renamed this principle as the principle of greatest happiness. In his remarks Mill stated that actions are right to the extent of promoting happiness while wrong tend to produce the opposite of happiness. Happiness means intended pleasure and devoid of pain while unhappiness refers to devoid of pleasure and full of pain. In reference to cloning, there is some consequential argument against human cloning. For instance in the case of somatic cell nuclear transfer with aim of creating children, the main concern include family integrity, treating children as objects, individuality and safety concerns. According to NBCA, the best argument against human cloning is not safety concern or harms or action but rather the motion of harm. Utilitarianism argues that if the harm of creating a child using cloning is

greater than the benefits of having a child then it is impermissible having a child through cloning.

The general strategy in this regard is to point out to contingent factors such as inability to stop genetical problems, inability to perform to determine age of a cloned organism or inability to perform cloning procedure correctly. The set of social and psychological harms form the second set of harm associated. The terms harm is vague because many things may seem harmful but are morally permissible. So the main question is what is harm and when is it relevant for moral judgment in a particular case of human cloning?

Bernard Gert in his book Morality, enlist evils (harm) and goods (benefits) that will give us a good understanding for this discussion of what harm is with respect to cloning. Gert says " We uninounmously agree pain and death are evil" he defines harm or evil as an object of irrational desire. Based on this definition one can provide a list of evil which includes pain, disability, death, loss of pleasure and loss of freedom. According to Gerts, one has to have adequate reason to accept pain.

There are many forms of harm; this includes physical harm argument, psychological harm argument, among others. Physical harm can be divided into several groups the simplest of all being probability of physical harm to the clone qua clone. This means that there is intrinsic feature of a clone that could be of physical harm to the clone. There are many philosophers who concur with this argument.

The argument as indicated by NBAC report is potential physical harm argument:

- If an action B will definitely cause harm to others, then during the action is wrong

- Use of cloning technique will definitely cause harm to the child.

- It is wrong absolutely wrong to use cloning technique to create a child.

For instance in statement:

- There are some things which are contrary to it. For example, any medical procedures that involve harm e. g dental work make (i) false. The only way to justify (i) is to go back to Girt statement and say probably there is enough reason for harm as such, but in limited case (i) can be allowed so as to see the potential harm argument defeated.

In regard to (ii), this is an empirical claim that can be proved to be either true or false. Some of the harmful concerns include the number of eggs that are required to produce a close. Secondly, the safety of cloning both humans and animal is a great concern. Some of the potential harm to both the clone and cloner include, multiple miscarriages, excessive number of trial which can result in damaged womb, manipulation of hormones of the donor, development abnormalities. Some of these harms are acceptable in a similar manner as those in surgeries. For instance if one accepts hormonal manipulation, they risk multiple miscarriage, and also possible womb damage due to multiple trials to have the cloned child as it is the one and only way to have the child attached to them. On assessing the potential harm to both the parent and the clone, this is permissible.

Even for the case of Dolly, 277 eggs were used and succeeded to be

embryos which were introduced to 13 ewes of which only one was pregnant giving birth to Dolly. It is said that this ration is far much better than in vitro fertilization, or this question are empirical and can only be answered in cases where by cloning has been done. Therefore false premises, heroic epistemological assumption, accepted practices are not enough objections to a potential medical success to people who want children that are biologically linked to them. It is important to note that this harm argument is basically centered on participants of human cloning and not the clone per say.

There are other physical harm arguments. However, they are potential harm argument though covering different kinds of harm. Harm to the clone and the cloners. These are potential harms because little is known about how the cell age in order to determine where a clone from a cell that is 30years old will behave is a similar manner as a 30years old cell or as a new cell. To illustrate this argument in question form, one can ask " After being tricked back to totiopotency, does genetic material begin at the age of zero?"

There is an argument that is very important; the telomere argument

- At the cell ages (grow old) the length of telomere decreases.
- It is the telomere that determines how old a cell is.
- Telomere cannot be lengthened or stored as such clone will have a shorter life.
- If the clone life is shortened it implies the clone is harmed.
- If the clone is harmed, it is wrong to clone.
- It is impermissible to clone (wrong).

The telomere argument is basically hinged on the 3rd premise. At the

moment here is no known technology that can be used to increase the length of the telomere for purposes of cell development. However since 90% of the cell division do occur is the womb, then if the clones make it past the initial stages of cell division, there is no risk in terms of cellular senses for a clone to act older or being older. As such premise 3 is false and the argument doesn’t hold any waters.

For the 4th and 5th, they are controversial conceptually speaking some life is shorter that is supposedly be or it should have been doesn’t make any sense. Then it is not true to say that shortened life is harmed life because life is as long as it is. Furthermore it is less clear to say if something that is harmed then it shouldn’t be cloned. Premise (4) and (5) indicates doubt making this argument unsound. Ultimately physical harm argument boils down to the potential harm to the cloners or harming the clone. In either case the potential of the harm doesn’t over weigh the potential benefit, however this decision should be made by rational agent who are involved in decision making process.

This implies that potential harm is synonymous to harm that are acceptable morally. Such as in surgery and child bearing process past certain age. Furthermore the potential benefit that cloning may provide is to think that other harms are acceptable and this is something that is tremendous achievement in science, exploration and medicine had to make. This will only make a difference depending on the kind of consequentlist one is. However for utilitarism with a different time horizon and having the picture of whole society in mind will make a different valuation of the benefits and harms. This implies if the only way for one to bear a child that is genetically

connected to the parent is through cloning then this option should be available for person seeking infertility treatment first and the potential harm argument is not strong enough to deny the parents their desires.

Psychological Harm argument

As physical harm argument, psychological harm argument is in various forms but the most famous one is famed bioethicist Sorem Holm who calls it “ A life in the shadow argument”. According to Holm opponents of human cloning should be replied bared on the understanding on identical twins and the fact that strictly speaking clones are not exact copies even in the event that exact genetic copies are inserted into the donor egg. However Holm concurs with the fact that it is wrong to deliberately try to create another exact copy of an existing human being.

Holmes makes a psychological observation on people and their interaction with new born children. He observes that one’s a child is born, we often ask question such as “ how will it develop? Or what kind of a person it will become? Usually we ensures there questions in some kind of psychological manner. For example, I hope it won’t have the same temper I had when I was young.

According to Holm, what is wrong is that we have higher chances of obtaining correct answer with clone than normal children. Holms believes having this answer will affect the way the clone if raised, and since the public believe in genetic essentialism, Holm says it is possible that the parents of the clone will have formed a picture in their mind of how the clone will grow based on the actual development of the original (parent). He goes on to say

that in every point of a clones life there would be a person who would have lived it with whom it would be compared to and the clone achievement measured against. Then the question is what wrong with life in the shadow? Holm clearly indicates his position by stating " it decreases the clone's possibility of living a life of full sense of that word in his/ her life. As such, as long as genetic essentialism remains to be a common cultural belief then there is substantial reason not to allow human cloning. The psychological harm results from the fact that the clone will lead a diminished life.

One might then think there are no good reasons for cloning due to increased level of psychological harms occurring to the clones, however this is not true.

There are some short comings with Holms " life in the shadow" argument. They include;

- False believe can never be premise in good arguments.
- He equivocates on what it means to live a life.
- His conclusion from what is possible to the actual is valid.

In his shadow argument, one of Holm essential premise is general belief in genetic essentialism. As a result of this belief parents will treat their children in a manner that will harm them psychologically. It is not clear at all why actually Holms thinks that it follows form false belief about genetic essentialism that there is no good reason to clone. This clearly is an invalid argument. As such there is no reason at all to think that the false belief in genetic essentialism should have moral direction on some activity including cloning.

In premises (b), what does Holm mean by saying " that life" argument? There are 3 possible meaning of that life. It can refer to the life of donor DNA

or clone life’s it is the latter; that this is not an object of human to clone and lastly the cloning is living the same genetic life as the initial parent.

Finally as a conclusion, Holm analysis “ shadow” argument does not provide any good reason not to clone. It is a clever quick, but irrelevant to any type of moral analysis.

Works cited

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