

a. Explain how Kantian Ethics might respond to issues raised by genetic engineering. [25]

Kant was a deontologist. This means that he made ethical decisions by considering the nature of the act itself, not its consequences. Kant would not be interested in the benefits of genetic engineering, but in the sorts of actions that genetic engineering involved. For example, genetically modifying crops could allow us to produce cheap vaccines for less-economically developed countries; crops resilient to frost, salt, acidity in soil etc.; to increase yield and therefore reduce damage to the environment. A good example would be Golden Rice, genetically modified to include beta carotene. As part of the staple diet of the malnourished, this could prevent blindness in 500,000 who have little Vitamin A in their diet, as well as helping half a billion who are malnourished. Kant does not think that these benefits make genetic modification morally justified, as good consequences can result from bad actions. Kant would look at the process involved in creating a genetically modified organism. There does not seem to be anything inherently wrong or irrational in splicing genes, but it would depend on how this was done, and whether this involved human genes.

Therapeutic Cloning is more problematic for Kantians, as this involves creating a cloned embryo. The embryo is never intended to grow into a baby, and would not be considered a Kantian person. However, Kant did not consider children to be persons in the fullest sense, as they do not yet have a developed ability to reason, but he still said they need to be protected as potential persons. President Bush held that embryonic stem cell research was unethical, and would not allow public funding of such research. A bill was passed allowing funding of research on spare embryos produced in IVF, but the President vetoed this. When President Obama came to power he lifted some of the restrictions on stem cell research. President Bush's position has been called a Kantian response, because it ignores the possible benefits of embryonic stem cell research (potentially treating 120 million people) and focuses on what is being done to the embryo. Kant's first statement of the categorical imperative said that you should act according to maxims that you could will to become universal laws. If you universalise experimenting on embryos, you hit a self contradiction. If all embryos were experimented on, none would grow into humans, so such a law is not logically possible. However, President Obama might also be a Kantian, and might be following a different maxim. For example, 'Embryos created by researchers can be experimented on and destroyed'. What if all embryos created by researchers were experimented on? This wouldn't be inherently self-contradictory, and many would argue it is not contrary to the will.

Another argument used by Bush and opponents of genetic engineering involving embryos appeals to Kant's second formulation of the categorical imperative. They say that using an embryo for research is 'using humanity merely as a means to an end'. There is no benefit to the embryo, so it should not be used in this way. However, some Kantians believe that the embryo is not yet a potential person. Bertha Manninen argues that becoming a Kantian person is not a physical change, as there is something transcendental about being a reasoning being: "The capacity for reason, according to Kant, is a supersensible capacity, given that the possession of transcendental freedom is a necessary precondition for possessing this capacity." Mark Sagoff also argues that science cannot demonstrate that there is a specific point at which a "... glob of protoplasm is now sufficiently endowed with moral freedom that it has become a responsible agent or sufficiently endowed with cultural, aesthetic, and ethical capacities that it has become a human being".

Kant's second formulation can also be applied in cases of PGD, where genetic screening of embryos leads to some being discarded and others implanted. There are cases, such as with saviour siblings, where Kant's second formulation can be more clearly applied. In the UK, two similar cases arose, the Hashmis and the Whitakers. Both had children with genetic disorders, and wanted to use PGD to produce a sibling whose umbilical cord blood could be used to cure the existing child. The Hashmis were allowed to use PGD, but the Whitakers were not. The significant difference was that the Hashmis carried an inherited disorder that could be passed on to their child, so screening would prevent a new child being born with a genetic defect. For the Whitakers, the genetic disorder was not inherited, so there was no benefit at all, and some risk, to the new child of being screened. Kantians would disagree about this decision. Some would say that the Whitakers should have been allowed to use PGD as the embryos being screened were not yet potential people (as argued in the previous paragraph). Others would disagree with what the Hashmis were doing, as they may have been using the new child merely as a means to an end. If the umbilical cord blood was not sufficient, the new baby could be used for bone marrow aspirations or even organ donation, as in the film 'My Sister's Keeper'. In 2010, Megan Matthews received a tissue transplant from her 'saviour sibling' Max, which saved her life. But the Director of Comment on Reproductive Ethics said of Max: "He owes his life to his capacity to be of therapeutic use to his sick sister, otherwise he would not have been chosen in the first place."

There are many promising genetic engineering techniques involving animals. For example, cows have been cloned to produce high yields of meat and milk. Kantians would have no problems with this sort of genetic modification, which does not seem to be harmful to humans in any way. Other animals have been modified to include human genes. Often called 'pharming', new processes allow scientists to produce pharmacological materials in animals. Goats are used to produce anticoagulants in their milk, marketed as ATryn. One goat produces the same amount of anticoagulant as 90,000 blood donations. When human genes are inserted into animals, some feel that the animal is in some way 'human', and that boundaries have been blurred. Others feel that the genes are just 'of human origin'. For example, a MAFF Committee looking into GM Foods was given evidence that Muslims feel that genes of porcine origin that find their way into foods are still 'pig genes'; Jews do not share these concerns. A Kantian that shared this view attributed to Muslims might think that xenographs, xenotransplantations and genetic modification involving human genes would be in some way 'using humanity merely as a means to an end'. Other Kantians, that share the view attributed to Jews, would have no problems with using animals to grow human organs, or splicing human genes into foods.

b. 'Genetic engineering is ethically justified .' Discuss. [10]

Kantians would argue that many forms of genetic engineering are not ethically justifiable. Some Kantians would be against any processes that involve experimentation on or destruction of human embryos. These concerns could stretch to the use of human genes in creating pharmaceuticals in animals, or the insertion of human genetic material into crops. Utilitarians would disagree with this approach, as it fails to take into account the positive benefits of genetic modification. Whilst it seems right to consider the benefits of genetic modification, it doesn't seem that Utilitarians are right to suggest it is only the outcome that matters – to work out what is ethically justified we do need to think about the act too.

Some Kantians disagree about the status of the embryo, and would limit their concerns to cases where embryos are implanted and allowed to grow, such as reproductive clones or saviour siblings created using PGD. This approach is more in line with the legal position in the UK, and with public opinion, which largely holds that reproductive cloning is not ethically justifiable. The film 'My Sister's Keeper' highlighted concerns about the rights of a saviour sibling. This film suggested that, even though creating saviour siblings might be for the greater good, they may still go against what is just or right. There may be a difference between what is most beneficial and what is ethically justifiable, and a Utilitarian approach may not be appropriate with issues concerning human rights.

As well as the processes of genetic engineering, Kantians would focus on the implications of such processes. For example, even if preventing genetic disorders using PGD was not 'using humanity merely as a means to an end', it might lead to discrimination, as humans with those disorders may be seen as having a lower status (if it's okay to use PGD to get rid of embryos with that condition, what does that say about people with that condition?). Utilitarians would also be concerned with discrimination, as it could mean bad consequences for people. For example, PGD is used to prevent Down's syndrome pregnancies, and with fewer children with Down's syndrome, it is harder to get a child with Down's into a mainstream school; in the UK, a person with Down's syndrome cannot get a heart and lung transplant simply because of their condition etc. Many people would say it is not ethically justifiable to make other choices using PGD including gender, physical attributes like hair and eye-colour, and superficial medical issues like premature baldness, short-sightedness and a propensity for obesity: simply put, 'designer babies' are not ethically justifiable.

A farmer in Australia has lost his organic status because a neighbouring farmer used GM crops. This may mean that allowing GM Crops is not ethically justifiable for Kantians. This is not an argument about consequences, but about principle: does a farmer have a right to grow organic crops? If so, then other farmers cannot have the right to grow genetically modified crops, because there is no way to contain them. You cannot universalise the principle of allowing farmers to freely choose whether to have GM crops, as it is self-contradictory (if you allowed the choice, everyone's crops would be contaminated and therefore effectively GM crops), and not ethically justified.

Where there are risks to genetic modification, Kantians would need to consider whether the level of risk would make the process 'contrary to the will', and this may need to be compared to existing farming methods, which also have some risks. Here a Kantian approach is very similar to a Utilitarian risk/benefit analysis – what is ethically justifiable is whatever leads to the greater good for humans.

Utilitarians would say that genetic engineering is ethically justified when the benefits outweigh the risks. For example, using genes from jellyfish to make bacteria and animals glow in the dark has been used by scientists to study human diseases and to improve the way sewage is treated. The level of risk here is low, and the benefits substantial, so Utilitarians would be happy with these procedures. However, growing human organs in pigs has a greater level of risk from retroviruses. A virus just affecting pigs could move over to humans, causing widespread illness and death. Recent scares have included 'mad cow disease' and 'bird flu'. Utilitarians will disagree about whether xenotransplantation is ethically justifiable based on how significant they feel these risks are.

Where genetic engineering is allowed, it is important to make sure that laws are in place to protect people. For example, rich biotech companies might produce high-yield varieties of corn. Even if the processes are ethically justifiable, farmers from developing countries could lose out, which might cause a great deal of human suffering. Both Kantians and Utilitarians would want to protect the rights of poor farmers.

In conclusion, Kantians and Utilitarians would give different answers as to which specific procedures are ethically justifiable. Kantians would look at the act itself, whilst Utilitarians would look at the consequences. They would both also be concerned with wider implications about the social aspects of genetic engineering e.g. discrimination due to PGD. Kantians would be particularly concerned about the status of embryos and whether the dignity of humanity would be affected by putting human genes into crops and animals. In these areas, a Utilitarian response is more popular, as it seems hard to justify a Kantian position that fails to take into account the benefits of procedures. In issues of rights, e.g. saviour siblings, reproductive clones, farmers' rights etc. a Kantian approach seems more just and ethical.