

Term Project (worth 30%)

Phil/Psych 256, Introduction to Cognitive Science

Professor: Nicholas Ray

TA: Mitchell Ross

Due Date: December 15*

**As per the syllabus, the absolute latest date to submit the Term Paper is December 21. Any submissions after December 15 will not be penalized but will receive no commentary (including rubric commentary). Papers will not be accepted after December 21, except in very rare cases of documented medical emergency or other such serious event.*

The Assignment

Write a standard paper on any of the topics/sample questions below. Standard essays should be around 6 to 8 pages (including a bibliography) and should draw on all relevant materials from the course and **at least 2 scholarly sources not from our assigned readings**. You are allowed to use Nick's lesson notes, or Nick's and Mitchell's slideshow presentations, but only sparingly; the expectation is that your primary engagement will be with the authored course readings and your chosen external sources. Some weeks have optional readings. These readings cease to be optional if you choose to write on a related topic. They also do not count toward your two external sources.

The Questions

1. We have surveyed a number of different theories of cognition. Which do you find the most plausible, and why? Options include classical computational (or rule-governed symbol) theories; connectionist and other "brain-driven" theories (which may or may not be tractable using classical theories of computation); embodied, enactive, and externalist theories. You should make sure to not only highlight the virtues of the theory you find most plausible, but critically contrast it with its competitors.
2. Which theory of concepts do you find most plausible and why? Options include older philosophical theories such as Plato's Forms, Descartes' ideas, and Frege's senses, but also more recent theories, such as prototype theory, exemplar theory, and theory-theory, Fodor's informational atomism, and proxytype theory. You should make sure to not only highlight the virtues of the theory you find most plausible, but critically contrast it with some of the other theories we surveyed.
3. Do you agree with functionalists like Turing and Putnam that it is possible to produce intelligent machines? If so, will we do so by using digital computers, or do we need to use alternative architecture, e.g. analog computing or artificial neural networks? If there are practical or principled obstacles, what might they be? If you think we can produce intelligent machines, how might we overcome these obstacles? How do you respond to someone who disagrees with your view regarding the prospects of artificial intelligence, perhaps Searle or another such critic?
4. What is the frame problem (in both its narrow logico-mathematical sense, and its broader epistemological sense) and why is it a problem for AI research? What new tools in machine learning might be utilized to overcome problems of "background beliefs/knowledge" in the programming of AI?

5. Edward Sapir and Benjamin Lee Whorf propose a principle of linguistic relativism. This principle tells us that language affects cognition. Find recent empirical studies (studies within the past twenty years or so) that support this principle. What sorts of other explanations might be given of the evidence if one wanted to resist the Sapir-Whorf hypothesis? Are the empirical findings definitive?
6. Machery argues that philosophers and psychologists are using the term “concept” quite differently, and that this is preventing us from further progress regarding theoretical and empirical work in cognitive science. Read his Précis for *Doing Without Concepts* and assess whether or not you think he is correct. (You will also want to reference the Machery and Prinz video we watched in class.)
7. What are mental images and how do they differ from other representational states? Some theorists think that mental images are like actual images, in that they are presented in a 4-dimensional space (though this “space” is an inner space in the case of mental imagery). Others think mental images can be reduced to descriptive contents employing non-pictorial representations (e.g. conceptual content). Mediate the debate between pictorial and descriptionist accounts of mental imagery. Indicate which view you find best and why. (Remember that we didn’t take a deep dive on imagism. Make sure you utilize the course notes if you choose to write this paper.)
8. Damasio argues that Descartes made an error in closely associating thinking and intelligence with non-emotive, purely rational processes. How do Damasio and others upset the Cartesian idea that you can (and should!) think without emotion? How do new theories of representation and new computational models take into account the associations between mental representations and emotional response and empathy (“affect”, more generally)?
9. Clark and Chalmers consider the extended mind thesis: the thesis that cognition is located beyond a cranial boundary, in an organism’s environment. This is the fairly strong view that things outside of the brain not only aid cognition (as tools) but are constitutive of cognition. Mediate the debate between trans-cranialists like Clark and Chalmers and intra-cranialists like Adams and Aizawa. Do you think the extended mind thesis is defensible against its critics?
10. Go back to the beginning of term. Re-read Thagard’s article on the relationship of cognitive science and philosophy. Do you agree that they “need” each other? Do you think that Thagard has given an adequate account of the relationship? Is it complete? (Here, “complete” means that his account isn’t missing some aspect of philosophy that is useful for cognitive science, or vice versa.)
11. Anne Jaap Jacobson argues that we have a very narrow (and possibly inaccurate) conception of vision as truth-seeking. What other roles does vision play in cognition? Why do these roles point us in the direction of embodied, enactive, and social theories of vision according to Jacobson? Do you agree with her view that seeing is a social phenomenon?

Rules for Submission

Papers are to be submitted to the Dropbox on LEARN by 11:59pm on December 15. Submissions received after this time will receive no commentary or feedback, only a grade. Submissions will not be accepted after 11:59pm ET on December 21, except in very rare and documented cases of medical emergency (or other serious event).

Format

Term Papers should be double-spaced in a regular font (Calibri, Arial, Cambria, or Times New Roman) with a font size of 12. Your paper should have regular margins. Put your name, student ID number, course number, Nick's name, Mitch's name, and the date on the upper left-hand side of the first page. (This can all be single-spaced.) No cover sheets, but titles are required! The pages of your essay *must* be numbered. You should use some recognized reference style (APA, MLA, Chicago, Harvard, etc.) that includes specific page numbers for references. (Please consult a style guide if you have any questions about referencing.)

If you wish to remain anonymous in the grading process, just omit your name. Make sure you still include your student ID number!

Assessment

These papers represent a holistic position you are taking within a real (or at least possible) debate in cognitive science. As such, it is impossible to break the paper down into discrete parts, giving each their own component grade. Your grade will be determined in accordance with the following criteria, stated here as questions to which you should be able to answer "Yes!". For another, more detailed, heuristic, please see the Guide for Writing an Argumentative Paper, posted on LEARN.

1. Have you done extensive research regarding your topic, and is that research clearly brought to bear in your essay? You must make good use of course material, and at least two external sources to get a grade in the A range.
2. Do you **properly identify and reconstruct** the relevant positions?
3. Do you provide **reasoned arguments** and evidence for your position?
4. Do you construct a plausible **counter-argument** to your position, and defend your position against likely critiques? (Please see the "Guide for Writing an Argumentative Paper" if you don't know what a counter-argument is.)
5. Is the project **structurally and stylistically sound**, including proper referencing style (e.g. MLA, APA, Chicago Style, etc.)? Only submissions with perfect or nearly perfect grammar, clear prose, paragraph structure, and fluid and rational sequencing will be considered for A or A+ grades.

Purpose of the Assignment

We want to see you develop an excellent piece of writing that satisfies the Intended Learning Outcomes for our course, which can be found on the Syllabus. To link with those ILOs, make sure your paper is fulfilling its purpose:

1. To assess your understanding of complex course ideas through the development of a critical argument.
2. To craft a concise and clear piece of writing.
3. To come to some conclusions regarding key debates in interdisciplinary theorizing about the mind.
4. To see the ways in which theoretical ideas intersect and relate to one another by addressing issues in cognitive science from more than one critical perspective.
5. To search for relevant literature, and to use that literature to craft a well-rounded paper.
6. To integrate critical comments from peers, the professor, and the TA into your paper.
Remember: this is the end of a process that started with your first Proposal draft for the Peer Share. Your paper should show a sophisticated integration of all of that feedback.