Quiz 3 Name: Kathryn Atherton

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All work on this assignment that you submit under your name should be solely the results of your efforts. If you copy someone else's work and put your name on it, you are being dishonest. Anything that appears with your name must reflect nerve impulses that originated from your brain. I expect and require honesty from all my students. The penalty for dishonesty in class is automatic failure and a report to the Dean of Students Office.
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Signature: [signature] Date: 1/27/2018

Printed name: Kathryn Atherton

Assignment:

This assignment involves the impacts of technology on society, specifically recent biological engineering technology based on genetic modification/alteration of mammals. The concepts of how technology impacts society is just starting for the biological engineering area, so being able to understand these issues and create critical arguments for yourself and to persuade others will be important for your discipline.

Your assignment is to synthesize and present a strong critical argument containing either of the following conclusions (only 1 argument):

The U.S. federal government should regulate the use of biological engineering in altering/modifying the genetic structure of human beings.

The U.S. federal government should not regulate the use of biological engineering in altering/modifying the genetic structure of human beings.

For the purposes of this assignment, the term biological engineering means using technology involving modifying/altering genetic structure in order to change phenotypical properties.

Recent discoveries in biological engineering in China have enabled the cloning of primates (1) and the genetic alteration of dogs to increase muscle mass/strength (2,3). While the authors of these studies claim there is no intention to extend the technology to humans, it is clear that the same technology could be extended to do so. Creation of genetically altered humans raises many

1. Biological engineering technologies are the application of engineering concepts to biological systems to create new biological systems.
2. Creating new biological systems can cause unanticipated effects on the biological system. *(annotation above "can": indicators)*
3. Unanticipated effects can be dangerous and harmful to biological systems. *(annotation: highly inductive?)*
4. Regulations provide procedures and restrictions to mitigate harm and ~~damage~~ danger to biological systems. *(annotation: ??)*
5. The government creates and enforces regulations.
6. The purpose of the government is to protect its people from harm and danger.
7. People are biological systems. *(annotation: ← compositional issue?)*
8. (The government should fulfill its purpose.)

Conclusion: The government should regulate biological engineering technologies.

Logic OK other than HOS issues.
P2,3 are issues due to highly inductive; these greatly weaken argument
minor HOS issue w/ "biol. systems" & P4, 7.

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ethical, economic, and societal questions. Given the economic/social value of phenotypical traits in humans, e.g. strength, appearance, life span/health, etc., it would seem that such technology could be very beneficial. Of course, this also raises the question of social equity and access to the technology, as well as long term social issues of population/societal structure. Should biological engineers be allowed to develop/use this technology on humans? Should biological engineers be held responsible for the results of using this technology by others?

One method society has used to control access/use of technology is by governmental regulation, in both basic scientific research as well as technology availability. An analogy might be nuclear technology. While first developed as science to understand the nature of the universe, social needs utilized this technology for weapons due to global conflicts (WWII). Following this development, many government agencies were created to regulate and restrict the use of the technology both nationally and internationally. While nuclear technology is widely used today for many purposes other than warfare, such as medical diagnostics/treatment, space exploration, energy production, etc. it is still highly regulated/restricted by many governments. Technology regulation can also create global conflict, note recent issues involving nuclear technology/regulation with Iran and North Korea.

Should governments regulate biological engineering technologies? If you are interested conducting research in this area, would you support the government regulating your research? Should the U.S. or other countries regulate biological engineering in China?

References:

1. https://www.washingtonpost.com/news/speaking-of-science/wp/2018/01/24/researchers-clone-the-first-primates-from-monkey-tissue-cells/?utm_term=.5c215b66d874
2. https://www.cnn.com/2015/10/28/world/china-mutant-dogs-genetic-engineering/index.html
3. Generation of gene-target dogs using CRISPR/Cas9 system , Qingjian Zou Xiaomin Wang Yunzhong Liu Zhen Ouyang Haibin Long Shu Wei Jige XinBentian Zhao Sisi Lai Jun Shen, et al., *Journal of Molecular Cell Biology*, Volume 7, Issue 6, 1 December 2015, Pages 580–583,https://doi.org/10.1093/jmcb/mjv061

Notes:

1. You may access information from the internet or other electronic sources, but may not copy arguments from these sources, i.e. your submission should solely be a result of your efforts/work. Please do cite any references that are significant in your argument.
2. You may not discuss this assignment with other people. Again, your submission should solely be a result of your efforts/work.
3. Your argument should be appropriately presented in **clear, concise** written critical argument format (premises/conclusion). Premises should be numbered.
4. Your argument will be evaluated based on clarity, soundness and validity of your critical argument/presentation (as discussed in class/prior assignments). I suggest typing your argument for clarity of presentation (vs. hand written). I note that wordy/poorly worded premises containing HOS are generally not considered to be clear and concise.
5. I suggest that you stay away from terms such as 'good', 'bad', 'evil', 'immoral', etc. that might make your critical argument a moral one, since I will not evaluate the subjective morality of your argument.

← See argument