Case Study #2: Kant & CRISPR-Cas9

Read the section on Kant in our text, the section from Kant’s "Groundwork of the Metaphysics of Morals" for which there is a link provided on the syllabus, and the attached Case #2 from the Association for Practical and Professional Ethics National Championship Cases for 2019, and then answer the following five questions. The completed assignment should be two pages long, (approximately 1250 words) using 12 pt. fonts and single spacing with one inch margins. Please follow the assigned format as exemplified at the end of this document. Each answer should be separated, numbered and proportionate to the number of points possible. This study is worth a total of 60 points.

Your completed assignment is due on the 17th (MW) 18th (TTH) of April.

Keep scrolling down after the background for further instructions, general suggestions, grading rubrics, and a sample completed assignment!

1. **Identify the key relevant moral issues associated with this case** (2-3 questions). The core moral issue for this case is, “Is experimentation on human subjects using CRISPR-Cas9 therapies morally defensible?” However, there are several sub-issues that must be identified in order to respond to this central issue. Remember that a moral issue is normative – these are to be expressed as questions using normative terms (e.g. using terms such as "should" and “ought,” and concerning issues of right and wrong regarding moral rights & obligations, etc.). (5 points)

2. **Asking the right questions**: What facts would you need to know about this case to make a reasonably informed judgment? In this section, note that you should be raising questions such as current practices and policies of other countries regulating CRISPR therapies on humans, the incidence of abuse of medical experimentation on human subjects, etc., but **not** questions about Kant. **Provide as a bulleted list and pose in question form.** For this assignment, you do not have to do all the research but you need to raise the kind of questions that would drive such a project. These should be research questions and as such should be concrete and answerable with reference to assessable data and reliable sources. No bias or prejudice should be evident and the questions should be non-normative (no “ought” or “should” questions). Think about facts that, if known might help determine how one should or could respond to the case. (15 points)

3. **Kant’s Position**: How do you think Kant would respond to this proposal; “Is experimentation on human subjects using CRISPR-Cas9 therapies morally defensible?” Be sure to provide properly cited quotations from Kant (**primary source = Kant’s writings and does not include secondary commentary from Rosenstand or from me**) to support your answer. Note that this question carries the highest weight in points. (25 points)
4. **Critical Objection:** Identify one key problem with Kant’s deontological approach as it applies to this particular case. Hint: begin with one of the objections to Kant’s deontology as a moral theory and then determine if that problem is illustrated by the case. (10 points)

5. **Conclusion:** Where do you personally stand on this question? Is experimentation on human subjects using CRISPR-Cas9 therapies morally defensible? Defend your answer without resorting to a repetition of points made in previous sections. (5 points)

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**Background¹:** Case Study #2

**Association for Practical and Professional Ethics**

**Case 2: You Want Those Genes CRISPR’d?²**

CRISPR-Cas9 is a gene correction system that is simpler to design, easier to use, less time-consuming and less costly than previous techniques. Applications of the technology are so broad "that the possibilities for using it to treat disease are virtually endless," according to E. Mullin at the MIT Technology Review.

Researchers across the globe are exploring the uses of CRISPR-Cas9. The Chinese ministry of health has approved all gene-therapy clinical trials in China. According to the Wall Street Journal's article, "China, Unhampered by Rules, Races Ahead in Gene-Editing Trials," so far, "scientists have genetically engineered the cells of at least 86 cancer and HIV patients in the country using CRISPERCas9 technology since 2015." Of these eighty-six, there have been fifteen deaths, seven of which were enrolled in the same clinical trials. The causes of the deaths are being attributed to the natural disease process, not to the CRISPR-Cas9 therapies.

CRISPR-Cas9 is a “gene correction” which focuses on replacing disease-causing DNA with healthy DNA. The gene editing process naturally activates the p53 gene, sometimes referred to as the “Guardian of the Genome,” which is part of the body’s natural defense. It works in one of two ways, either repairing cells with damaged DNA or telling the damaged cell to self-destruct. Herein lies the problem: p53 will also defend against genome edits made using

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¹ Please note that you are not limited to the background offered. It is expected that you will do more in-depth reading to develop your thesis. You may feel free to use any credible/reliable source as evidence for your arguments. Additionally you may use additional material from Mill to defend your answers. Please provide full citation for all research.

CRISPR-Cas9, eventually causing the edited cells to be repaired (remove the edit) or self-destruct. Either way, the outcome is the same: some CRISPR-Cas9 therapies are largely ineffective. In order for CRISPR-Cas9 to reach maximum efficacy the p53 gene needs to be dysfunctional or deactivated. While a dysfunctional p53 may appear to be beneficial for CRISPR-Cas9 therapies there is a caveat: it is known to cause cancer.

Last year, two different biomedical labs published research on CRISPR-Cas9 effectiveness in Nature Medicine. They both came to the conclusion that there is an increased risk of cancer from the use of CRISPR-Cas9. As reported by Scientific American, researchers from Sweden’s Karolinska Institute and from Switzerland’s Novartis International AG have said that cells whose genomes are successfully edited by CRISPR-Cas9 “have the potential to seed tumors inside a patient. That could make some CRISPR’d cells ticking time bombs.” More specifically, “The reason why that could be a problem is that p53 dysfunction can cause cancer. And not just occasionally. P53 mutations are responsible for nearly half of ovarian cancers; 43 percent of colorectal cancers; 38 percent of lung cancers; nearly one-third of pancreatic, stomach, and liver cancers; and one-quarter of breast cancers, among others.”

Keep scrolling down for rubrics and a sample completed assignment!

General Suggestions for Writing Case Studies

How not to write your paper:

I. Focus & Relevance

Be sure that you understand the assignment and have understood each question. Your responses should be focused on the questions I’ve asked & not the questions you wish I had asked! It is important to weed out all irrelevant considerations or concerns that an economist or historian or political scientist might have but are not

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3 Please note that these guidelines are for my class assignments. Individual instructors may have other format preferences and you should consult with your teacher for the details before completing your assignment.
strictly speaking, ethical concerns. Look at the completed sample case study for some ideas.

II. Format
You should copy & paste or re-type only the first part of the question (the portion in bold type). Please number each response corresponding to the assigned questions. Papers should be 2 pages (approximately 1400 words) using 12 pt. fonts and single spacing with one inch margins. There should be an extra space separating your responses to each question. Again, please reference the completed sample case study and follow the format exemplified.

III. Tone/Voice
Ever since George Carlin pointed out that “using your own words” would result in a private and hence meaningless expression, I’ve had to give up on the phrase. However a certain degree of originality is still important. Your task is to explain a concept as if you were the Teaching Assistant for this class. If you simply repeat the text or my lecture, you haven’t helped your imaginary student. You need to clarify the argument/concept in a way that demonstrates that you really understand it and can express the same ideas in a way that is different than has already been explained by the text or by me.

IV. Formatting and Phrasing Questions
Students often find Sections 1 & 2 the most challenging. Section 1 questions are supposed to break the key question down to more particular components of ethical issues surrounding the issue or other basic and general ethical questions that must be answered in order to respond to the core question. For example suppose the core question raised is, “Should net neutrality be preserved?” This raises further issues such as:
- Should the internet be viewed more properly as a public utility or as a private commercial enterprise?
- Should the Federal governmental policies outweigh the various State mandates governing the internet?
- Does the throttling of certain content by Internet Service Providers constitute a form of unjustifiable censorship?

In section 2, the questions are supposed to be very different. These should be fact-based & data questions that would be likely to drive effective research facilitating an informed response to later sections of the assignment. You should avoid any questions involving “ought,” “should,” “would,” or “could,” “will” or “what if.” In a similar vein, questions asking about the popularity of policies or opinion polls are usually irrelevant to the philosopher. (Most take a form of the “ad populum” fallacy.) Suppose, in the example given above, you want to know what is likely to result in the cessation of net neutrality. This initial concern isn’t concretely answerable so it would not be the right question to put in this section. However, it can be broken down into many assessable questions that you could research. In this case you may ask questions that include the following:
- What is net neutrality and when was it enacted and when was it repealed?
- What were the reasons the Chairman of the Federal Communications Commission, Ajit Pai, offered to support the repeal of net neutrality?
- When other public services or industries were deregulated in the past, did it
result in lower consumer costs, greater efficiency and higher innovation?

- When public utilities have been privatized, were there any significant changes to costs or quality of service?
- What do industry experts predict in terms of impact on consumer access to internet sites?
- Have any of the ISPs announced their pricing strategies, post repeal of net neutrality and, if so, what are the changes to both content producers and users in terms of price to access data?
- Which states are currently developing legislation to restore net neutrality?
- Are there constitutional requirements stipulating when state laws are subordinate to federal laws?
- What is “throttling” and does the repeal of net neutrality make this a legal practice?
- How are search algorithms changing since the repeal of net neutrality in terms of prioritizing certain content providers?
- Are there any legal requirements regarding access to the internet as there are requiring access to phone service for low-income households?

V. Adequate and Balanced Defense of Your Argument
In question three and four, you are asked to make an argument using the philosophers we’re studying. You should be clear in your thesis in the first sentence of the first paragraph of section #3 & #4 (and your own thesis should be in the first sentence of section #5). It is important to ensure that your application is consistent with the philosopher’s theory and that you support that application with a well-thought-out defense. Your analysis should reflect a degree of familiarity with not only the philosophical theory but also the key facts of the issue gleaned from a number of reputable sources. You should include counter-considerations that are relevant to that theory and could impact the philosopher’s conclusions.

VI. Quotes & End-Note Citations
All citations should be presented as endnotes – not as footnotes nor as works cited. (See example provided.) The endnote citations do not count as part of your page limit.

Quoting is a way of supporting your interpretation of an argument or theory and is critical to a scholarly endeavor. Relevance to your response and to the question asked is critical. Quotes can be edited to shorten them but be careful not to take the quote out of context, thus altering the intent of the author. The length and number of quotes must be appropriate to the length of the assignment; short papers require shorter and perhaps fewer quotes.

All quotes on the philosophers must be from primary sources – i.e. must come from the original author’s works, neither from the secondary commentary of the author of our text nor from my lectures nor my power points. If the quote was found in our text, they need only be cited with the page number of our text where it was found (see sample completed assignment). However, quotes from all other sources must be fully and completely cited. You may not use quotes that I’ve already used in my lectures or power-point slides! No quotes should come from sources such wiki-quotes, intelli-quotes, brainy-quotes, Mill-quotes, Kant-quotes, etc. as these are insufficiently scholarly and often include misquotes. All
close paraphrases and every piece of data/factual reference should also be cited though not necessarily encapsulated in quotation marks.

An additional really valuable use of end-notes is moving a discussion or definition which would be a distraction in the body of the text to the end of the paper. This way the reader is provided with the relevant information but the flow of the argument presented is not interrupted.

VII. Length
Part of the criteria for success is effective use of the space allowed. If you write a single page for a two page assignment, you have not satisfied this criterion. However, this is not an invitation to use the additional space for stream-of-consciousness or irrelevant information not pertinent to the assigned issue. If you are having difficulties with the length, it is usually because you have not recognized or developed sufficiently the various issues involved. Conversely, if your draft is too long, you need to whittle it down to just the relevant essentials, perhaps editing out the anecdotes or redundancies; more is not always better! I am very willing to help if you submit drafts sufficiently before the due date.

VIII. Rough Drafts
I have invited all of you to bring rough drafts of your completed assignment in for a preview reading. I do not offer re-writes after I have graded your papers. Rough drafts are brought in during my office hours or by appointment and I only read them in person - with the student present. Please do not submit rough drafts electronically nor should you drop them off in my box. I support pro-active measures that encourage preparation and thought and with rough draft readings, both the student and I should benefit with the end result being a better final draft. If your work satisfies my criteria (see rubrics following) for “A” level work, and if the draft is formatted and printed in final draft format, I will sign off on the draft, guaranteeing those students somewhere between 100% and 90% of the points possible for this assignment. I will read no rough drafts the day of or the day prior to the due date.

Keep scrolling down for rubrics and a sample completed assignment!
Standards (Rubrics) for Grading Case Studies

The excellent paper (100-90% of points) will exhibit the following qualities:

Question 1:
- Issues identified are of a normative/moral nature. (i.e. they contain normative terms such as “Should” or “ought” and are concerned with issues of right and wrong regarding moral value, rights & obligations, etc.)
- Each issue is distinct and not repetitive of other issues raised.
- Issues are presented as grammatically correct questions and are presented in a bulleted list.
- Issues cited include the most central, relevant issues associated with the topic.

Question 2:
- All items are listed as factual, non-normative questions. No immediate bias is evidenced and no questions center on what “ought” or “should” be the case.
- All critical questions have been raised given the space allowed.
- Questions are relevant to the case and would be likely to be relevant to the philosopher/theory being applied to the case.
- Questions are likely to drive effective and informative research. The questions should be factual and answerable (at least in terms of probabilities or projections backed up with historical data).
- Questions are not phrased in terms of what will or could happen nor should they be conditional speculations (If x happens....) but should instead focus on what has happened or is happening; remember one cannot gather data from events that have yet to occur.
- Questions are grammatically correct and are presented in a bulleted list.

Question 3:
- A clear thesis statement is made in the first sentence.
- Argument is focused on the key issues.
- Argument is clear and well organized.
- Argument is consistent with the assigned philosopher’s theory.
- Argument is effectively supported with relevant reasoned discussion.
- Sufficient detail from the philosopher’s theory is provided.
- Argument is effectively supported with relevant quotes from the philosopher’s primary work & all quotes are cited properly. (Note that endnotes are to be used; endnotes do not count as part of the 2 page limit); Quotes are not too numerous or disproportionate to student’s original discussion, are of appropriate length, are pulled from sufficiently scholarly sources, are properly cited and quotes are not those which have been used in lectures or on power point slides.
- Responses reflect thoughtful and detailed consideration of not only background material provided but also a further familiarity with the events and history surrounding the issue.
• No immediate personal bias is evidenced.

Question 4:
• Core objection/counter-consideration is clearly identified.
• Issue raised is reflective of the details in the assigned case study.
• Objection/counter-consideration is reflective of issues or problems with the assigned philosopher’s theory in application to the case.
• Objection is directly relevant to the case made in response to question three.

Question 5:
• Thesis is clearly stated in 1st sentence
• Reasons offered in support of thesis reflect a thoughtful and fair approach to the details of the case and the details of the assigned philosopher’s theory.
• Discussion is not repetitive of any previous section.

Overall Impressions:
• Study presents evidence of a thoughtful and deliberative approach.
• Language is clear and explanations/arguments are original
• Effective use has been made of space allowed
• Study reflects careful consideration of background material provided.
• Study reflects that the author has "dived in" and explored the issue beyond the background material provided
• The study is scholarly, with effective use of the essays and relevant philosophical theory.
• There is good logic flow from one response to another – issues raised in earlier questions must link logically with responses to later questions.
• Assignment format has been followed.

Good (89-80% points)
The good paper will demonstrate all the above qualities but perhaps to a lesser degree or, will demonstrate some of the above qualities excellently, but not all of the qualities will be presented at a consistently high level.

Satisfactory (79-70% points)
The satisfactory paper will present all of the above qualities but not as strongly as the good paper or, some qualities may be stronger with some not as strong. Insight is not usually present.

Needs Work (69-60% points)
This paper is weak on many of the desired qualities.

Really Needs Work – Pretty Much Unacceptable (59-0% points)
This paper presents few if any of the desired qualities.

Keep scrolling down for a sample completed assignment!
1. **The Key Moral Issues:**
   - Do public schools have a moral obligation to support and promote diversity in the educational curriculum, regardless of the racial and cultural demographics of the population of their students?
   - If it is a situation of strained economic resources, should the interests of the majority of students outweigh the interests of a minority population of traditionally underrepresented students?
   - Given that this is an issue regarding public high schools, it follows that AZ taxpayers are actually paying for the student's education. Should this give the taxpayers and their representatives the right to dictate curriculum to be taught?

2. **Asking the right questions:**
   - What is the population distribution by race/ethnicity of AZ high school students?
   - How much does the ethnic studies program cost per student compared to the general courses taught and how many students as a percent of the total school district population does it serve?
   - What impact has the institution of ethnic studies programs had on the students who participate in terms of completion, transfer and continuing success post-graduation in AZ and nationwide?
   - Are there statistical correlations between drop-out rates and unemployment, homelessness and crime?
   - What portion of tax revenue is spent on crime prevention and mediation in Arizona?
   - Are there estimates of lost tax revenue due to unemployment and homelessness in Arizona?
   - How have the students in the ethnic studies program performed on standardized tests as compared to the general population of students in the district?
   - Was there an increase in school violence or public disturbances linked to racial tension during the period the program was taught?
   - To what degree is the contribution of non-white persons included or recognized in current curriculum?
   - What was the ethnic/racial background of the students who participated in the program?
   - What is the ethnic/racial background of those who serve in the AZ House?
   - What is the ethnic/racial background of voter turnout in AZ as a proportion to total population?
   - Is the public funding of AZ schools very limited or decreasing & how does AZ per student spending compare to other states in the US?
   - Have there been significant changes to the tax revenue or apportionment towards education in the state of Arizona & how does the percentage of proportionment compare to other states in the US?

3. **Mill’s Position:**
   There are three main reasons why Mill would have rejected Arizona’s House Bill 2281. First, Mill was a utilitarian and thus would weigh the moral worth of this bill in terms of outcomes and the number of people affected. From such a cost-benefit analysis, it appears that though the ethnic studies programs may have been more expensive and served a smaller population of students, the outcomes were significant in terms of greater retention and graduation rates, better scores on standardized exams, higher transfers to colleges, and a significantly more motivated student body who felt empowered to work towards issues of social justice and equal opportunities for Latinos. Under the old system, one must consider the cost of educating students who fail or drop-out. The waste of finite public resources, combined with the social cost...
of high school drop-outs in terms of quality of life, higher incidences of crime, unrealized potential and lost productivity cannot be disregarded.

Secondly, Mill held there is a connection between education, a just society and the greatest good or ‘happiness’ as he called it. Mill argued that qualitative differences were important to recognize in ranking the goods to be maximized. For Mill, this highest good involved free will, empowered action, a sense of pride and most importantly, a kind of higher rational dignity. He argued, “The present wretched education and wretched social arrangements are the only real hindrance to its being attainable by almost all.” If it can be adequately shown that the ethnic studies do contribute to such qualities for a significant number of students – and anecdotal evidence supports this – then this is just the sort of program of which Mill would most approve. Many of the participants reported a significant change in their understanding of how their ancestors contributed to this country and that they had gained a real sense of empowerment and optimism about their own future.

Finally, as a classic libertarian, Mill was opposed to excessive government intervention. He wrote, “The only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others.” There appears to be little evidence to support that there was an active harm incurred through the teaching of ethnic studies. Contrarily, there is good evidence that an ethnically diverse curriculum is pedagogically defensible. The Arizona state legislators’ move has effectively curbed a cherished practice of academic freedom which is clearly consistent with Mill’s position on governmental overreach. Encyclopedia Britannica defines academic freedom as, “...the freedom of teachers and students to teach, study, and pursue knowledge and research without unreasonable interference or restriction from law, institutional regulations, or public pressure.” In order to justify this Bill, the legislators needed to demonstrate positive harms such as proving a clear link between an increase in racially motivated violence and the program. Mill argued strenuously against censorship in On Liberty, “If all mankind minus one, were of one opinion, and only one person were of the contrary opinion, mankind would be no more justified in silencing that one person, than he, if he had the power, would be justified in silencing mankind.” It seems clear that, in this case, there are greater harms in censorship and the erosion of freedom than there are gains made in the name of consistency and standardization. When one includes the books that were also banned, this looks like a bad Bill likely to result in worse consequences.

4. **Critical Objection:** The utilitarian credo demands acting to promote the good for the greatest number of people and does not require that the needs of the minority be met unless it can be shown that doing so will serve the greater good. Here, a problem of sheer numbers is clear. Public school funds are always limited and special programs do tend to cost more per student and serve fewer students as a whole. Public schools across the nation are largely in a situation of economic triage – determining how to serve the majority of those who can succeed with moderate efforts expended, while allowing those who won’t succeed without significant intervention to languish while also sacrificing the programs geared towards the upper tier of most excellent students. It might seem that the cash-strapped state of Arizona might make the same argument other schools have been forced to make regarding music, art, and language courses.

5. **Conclusion:** I believe these programs need to be supported – as an addition and enhancement of students’ educational opportunities. The argument thus far, has been presented as a bit of a utilitarian false dilemma: either serve the majority at the sacrifice of the minority or serve the minority, thus diminishing the good to the majority. My answer is to serve all, and in doing so, increase the good for current and future generations. The means by which this can be accomplished is to increase school funding as AZ is one of the lowest states in per student spending in the nation. The small sacrifice of proportionately increased taxes for each would produce a far greater benefit for so many students and, ultimately the entire state.

ii Text, p. 266

iii Text, p. 267


v Ibid.

vi Text, p. 256

vii Text, p. 255


