

## • Advanced Critical Reading – Intelligence Augmentation

The terms “intelligence augmentation” and “intelligence amplification” evoke images of human beings with computer chips embedded in their skulls or bizarre accoutrements attached to their heads. However, according to an article entitled *Get Smart* by Jamais Cascio, human beings’ ability to augment their intelligence is precisely the prowess which has empowered us to survive “a series of convulsive glacial events” evinced by the last ice age.

Neurophysiologist William Calvin asserts that the human species continues to evolve cognitively and to create its own cognitive evolution in two basic ways: external and internal.

Cascio states that humans have been externally augmenting their intelligence for millennia. By developing written language, we boosted our capacity to share information over space and time. Other advancements, such as agricultural and industrial technologies, reduced the exigencies of manual labor. Current external digital systems augment human intelligence by allowing us to perform tasks that would be unfeasible with recourse only to the rational skills of a singular human brain. Cascio cites as examples the “powerful simulations and massive data sets (which) allow physicists to visualize, understand, and debate models of an 11–dimension universe, real–time data from satellites, global environmental databases, and high–resolution models (which) allow geophysicists to recognize the subtle signs of long–term changes to the planet,” and similar man–made interactions which have the functional effect of augmenting human intelligence. Conceivable potential software could incorporate individual “attention filters” or “focus assistants” which would discern and highlight your individual preferences in a computer display, permitting you to focus and direct your computer searches more efficiently than you do now. It could incorporate individualized planning and foresight systems which could allow people to play “what–if” with their life choices. Such systems could co–evolve with people to produce intimate technologies which would become “something akin to collaborative intuition,” through web–based information systems with personalized components, according to Cascio.

Somewhat more problematic in social terms might be pharmacological intelligence augmentation, evoking Brave New World nightmares – pharmaceutically placated people tranquilized to zombie–like subservience to the collective and a central bureaucracy dedicated to its own continued survival. However, as with external cognitive augmentation, the future has arrived — in the form of, for example, ADD drugs, pharmaceutical agents which mitigate sleep disorders, and antidepressants, all of which enhance human problem–solving ability and cognitive efficiency. According to Cascio, “people who don’t know about (such drugs) or don’t want to use them will face stiffer competition from people who do. From the perspective of a culture immersed in athletic doping wars, the use of such drugs may seem like cheating. From the perspective of those who find they’re much more productive using this form of enhancement, it’s no more cheating than getting a faster computer or a better education.”

Cognitive amplification, whether by external or internal means, may constitute evolution, if Calvin’s assertion is correct. Some societies may readily embrace it, while others may shy away. As science fiction writer William Gibson observes, “The future is already here; it’s just unevenly distributed.”

## Questions

1. The author is mainly concerned about
  - A) various dangers of intelligence augmentation.
  - B) the advantages of intelligence augmentation.
  - C) the basic methods of intelligence augmentation.
  - D) some scientists who are working on intelligence augmentation.
  - E) the differences between external and internal intelligence augmentation.
2. The author's use of the phrase "somewhat more problematic in social terms" refers to
  - A) the difficulty of making cognitive enhancement widely available.
  - B) the difficulty of making pharmacological enhancement socially acceptable.
  - C) equalizing cognitive competitive advantages among social groups.
  - D) bureaucracies which hamper cognitive enhancement activities.
  - E) the relationship between external and internal intelligence augmentation.
3. As it is used in line 27, the word *placated* most closely means
  - A) deprived.
  - B) enhanced.
  - C) cured.
  - D) assisted.
  - E) quieted.
4. In the context of the passage, which of the following best articulates the author's opinion?
  - A) Intelligence amplification by external means might be more difficult to achieve than by internal means.
  - B) Cognitive augmentation does not really constitute evolution.
  - C) Some people consider intelligence enhancement to be a form of cheating.
  - D) External and internal intelligence enhancement might constitute evolution in cultures that accept them.
  - E) Personalized software could be misused by a bureaucracy intent on its own continued survival.
5. The primary purpose of the passage is to
  - A) describe different kinds of intelligence enhancement.
  - B) discuss society's reactions to pharmacological cognitive augmentation.
  - C) examine the differences between external and internal intelligence enhancement.
  - D) dispel misgivings about humanity's attempts at creating its own evolution.
  - E) illustrate the limitations of external intelligence augmentation.

## Answers and Explanations

1. The correct answer is **C**.

- A) Incorrect. Although the author alludes to dangers involved with intelligence augmentation, she does not specifically mention any dangers. The ability to play “what–if” with life choices, mentioned in line 23, could portend a dangerous situation. People’s fears of a Brave New World situation, mentioned in lines 27–28, allude to dangers discussed by Aldous Huxley in his novel entitled Brave New World. However, danger is not the author’s main concern.
- B) Incorrect. Although the author discusses the advantages of intelligence augmentation, this is not her main concern. Lines 8–25 mostly discuss the methods of external intelligence enhancement, and lines 29–32 discuss the advantages of internal intelligence enhancement. These are interspersed with comments about fear related to intelligence enhancement (lines 27–28) and some doubt regarding intelligence augmentation (33–34), so the advantages of intelligence augmentation are not the author’s main concern.
- C) Correct. In the second paragraph, the author introduces the topic of cognitive augmentation by stating that the “neurophysicist William Calvin asserts that the human species continues to evolve cognitively and to create its own cognitive evolution in two basic ways: external and internal.”
- D) Incorrect. Although several scientists are mentioned, the scientists are not the author’s main concern. The author of *Get Smart*, Jamais Cascio, may or may not be a scientist. Neurophysicist William Calvin is mentioned in the second paragraph when the author introduces the topic. The only other person mentioned by name is science fiction writer William Gibson. Geophysicists are mentioned in line 16, but the scientists involved in intelligence augmentation are not the author’s main concern.
- E) Incorrect. Although the author discusses both external and internal intelligence augmentation, she does not say much about the differences between the two types of cognitive enhancement. The only difference she mentions is in lines 26–27 – “Somewhat more problematic in social terms might be pharmacological intelligence augmentation.”

2. The correct answer is **B**.

- A) Incorrect. The author seems to say that pharmacological agents for intelligence enhancement are already readily available. She says in lines 29–32, “as with external cognitive augmentation, the future has arrived – in the form of, for example, ADD drugs, pharmaceutical agents which mitigate sleep disorders, and antidepressants, all of which enhance human problem–solving ability and cognitive efficiency.”
- B) Correct. The author mentions social acceptance of intelligence augmentation in several places in the passage. In lines 26–29, she says, “somewhat more problematic in social terms might be pharmacological intelligence augmentation, evoking Brave New World nightmares – pharmaceutically placated people tranquilized to zombie–like subservience to the collective and a central bureaucracy dedicated to its own continued survival,” which points up societal fear of pharmaceutical augmentation. In lines 32–34, she also says, “people who don’t know about (such drugs) or don’t want to use them will face stiffer competition from people who do. From the perspective of a culture immersed in athletic doping wars, the use of such drugs may seem like cheating,” which shows a moral resistance to pharmacological augmentation. Finally, in lines 38–39, the author

says, “some societies may readily embrace it, while others may shy away,” which points to a larger societal aversion to pharmacological intelligence augmentation.

- C) Incorrect. The author does mention competition between people who take advantage of pharmacological intelligence boosts and people who do not. (lines 32–36) However, this is not the subject that the author finds problematic. The problematic issue is overcoming fear of pharmacological agents. In lines 26–29, she says, “Somewhat more problematic in social terms might be pharmacological intelligence augmentation, evoking Brave New World nightmares – pharmaceutically placated people tranquilized to zombie–like subservience to the collective and a central bureaucracy dedicated to its own continued survival,” which points up societal fear of pharmaceutical augmentation.
- D) Incorrect. Although the author mentions bureaucracies, she does so in the context of a nightmarish scenario in which the bureaucracies provide pharmaceutical agents in order to placate the people, not to enhance their intelligence. In lines 26–29, she says, “somewhat more problematic in social terms might be pharmacological intelligence augmentation, evoking Brave New World nightmares – pharmaceutically placated people tranquilized to zombie–like subservience to the collective and a central bureaucracy dedicated to its own continued survival,” which points up societal fear of pharmaceutical augmentation.
- E) Incorrect. Although the author discusses both external and internal methods of augmentation, she does not discuss the relationship between the two, except in lines 29–30, when she says, “as with external cognitive augmentation, the future has arrived,” and in the concluding paragraph when she says, “Cognitive amplification, whether by external or internal means, may constitute evolution, if Cascio’s assertion is correct.”

3. The correct answer is **E**.

- A) Incorrect. In lines 27–28, the statement “pharmaceutically placated people tranquilized to zombie–like subservience to the collective” rules out the possibility that the word *placated* could mean *deprived*. If they were pharmaceutically deprived, they would not be tranquilized.
- B) Incorrect. In lines 27–28, the statement “pharmaceutically placated people tranquilized to zombie–like subservience to the collective” rules out the possibility that the word *placated* could mean *enhanced*. If they were pharmaceutically enhanced, they would not be tranquilized.
- C) Incorrect. In lines 26–28, the statement “Somewhat more problematic in social terms might be pharmacological intelligence augmentation, evoking Brave New World nightmares – pharmaceutically placated people tranquilized to zombie–like subservience to the collective” rules out the possibility that the word *placated* means *cured*, as it would not be nightmarish to be cured.
- D) Incorrect. In lines 27–28, the statement “pharmaceutically placated people tranquilized to zombie–like subservience to the collective” rules out the possibility that the word *placated* could mean *assisted*. If they were pharmaceutically assisted, they would not be tranquilized or zombie–like.
- E) Correct. In lines 27–28, the statement “pharmaceutically placated people tranquilized to zombie–like subservience to the collective” points to the likelihood that the word *placated* means something similar to *tranquilized*, or *quieted*.

4. The correct answer is **D**.

- A) Incorrect. In lines 8–24, the author mentions many methods of external intelligence augmentation, including writing, agricultural and industrial technologies, digital systems,

satellites, databases, attention filters, software, web-based information systems, and other computer systems. In lines 30–31, she mentions only 3 kinds of pharmacological agents to enhance intelligence. Therefore, external enhancements do not seem to be more difficult to achieve than internal enhancements.

- B) Incorrect. In lines 37–38, the author states that “cognitive amplification, whether by external or internal means may constitute evolution if Calvin’s assertion is correct.” The author, however, neither agrees nor disagrees that the assertion is correct.
- C) Incorrect. In lines 32–34, the statement “According to Cascio, “people who don’t know about (such drugs) or don’t want to use them will face stiffer competition from people who do. From the perspective of a culture immersed in athletic doping wars, the use of such drugs may seem like cheating”” is not the author’s opinion. It is a quotation from Cascio, the author of the *Get Smart* article.
- D) Correct. In the concluding paragraph, the author states, “Cognitive amplification, whether by external or internal means may constitute evolution, if Calvin’s assertion is correct. Some societies may readily embrace it, while others may shy away.”
- E) Incorrect. Rather than pointing to the possible misuse of personalized software, the reference to personalized software is positive, in lines 23–26, “Such systems could co-evolve with people to produce intimate technologies which would become “something akin to collaborative intuition,” through web-based information systems with personalized components, according to Cascio.”

5. The correct answer is **A**.

- A) Correct. In the second paragraph, the author introduces the topic of cognitive augmentation by stating that the “neurophysicist William Calvin asserts that the human species continues to evolve cognitively and to create its own cognitive evolution in two basic ways: external and internal.”
- B) Incorrect. The author touches on the reaction of society to cognitive enhancement in lines 26–27 when she states, “Somewhat more problematic in social terms might be pharmacological intelligence augmentation,” in line 34, “the use of such drugs may seem like cheating,” and in lines 37–38 when she says, “Some societies may readily embrace it, while others may shy away.” However, these ideas are not developed.
- C) Incorrect. Although the author discusses both external and internal intelligence augmentation, she does not say much about the differences between the two types of cognitive enhancement. The only difference she mentions is in lines 26–27 – “Somewhat more problematic in social terms might be pharmacological intelligence augmentation.”
- D) Incorrect. The author mentions societal misgivings regarding cognitive enhancement in lines 26–27 when she says, “Somewhat more problematic in social terms might be pharmacological intelligence augmentation,” in line 34, “the use of such drugs may seem like cheating,” and in lines 37–38 when she says, “Some societies may readily embrace it, while others may shy away.” The author does not dispel these misgivings.
- E) Incorrect. In lines 8–25, the author discusses external intelligence augmentation. She does not mention limitations of any of the enhancements.