

### リーディングの指示

1. リーディングには、PART I と PART II の 2 つがあります。
  2. 解答時間は、PART I、PART II を合わせて 60 分です。どちらの PART、どの問い合わせから始めてもかまいません。
  3. 各問い合わせには 4 つの選択肢が与えられています。その中から最も適当と思われる答えを 1 つ選んで、解答カードの相当欄をマークしてください。
  4. 終了の指示があったら直ちに鉛筆を置いて、問題冊子と解答カードを試験監督が集め終わるまで待っていてください。
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5. PART I では、3 つの文章をよく読んで、それぞれの文章についての 8 つの問い合わせに答えてください。文章はくりかえし読んでもかまいません。
  6. PART II では、文章中の 12 の空欄を埋めて、意味が通るように文章を完成させてください。PART II の解答指示は 22 ページにありますので、それに従って下さい。

## PART I

### *Text 1*

1. Indiana University Professor Elinor Ostrom won the 2009 Nobel Prize in Economics for research that demonstrated the limitations of a major economic theory. Ostrom received the prestigious award for her research investigating the management of the “commons”. Commons are natural resources that are shared in a community. A widespread belief in economics is that human behavior is motivated by self-interest that often leads to the depletion or destruction of shared resources unless they are privatized or regulated by the government. However, Ostrom’s work emphasizes that local communities can develop rules and institutions to manage and sustain these shared resources efficiently. Her research raises questions about the validity of earlier notions of the commons, and offers a more optimistic perspective on dealing with limited resources.
2. The concept of the commons first appeared in an essay written in 1833 by the economist William Forster Lloyd. Lloyd imagined a scenario in which a community shares land to graze cows, which means all the cows in the community are allowed to eat the grass on the commons. He believed that because no one owned the land, individuals would allow animals to overgraze the common area, which, in turn, would degrade the land. In Lloyd’s scenario, people are more likely to serve their self-interests than to preserve the common good. In 1968, Dr. Garrett Hardin made the concept more widely known in an article he published in the journal *Science*. In his article, Hardin coined the phrase “the tragedy of the commons”. The tragedy Hardin referred to was the difficulty in controlling and limiting consumption in a world that was becoming overpopulated. Commons, like land for grazing, water for irrigation, forests for timber, fishing areas, and also intangible resources, like knowledge, might be depleted or abused. Hardin’s work was embraced as a principle by the emerging environmental movement; it led to either privatizing resources or expanding national and international regulations.
3. Greater authority was transferred to government institutions and companies to manage the shared natural resources in local communities. However, many of these resources ended up in worse condition once they were put under the control of distant bureaucrats and businesspeople who lacked the knowledge or the motivation to manage them properly. Ostrom’s research revealed the damage that had been done by private corporations, government institutions, and international donors who had replaced the local institutions. While well-intentioned, these organizations have unwittingly destroyed the shared relationships, customs, and knowledge that have been used by local people over the ages.
4. Ostrom’s research documented how various communities manage commons over the long term, and her findings refute the tragedy of the commons with real examples from places like Nepal, Kenya, and Guatemala. She found that when local people have a long-term perspective, they are more likely to monitor each other’s use of the land, and develop rules for behavior that

ensure a sustainable and economically efficient system of governance. One specific example is the problem Swiss Alpine cheesemakers faced 800 years ago. They lived at a high altitude, and the amount of land they could use for grazing their cows was limited. They developed a simple rule that solved their problem. A person could graze their cows during the summer only if they endured the difficulties of keeping them on the commons over the previous winter. No new cows were allowed to graze during the summer. This rule helped the community manage the commons more effectively. A modern example is the “Wikipedia community”, a successful collective institution that manages communal knowledge. This community relies on contributors to follow its rules and principles, and has safeguards in place that help the members manage information and ensure that it is both accurate and reliable.

5. Awarding the world’s most prestigious economics prize to a scholar who champions cooperative behavior significantly boosts the legitimacy of the commons as a framework for solving some of the world’s greatest social and environmental problems. Ostrom’s work also challenges the prevailing attitude in economics that there are few, if any, alternatives to privatization as a means to generate wealth and welfare. Her work shows that social, environmental, and personal advancements depend on the vitality of the commons.
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31. What is the “widespread belief in economics” described in paragraph 1?
  - a. Motivation is necessary to share and protect resources from self-interests.
  - b. Regulation is needed to protect community resources from human actions.
  - c. Human behavior is the primary cause of the destruction of the environment.
  - d. Privatization of common resources is necessary to protect human interests.
32. According to the text, which of the following is one cause of the “tragedy of the commons”?
  - a. Environmental problems
  - b. Overregulation
  - c. Cultural values
  - d. Overpopulation
33. What is the purpose of paragraph 2?
  - a. To describe consequences of the economic theory of the commons
  - b. To describe research findings about the economic theory of the commons
  - c. To describe the history of the original economic theory of the commons
  - d. To describe the rationale for changing the economic theory of the commons

34. Which of the following can be best inferred by paragraph 3?
- a. Cooperation between businesses and government is needed to save resources.
  - b. Businesses and government are generally not suited to managing the commons.
  - c. Organizations know they are destroying the commons despite their goodwill.
  - d. Government regulation is appropriate for protecting global resources.
35. Which of the following is the best definition of the underlined word “refute” in paragraph 4?
- a. To illustrate a statement or a theory with examples
  - b. To deny evidence for a statement or a theory
  - c. To prove that a statement or a theory is false
  - d. To support a statement or a theory with evidence
36. Based on her research findings, which idea would Ostrom agree with?
- a. Local people should manage shared resources based on their own system of rules.
  - b. Businesses should adopt local people's rules to govern the commons.
  - c. Governments should have a longer perspective when managing shared resources.
  - d. Communities should develop more complex rules to protect the commons.
37. Which example does NOT support Ostrom's management of the commons?
- a. To encourage local people to use different routes to go to work, the state charges tolls on major roads.
  - b. Fishers, farmers, homemakers, and professors cooperate to protect a lake from water pollution.
  - c. To enable both public access and coastal protection, communities prohibit the use of certain vehicles on beaches.
  - d. Linguists researching children's first language development share the results of their study on a public website.
38. Which of the following is the best title for this text?
- a. Historical Views of the Theories Regarding the Commons
  - b. The Environmental Consequences of Protecting the Commons
  - c. A Challenge to the Traditional Theory of the Commons
  - d. Practical Ways to Develop and Govern the Commons

Text 2

1. After taking part in the 1964 World's Fair, science fiction author Isaac Asimov wrote an essay in *The New York Times* in which he imagined what it would be like to visit the World's Fair 50 years in the future, in 2014. Asimov predicted that, "Much effort will be put into the designing of vehicles with 'robot-brains'—vehicles that can be set for particular destinations and that will then proceed there without interference by the slow reflexes of a human driver." Several scholars now expect that driverless cars will be available to the public by 2020, as Asimov predicted. Along with this technological development come ethical questions. Philosophers are now beginning to explore machine ethics, and whether or not machines can be programmed to make ethical decisions in an emergency. Of course, being able to program a machine in a particular way requires both technological advancement as well as an agreement between people as to what kinds of behavior should be programmed into a machine. In making such decisions, machine ethicists face a variety of difficult challenges.
2. The first is examining whether or not ethics can be properly programmed at all. "Act utilitarianism" is one well-known ethical theory that provides a possible answer. According to this theory, one can make ethical decisions based solely on an expected outcome that a person believes results in the greatest good to the greatest number of people. Most ethicists believe that we need to consider whether an action will cause pleasure or displeasure to those involved. To do so, we need some sort of scale to measure the intensity and duration of pleasure or displeasure in order to determine the proper course of action. Theoretically, machines would have an advantage over humans if algorithms\* could be installed in them that would enable them to calculate and quickly decide the best action for the greatest pleasure. However, not all ethicists agree on using the theory of act utilitarianism on machines. They say it violates human rights because decisions might be made to sacrifice some people for the greater good. In that case, which ethical theory should be used to develop algorithms for machines?
3. The second challenge is whether machines can be programmed to make correct ethical decisions under particular circumstances. Currently, many scholars doubt that machines will ever be conscious, be able to display emotions, or have freewill. To make these decisions, machines will have to be programmed with an almost unlimited set of circumstances and projected outcomes. If this is possible, machines might have an advantage over humans. In fact, the intensity of emotions that humans face in dire situations can be viewed as a weakness that might render a person incapable of making a morally questionable decision or taking a morally questionable action, in the face of a threat. For example, the brakes on a car malfunction while driving at 80 kilometers per hour, and the driver has only four options: go left into a group of five children, go right into a group of nine businesspeople, go forward into a big tree, or forward into two people on bicycles. While a human driver might panic in this situation, a driverless car programmed with an algorithm based on act utilitarianism would not. However, is it possible to program machines to react appropriately to every possible situation?

4. The third and possibly most difficult challenge that needs to be explored is the issue of whether or not there are universally acceptable actions when faced with an ethical dilemma. Indeed, many scholars have pointed out that societies and individuals have differing ethics. Compounding this problem is the fact that different societies have their own traditions and customs that they rely on when facing ethical problems, and that these age-old approaches often trump more modern solutions when addressing ethical issues. One of these traditional methods for problem solving is the use of virtue ethics. Virtues, often described by scholars as culturally based notions of what is good, are deeply ingrained within culture. Relying on these virtues is often preferable to basing every decision on outcomes. The latter is a characteristic of consequential ethics such as act utilitarianism. This leads us to another issue. What is the best ethical approach? How can we program machines if we cannot collectively determine this ourselves?
5. As our world becomes more and more technologically oriented, we will need to examine the issues of machine ethics more profoundly. As we develop machine ethics, we simultaneously develop a deeper understanding of human ethics. To program a machine to behave in a certain way requires us to look into a mirror and better understand ourselves.

\*algorithm：演算法、アルゴリズム

Quotation from: Asimov, I. (1964, August 16). "Visit to the World's Fair of 2014." *The New York Times*. Retrieved from <http://www.nytimes.com/>

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39. What is implied in the Asimov quotation in paragraph 1?
  - a. Robot-brained vehicles are superior to human drivers.
  - b. Robot-brained cars are slow to act when in danger.
  - c. Robot-brained cars will interfere with human drivers.
  - d. Robot-brained vehicles will be widely available to the public.
40. In paragraph 2, why is it problematic to use act utilitarianism to program machines?
  - a. There is no scale to measure pleasure, so act utilitarianism cannot be used.
  - b. Machines cannot execute algorithms quickly enough to make decisions.
  - c. Decisions are made without regard for certain individuals.
  - d. It is impossible to develop algorithms to determine outcomes.

41. In paragraph 3, in what way do machines have an advantage over humans in reacting to situations?
- Machines behave more ethically.
  - Machines move more quickly.
  - Machines are not emotional.
  - Machines tend not to panic.
42. Based on the idea of act utilitarianism, which is seen as the best decision when the car brakes malfunction?
- Go left into the children
  - Go forward into the cyclists
  - Go right into the businesspeople
  - Go forward into the tree
43. When faced with an ethical dilemma, why is it difficult to suggest universally acceptable actions?
- Ethical approaches are influenced by culturally dominant nations.
  - Ethical approaches vary among individuals and societies.
  - Ethical approaches are often mistakenly related to virtues.
  - Ethical approaches are changing rapidly in the modern world.
44. According to the text, why do some people consider virtue ethics preferable to consequential ethics?
- They represent what people believe to be good.
  - They offer answers to difficult questions.
  - They allow us to predict the future better.
  - They are based on clear rules and outcomes.
45. What is the author's message in the last sentence of the text?
- Machine ethicists need to take into account cultural differences.
  - Exploring machine ethics requires us to learn more about ourselves.
  - Studying machine ethics is a challenge that requires reflection.
  - Machine ethicists will play a significant role in the next generation.
46. What is the best title for this text?
- The Philosophy of Act Utilitarianism and Technology
  - Problems with the First Driverless Cars
  - Consequences of Making Difficult Ethical Decisions
  - The Challenges Faced by Machine Ethicists

*Text 3*

1. On September 14th, 1990, a 4-year-old girl in the U.S. became the first gene therapy patient. Due to a genetic disease affecting her immune system, she was unable to fight infections. Doctors took white blood cells from her body and replaced the faulty gene responsible for her illness with a correct version. These cells were then re-injected into her body. This is the basis of gene therapy; it attempts to fix genetic diseases at the molecular level by correcting defective genes. Gene therapy is still an experimental technique, but there are many potential applications that could allow doctors to treat disorders without the use of drugs or surgery.
2. One recent success in gene therapy comes from a team of researchers at Oxford University in the U.K. who have developed a gene therapy technique that has been successfully trialed as a treatment for choroideremia, an inherited genetic disorder that leads to blindness almost exclusively in men. The eyesight of patients with this disease gradually begins to deteriorate, often starting with night blindness in childhood, before developing into tunnel vision and eventually resulting in a complete loss of eyesight, usually when the patients are in their 40s.
3. Choroideremia is caused by a mutation in the CHM gene, located on the X chromosome, which leads to the degeneration of the retina, a layer of light-sensitive cells in the back of the eye. Normally, a group of proteins, called Rab proteins, facilitates the movement of nutrients in and out of cells. Newly synthesized Rab proteins are taken to their correct location within cells by a carrier protein called Rab Escort Protein-1 (REP-1). The CHM gene is responsible for making REP-1. Therefore, having a defective CHM gene results in a lack of REP-1, which in turn prevents Rab proteins from functioning properly. Many cells in the body can cope with this by using an alternative to REP-1. However, the retina is unable to do this; hence the gradual degeneration of cells in the eye and the onset of choroideremia symptoms.
4. In order to fix this problem, the team at Oxford University injected a new copy of the CHM gene into the back of an eye, thereby providing instructions for the production of REP-1 and preventing the degeneration of the cells. The scientists were able to deliver the working copy of the gene by first inserting it into a retrovirus in a laboratory. Retroviruses that have been adapted for gene therapy enter human cells and integrate new DNA, containing the working copy of a gene, into the host cell's DNA.
5. The results of the trials have shown that this treatment not only stops the deterioration of eyesight but also improves vision. Patients have reported being able to read three or four lines further down an optician's eye chart than they could before the treatment. One patient, a 46-year-old man, revealed he had been able to see the stars for the first time since he was 17, and that he could see trees and flowers in much more vivid colour than before. These patients had believed that they would eventually become fully blind and were powerless to stop their disease. Now, thanks to this gene therapy treatment, their lives have been completely transformed. Moreover, if doctors can identify choroideremia in children at an early stage, they might be

able to prevent any loss of vision from occurring. Unlike traditional medicine, one single treatment of gene therapy can correct the defective gene and allow the affected cells to continue to function normally. In addition, by treating the disease at the genetic level, it is actually possible to prevent it from affecting the patient at all.

6. Choroideremia is a rare disorder, affecting only approximately 1,000 people in the U.K. However, doctors believe the success of the gene therapy trials for choroideremia can be transferred to more common forms of blindness, such as macular degeneration, which currently affects the vision of 600,000 people in the U.K. Treating macular degeneration is a big challenge because the disease is caused by defects in several genes, as opposed to the single gene in choroideremia. Nevertheless, scientists hope that gene therapy can be an effective treatment not only for blindness, but also for many other diseases from Parkinson's and Alzheimer's to cancer and AIDS.

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47. What does “a correct version” in paragraph 1 refer to?

- a. A white blood cell
- b. A molecular version
- c. A replacement gene
- d. An immune system

48. According to the text, what is true about choroideremia?

- a. It is very rarely found in women.
- b. It is primarily found in elderly men.
- c. It usually begins with tunnel vision.
- d. It generally causes rapid loss of vision.

49. The word “degeneration” underlined in paragraph 3 is closest in meaning to which of the following?

- a. A return to its original state
- b. A breakdown in production
- c. A decrease in weight and volume
- d. A progressive loss in function

50. According to the text, what is the direct cause of blindness in choroideremia?
- Rab proteins cannot facilitate the movement of nutrients in and out of cells due to a mutation in the REP-1 gene.
  - Rab proteins cannot take REP-1 to their correct location within cells in the retina due to a faulty gene.
  - REP-1 cannot be produced because of a faulty CHM gene, which stops Rab proteins from working normally.
  - The retina in the eye cannot use an alternative to REP-1 due mainly to a mutation in the CHM gene.
51. According to the text, how does gene therapy directly cure choroideremia?
- Newly synthesized REP-1 proteins are taken to their proper place within cells.
  - A layer of light-sensitive cells in the back of the eye is repaired by surgery.
  - Gene therapy enables the movement of nutrients in and out of cells.
  - REP-1 is produced after the addition of a new copy of the CHM gene.
52. Which is NOT mentioned as a result of this gene therapy trial to cure choroideremia?
- The success rate for the choroideremia gene therapy to date is much greater in younger patients.
  - Gene therapy has enabled some patients to read an optician's eye chart with greater accuracy.
  - Gene therapy has stopped patients from losing their eyesight and has enabled them to improve their vision.
  - One patient gained the ability to see the stars in the sky after he had not seen them for about 30 years.
53. According to the text, what is one of the characteristics of gene therapy?
- It complements traditional medicine.
  - It requires only a single treatment.
  - It is too expensive for most people.
  - It is the only cure for blindness.
54. According to the text, what difficulty does macular degeneration pose for gene therapy?
- Many doctors will be needed to perform the procedure.
  - Multiple genes will need to be targeted.
  - More people will need to be treated in hospitals.
  - Many other diseases will need to be treated first.

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## PART II

次の文章には 12 の空欄 (55-66) があり、23 ページに各空欄に  
対する 4 つの選択肢が与えられています。各空欄に最も適当と  
思われる答えを 1 つ選び、解答用カードの相当欄をマークして  
下さい。

Hannah Arendt, a popular 20th century philosopher and journalist, was accused of plagiarism. Arendt was sent to Israel by *The New Yorker* magazine to attend the war crimes trial of the Nazi, Adolf Eichmann, in 1961. After the trial, Arendt received worldwide praise for the book she wrote titled *Eichmann in Jerusalem: A Report on the Banality of Evil*. The less well-known part of the story, (55) \_\_\_\_\_, is that a man named Raul Hilberg wrote a detailed book used by Arendt to develop her thesis that Eichmann was an ordinary person who committed extraordinarily evil crimes. When Arendt's book was published, Hilberg claimed she had stolen his original ideas.

Hilberg was born in Austria in 1926. In order to (56) \_\_\_\_\_ the Nazis at the beginning of the Second World War, Hilberg's family fled first to France, then to Cuba, and finally arrived in America. In his late teens, Hilberg joined the American military and fought as a U.S. soldier in Germany. At the end of the war, after the (57) \_\_\_\_\_ of Berlin, Hilberg was chosen, as a native speaker of German, to translate thousands of Nazi documents on the (58) \_\_\_\_\_ of the Jewish people. This experience (59) \_\_\_\_\_ Hilberg's interest in studying the mechanisms of the genocide.

(60) \_\_\_\_\_ his arrival back in the U.S., Hilberg continued his work when he got a job with the *War Documentation Project*, and he was responsible for categorizing Nazi documents to prepare for war crimes trials. While studying the documents, Hilberg simultaneously pursued Masters and Ph.D. (61) \_\_\_\_\_ at Columbia University in New York. While many (62) \_\_\_\_\_ Hilberg from writing about such topics, mainly because the U.S. government was seeking to establish good relations with West Germany, he chose to continue. By the end of his studies, Hilberg had compiled a 1,200-page history of the Holocaust, which he submitted to his university as a Ph.D. dissertation in the mid-1950s.

Hilberg then attempted to publish his dissertation as a book, but the manuscript was rejected by its main reviewer, Hannah Arendt. Arendt claimed that she rejected Hilberg's epic volume because its first chapter on the history of anti-Semitism in Germany (63) \_\_\_\_\_ precision and accuracy. Later, when Hilberg found a (64) \_\_\_\_\_ to fund the publication of his book, Arendt was offered a copy by the publishing company before her departure to Jerusalem, which she took. Later, Hilberg asserted that Arendt had plagiarized portions of his writing in her work. In response to Hilberg's accusation, Arendt argued that she did no such thing and instead put forth the explanation that her work was primarily a philosophical one (65) \_\_\_\_\_ Hilberg's concentrated more on economics, history, and politics. Although both authors have passed away, this plagiarism controversy continues (66) \_\_\_\_\_ this day.

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|----|---|----|--|----|--|
| 55 | a. however<br>b. likewise<br>c. moreover<br>d. therefore          | 56 | a. betray<br>b. escape<br>c. offend<br>d. reveal             | 57 | a. Closure<br>b. Defense<br>c. Fall<br>d. Reconstruction |
| 58 | a. depression<br>b. exclusion<br>c. extermination<br>d. isolation | 59 | a. benefited<br>b. changed<br>c. persuaded<br>d. sparked     | 60 | a. At<br>b. In<br>c. Until<br>d. Upon                    |
| 61 | a. certificates<br>b. courses<br>c. degrees<br>d. theses          | 62 | a. denied<br>b. discouraged<br>c. dismissed<br>d. distracted | 63 | a. has lacked<br>b. is lacking<br>c. lack<br>d. lacked   |
| 64 | a. benefactor<br>b. beneficiary<br>c. receiver<br>d. recipient    | 65 | a. despite<br>b. nevertheless<br>c. when<br>d. while         | 66 | a. by<br>b. for<br>c. to<br>d. with                      |

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