COMP 3309 – Fall 2023 - Sec 1 - Midterm – Guidance – Weight: 30%

Exam Date: Nov 2nd, 2023
Duration: 80 minutes (1 hour and 20 minutes) –
Format: In-class written exam (not online)

The exam is based on the following material:

- **Lecture material**
  - **01 Data, Information, Knowledge, and Wisdom**
  - **02 Technology and Information Technology – viewpoints**
  - **03 A basic history of computers**
  - **04 Academic views of technology - Technological Determinism**
- **Task material – all material in these tasks is testable.**
  - **Task 2 – all videos and reading/responses**
  - **Task 3 – all videos, papers, and reading/responses**

Question Styles to expect

- 6 Short answer questions (A mix of simple and harder short answer questions)

The rest of this document contains some example questions you could see on the exam

Example test questions

Note these are just example questions. Questions on the exam can be based upon ANY of the key information/topics presented in the lecture notes and the tasks.

Short answer question examples

Simple Short answer requirements - answer questions like the following with a single paragraph, a bullet list, or sketch as appropriate. You should also make connections to material from the course in your answers. You can reference a lecture topic using key words from each topic. For an assigned reading or video, you can reference it by using part of the authors name or the title.

- Must include at least one reference from the course readings/videos/responses
- Must also include at least one reference from the course material/topics.
- These references can also be used to provide an example to strengthen your answer. Like making reference to a specific thing from a video or paper.

Note you will also be marked on the quality of choice of reference.

- You may include more references if you would like.

Harder short answer question requirements – Should include everything listed above for Simple short answer requirements from above, but include a lot more detail. This would require at minimum 2 paragraphs and multiple references (i.e. minimum of 2 but more would be better).

Lecture Material Example Questions

1. 01 Data, Information, Knowledge, and Wisdom

1.1. How does technology exist in relation to history, law, economics, and other societal elements according to the provided text?
1.2. Explain the relationship between technology and psychology.
1.3. How does technology influence both society and individual psychology?
1.4. What is the DIKW pyramid and how does it represent the relationship between data, information, knowledge, and wisdom?
1.5. In relation to DIKW pyramid, How is "information" differentiated from "data", and what role does context play in this differentiation?
1.6. How does epistemology, or the theory of knowledge, relates to the ways individuals perceive and understand technology and society?
1.7. Briefly explain the primary viewpoints of the nature versus nurture debate in psychology. What do proponents of each side believe influences individual behavior and personality more significantly?
1.8. Discuss the contributions of René Descartes, Thomas Hobbes, and John Locke to the nature versus nurture debate. What were the primary beliefs of each philosopher regarding the development of human behavior and traits?
1.9. Define and explain the concept of “biological determinism” in the context of the nature versus nurture debate. How does this concept relate to the arguments made by proponents of the “nature” side of the debate?
1.10. Explain how the nature versus nurture debate is relevant to the development and use of technology. Provide specific examples to illustrate your answer.
1.11. How do genetic factors (nature) and environmental influences (nurture) contribute to an individual’s ability to understand and engage with technology? Provide examples to support your response.
1.12. Discuss the role of education and experience (nurture) versus innate abilities (nature) in determining an individual's proficiency and comfort with using technology. Can one compensate for the lack of the other? Provide reasons for your answer.

2. 02 Technology and Information Technology – viewpoints

2.1. How is the term “craft” related to technology, and what does it imply regarding the relationship between technology and culture?
2.2. What are the distinguishing factors between “Technology” and “Information Technology”?
2.3. Explain how the common view of technology is associated with scientific investigations and economics.
2.4. Summarize Viewpoint 1 regarding technology as a driver of change and explain its alternate view related to co-evolution.
2.5. What are the issues with perceiving technology as a neutral tool, as presented in Viewpoint 2?
2.6. According to Viewpoint 3, why is it challenging to predict the ultimate effects of new technology? Provide an example.
2.7. How do the functional capabilities of a technology relate to its real-world consequences, as discussed in Viewpoint 3?
2.8. Explain the concept of unintended consequences in sociology and provide an example related to technology.
2.9. Why is it important to consider who benefits from the perception of accelerating technological change?
2.10. What are the problems associated with thinking that technology is neutral?
2.11. How is the term “technology” commonly viewed, and why might this perspective be considered limiting or inaccurate?
2.12. 20. Provide an example how a new technology might enable social changes, and explain the challenges in predicting these changes.

3. 03 A basic history of computers

3.1. Based upon the material presented in this course, define information Technology (IT).
3.2. Enumerate/list and briefly describe the four distinct phases of IT development.
3.3. How has the definition of the word “computer” changed over the history presented in this course.
3.4. List and briefly explain the three necessities for computation mentioned in the information.
3.5. Based upon this history if IT presented in this course, How is the concept of encoding information not new?
3.6. How has the need for computing been a long-standing aspect of human existence?
3.7. Why is the process of encoding, storage, computing, and decoding described as a practice that has been done for generations?
3.8. How did the invention of the vacuum tube impact the electronic phase of IT development?
3.9. What pivotal role did Herman Hollerith play in the electromechanical phase?
3.10. What significant transition in encoding information occurred between the mechanical and electromechanical phases?
3.11. Why was the invention of the transistor pivotal for the electronic phase?
3.12. Explain the connection between punched cards and the ability to input and output information during the electromechanical phase.
3.13. What significant change in information storage occurred from the mechanical to electronic phase?
3.14. How does the Jacquard’s loom relate to information encoding in the mechanical phase?
3.15. In the context of the pre-mechanical phase, how was information encoded and manipulated without electronics?
3.16. How did the introduction of the Integrated Circuit impact the electronic phase?
3.17. How did the method of inputting and outputting information evolve from the mechanical to electromechanical phase?
3.18. How was information permanently stored during the electromechanical phase?
3.19. In the transition from electromechanical to electronic phases, how did information manipulation evolve?
3.20. How do punched cards serve as a method for both inputting and outputting information?

3.21. What advancements in the electronic phase allowed for more efficient data manipulation?
3.22. How did the transition from vacuum tubes to transistors affect information encoding?
3.23. How is data encoded and manipulated in the Babylonian numerals system of the pre-mechanical phase?
3.24. What role did the Jacquard's loom play in the mechanical phase regarding information output?
3.25. Describe the impact of the transistor on information manipulation in the electronic phase.
3.26. How did the method of information input change from the pre-mechanical to the mechanical phase?
3.27. Explain the significance of the ENIAC in the realm of information manipulation during the electromechanical phase.
3.28. Describe the evolution of permanent information storage from the mechanical to the electronic phase.
3.29. Explain how information was inputted and outputted in the Curta Calculator during the mechanical phase.
3.30. 40. Describe the evolution of information manipulation mechanisms from the Babylonian numerals to the modern-day computer.

4. 04 Academic views of technology - Technological Determinism

4.1. What is the central thesis of technological determinism?
4.2. How does technological determinism relate to social structures and cultural values?
4.3. Explain Marshall McLuhan's phrase, "The medium is the message."
4.4. Describe the societal impact of automobiles as per the theory of technological determinism.
4.5. How does the city layout of Calgary reflect technological determinism?
4.6. What is the significance of the Gutenberg Press in the context of technological determinism?
4.7. Explain the concept of "conspicuous consumption" as proposed by Thorsten Veblen.
4.8. How does Karl Marx's view on technology relate to technological determinism?
4.9. In what way does technology supposedly develop, according to technological determinism?
4.10. How does the invention of the printing press support or contradict the theory of technological determinism?
4.11. Does technological determinism account for the different impacts of the same technology on different societies? Explain.
4.12. Explain the concept of technological autonomy.
4.13. Differentiate between strong and weak technological determinism.
4.14. How does weak technological determinism view the opportunity for social change?
4.15. How does the theory of technological determinism view the relationship between social progress and technological innovation?
4.16. How does technological determinism theory explain the changes in society's social relations and worldview?
4.17. What does McLuhan mean when he says "We shape our tools, and then our tools shape us"?
4.18. How do electronic communication technologies affect our perception of the world according to McLuhan?
4.19. Can you provide an example of a technology that is considered an extension of our faculties as per McLuhan's views?
4.20. What is the impact of the invention of the alphabet on society according to McLuhan's analysis?
4.21. How does technological determinism explain the inevitability of technological development?
4.22. How does technological determinism theory perceive the invention and adoption of the automobile?
4.23. Explain what is meant by "technologies are amputated" once extended, according to McLuhan.
4.24. Can you provide examples of technologies that have transformative effects according to the theory of technological determinism?
4.25. According to technological determinism, does the invention of significant technology always cause massive changes in society? Explain.

4.26. How is the concept of progress intertwined with technological determinism?
4.27. Does technological determinism provide a comprehensive explanation of the world? Why or why not?
4.28. How have humans and technology coevolved?
4.29. What does it mean to say that society and technology have coevolved according to the theory of technological determinism?
4.30. Explain Karl Marx's perspective on how technology influences social relations and organizational structures.
4.31. What are the inherent effects of technology on society as per the theory of technological determinism?

Task Material Example Questions

1. Task 2

1.1. How does epistemology approach the question "How do I know?" and in which domains of belief does it typically inquire?
1.2. What are the four sources from which we derive our beliefs, as outlined in the video on epistemology? Provide a brief explanation of each.
1.3. Describe the limitations of our senses in acquiring accurate knowledge, as discussed in the video "Is Anything Real?".
1.4. What is the significance of Long-Term Potentiation (LTP) in the formation of memories? Explain how LTP contributes to memory storage and retrieval.
1.5. Explain the distinction made between "reality" and "the phaneron" by Charles Sanders Peirce, as mentioned in the "Is Anything Real?" video. How does this distinction impact our understanding of what is real?
1.6. What is solipsism, and how does it compare and contrast with realism in terms of our understanding and belief in the existence of the external world?
1.7. What is the primary focus of epistemology as a branch of philosophy, and why is it considered foundational for other fields like science, ethics, and metaphysics?
1.8. Why is epistemology important in understanding and evaluating both your own and others' beliefs and decisions? Provide specific benefits of studying epistemology.
1.9. Briefly describe the five perspectives on how we acquire knowledge: Empiricism, Rationalism, Constructivism, Pragmatism, and Social Constructivism.
1.10. How do Rationalists believe that certain truths can be known, and how does this approach to acquiring knowledge differ from Empiricism?
1.11. Explain the role of sensory experience, education, and personal reflection in the acquisition of knowledge. Provide examples to illustrate each method.
1.12. How does communication and interaction with others contribute to our knowledge base, and why is it crucial for broadening our understanding?
1.13. What are the key sources and processes through which knowledge is acquired, as outlined in the response to "How did we learn what we know?"?
1.14. Discuss the relationship between technology and epistemology. How does technology raise new epistemological questions, and how is it used to acquire, process, and communicate knowledge?
1.15. Explain the nature vs. nurture debate in psychology. How do genetics and personal experiences and upbringing collectively contribute to human behavior, characteristics, and development?
1.16. What insights do twin studies provide in the nature versus nurture debate, and how do they demonstrate the interaction between genetics and personal experiences?

2. Task 3

2.1. Task 3 - Video

2.1.1. In the video "How Did We Get To The Modern Computer? | Order And Disorder | Progress", what was the significant leap in communication made by the ancient Mesopotamians with their writing system?

2.1.2.

2.1.3. How did Joseph Marie Jacquard's invention, as described in "How Did We Get To The Modern Computer? | Order And Disorder | Progress", revolutionize the silk industry and demonstrate the power of abstracting information?

2.1.4. Referencing the video "How Did We Get To The Modern Computer? | Order And Disorder | Progress", explain the role of punched cards in Jacquard's loom and how they represented information.

2.1.5. In the context of "How Did We Get To The Modern Computer? | Order And Disorder | Progress", how did Samuel Morse and Alfred Vale's invention change the speed and nature of information transmission?

2.1.6. According to "How Did We Get To The Modern Computer? | Order And Disorder | Progress", what were the two essential aspects Alan Turing identified that are involved in computation?

2.1.7. How did the 19th century's discovery of electricity as an information-carrying medium significantly impact the speed of information transmission, as illustrated in "How Did We Get To The Modern Computer? | Order And Disorder | Progress"?

2.1.8. Based on the video "How Did We Get To The Modern Computer? | Order And Disorder | Progress", what groundbreaking idea is the Universal Turing Machine based on, and why is it important?

2.1.9. In "How Did We Get To The Modern Computer? | Order And Disorder | Progress", what critical connection between information and reality is demonstrated through the explanation of Maxwell's Demon?

2.1.10. Drawing from "How Did We Get To The Modern Computer? | Order And Disorder | Progress", elaborate on Claude Shannon's contribution to Information Theory and the significance of the 'bit'.

2.1.11. According to the video "How Did We Get To The Modern Computer? | Order And Disorder | Progress", how does the medium that stores information influence its properties and applications in the physical world?

2.2. Task 3 - Paper

2.2.1. Based on the paper "Predicting the market evolution of computers was the revolution really unforeseen" by S. Schnaars & S. Carvalho, can you explain how the view of early inventors towards the potential of computers changed around 1950?

2.2.2. Referencing the findings from "Predicting the market evolution of computers was the revolution really unforeseen" by S. Schnaars & S. Carvalho, what evidence is there to suggest a "market fever" and how did this fever contribute to the growth of the computer industry?

2.2.3. In light of the research presented in "Predicting the market evolution of computers was the revolution really unforeseen", why did experts consistently overestimate the applications of computers? Provide examples of specific applications that were overestimated.

2.2.4. According to the conclusions in "Predicting the market evolution of computers was the revolution really unforeseen", how accurate were experts in predicting the social consequences of computers, and in what areas did they mainly err?

2.2.5. Referring to the paper "Predicting the market evolution of computers was the revolution really unforeseen", discuss the unique aspect of expectations and market growth of computers as compared to other innovative products of the time.

2.2.6. How did expectations and predictions regarding computers compare with those for nuclear energy in the 1950s, as described in "Predicting the market evolution of computers was the revolution really unforeseen"?

2.2.7. Based on the findings of "Predicting the market evolution of computers was the revolution really unforeseen", what factors contributed to IBM emerging as the dominant competitor in the computer industry, and how was this dominance perceived by Wall Street?

2.3. Task 3 - Readings

2.3.1. How did the invention of the printing press during the mechanical phase (1450-1840) democratize knowledge and contribute to personal epistemology, according to the given information?

2.3.2. Describe how the invention of the printing press during the mechanical phase influenced literacy rates and the growth of formal education systems?

2.3.3. Drawing from the given information, how did the printing press facilitate cross-cultural exchange and the blending of ideas, and what impact did this have on personal epistemology?

2.3.4. Explain how the printing press encouraged critical thinking and intellectual inquiry, thereby influencing personal epistemology.

2.3.5. Outline the key contributions of the pre-mechanical phase (3000 BC - 1450 AD) of IT development to the evolution of personal epistemology?

2.3.6. How did the electromechanical phase (1840-1940) of IT development alter the relationship between humans and information processing tools, and what were the implications for personal epistemology?

2.3.7. Describe how the electronic phase (1940-present) of IT development has impacted personal epistemology, highlighting the challenges and opportunities presented by advancements in technology.

2.3.8. How did the role of humans change from the mechanical phase (1450-1840) to the electronic phase (1940-present) in terms of interacting with information processing tools and computers?

2.3.9. How have advancements in technology during the electronic phase shaped and redefined the boundaries of human understanding and personal epistemology?

2.3.10. How has the relationship between humans and computers evolved from the pre-mechanical phase to the electronic phase, and how has this evolution influenced the ways in which humans acquire, process, and evaluate knowledge?