Due — Tuesday, January 16, 2001 (9:30 a.m.)

I. Preliminaries

A. **Schedule:** In general, problem sets will be handed out in class on each Tuesday of the semester (though this week this one is being handed out on Thursday).

B. **Responses**

  1. Answers are due by class time (9:30 a.m.) on the Tuesday a week after they are distributed.

  2. I don't really care how long answers are. Quality matters far more than quantity. That said, an answer outside the range of, say, 500-1500 words per problem set would probably need to be exceptionally good in order to qualify for full marks. (Some questions, though, may require more exposition than that; others considerably less. Use your own judgment.)

  3. Answers should be posted on the class web site,[1] using the **Annotate** system. I will try to post comments on each person's submission by the end of the week in which it is submitted. Note that comments will be visible by other class members. (You, too, are welcome to post comments on other students' submissions, if you choose.)

C. **Grading:** Each problem set will count for 7% of the grade. Responses will be graded on clarity of expression, force of intuition, and depth of understanding.

  1. Few questions have a simple "right" or "wrong" answer. I am far more likely to give an 'A' to a clearly argued position that I totally disagree with than to one that merely recites what was presented in class (or was written in a chapter or handout). In fact if you state something that I totally agree with, I may be suspicious, and grade it harder!

  2. It will in general be impossible to get to the "bottom" of relevant issues (without writing a PhD—and perhaps not even then). This make writing hard.[2] You are quite likely to find yourself with many intuitions and much to say, but discover that it is hard to marshal it all into a clear, cogent, argument. Do the best you can; this is an inevitable characteristic of working on foundational problems. (Learning how to work with this kind of material is part of what the course is about.)

D. **Collaboration:** As described in the syllabus, you are welcome—even encouraged—to discuss and debate the questions with other members of the class, and even to work out answers collaboratively. If worked on in groups, responses may be submitted:

  1. Individually, by each group member, in which case, each person should write their own reply, listing all the other group members at the beginning, and giving acknowledgment, on a point-by-point basis (in the way that would be appropriate in a professional paper), of the insights, contributions, and/or suggestions of the others.

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[1]**http://www.ageofsig.org/courses/b609**

[2]Computer scientists without prior philosophical experience may find this extremely difficult, at first. Foundational questions don't have "answers" in any traditional sense. Talk to others if this proves to be strenuous for you.

2. If it is acceptable to all parties, as a single document written by the group as a whole,[3] in which case the response should be posted under the name of one group member, begin with a list of all group members, and indicate, throughout the response, contributions of each member, as appropriate.[4]

E. **References:** Unless otherwise indicated, all references are to the draft versions of chapters of *The Age of Significance*, available on the class web site.

F. **Questions:** If you have questions, please ask in class, or send e-mail to <smithbc@indiana.edu>. Unless it is for some reason inappropriate, I will copy and/or summarise the question, and send the answer to the whole class.

II. Assignment

A. Of the six primary construals we've talked about in class:
1. Identify which one you feel gets at what you think is most important about computation;
2. Write a paragraph or two saying why you think it deserves this preeminence. What does it deal with, what does it say, that strikes you as most important?

Note: if you are a philosopher or cognitive scientist without much computational expertise, you might answer this with respect to a computational theory of mind, instead of computing per se.

B. Identify some phenomenon in the practice of computing—some issue or aspect or problem that comes up in real-world settings—that is currently *not* very well understood, but that you think *ought* to be understood, and *could* be understood if we had a better theory. I.e., describe your favourite internal-to-computing target for theoretical reconstruction.[5]
1. Describe the phenomenon briefly.
2. Say what it is about it that is not adequately treated in the current state of the (theoretic) art. If possible, say *why* this aspect of computing has resisted (or at least escaped) adequate theoretical reconstruction.
3. Discuss the kinds of trouble that people (programmers, theoreticians, designers, users) get into, in virtue of the present lack of adequate understanding (for example, describe bugs that have resulted, programs that have been hard to write, analyses that have been hard to frame, intuitions [e.g., about mind] that have been hard to formulate, etc.).
4. As best you can, identify the kinds of issue an adequate treatment should deal with.
5. Identify which of the six primary construals of computation we are considering is most likely (in your opinion) to point in the direction of a tenable answer. Or if none of them, then say what alternative construal, in your opinion—either one of the other three listed in the side-bar on AOS pages 1·2·4 (i.e., page 4 of chapter 2 of volume I), or another one that you believe exists, or even one that you think *should* exist but does not—is mostly likely to get us closer to an answer.

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[3]Or by a subgroup of the whole group, if appropriate.

[4]Obviously, exact credit will be impossible to assign. What is expected are comments such as: "The basic idea was Randy's; but details were developed in discussion with Pat, Hilary, and Llewelyn"; or "Overall, this part of the response was generated collaboratively, but it was Jedediah's idea to frame it in topological terms." Or whatever.

[5]Note: the phrasing of this question was modified slightly on January 12, 2001.