Introducing a Computer Science Ethical Issue Into the Liberal Arts Capstone Course

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Outline

- The GED 401 Course
- The Thesis
- Introducing the Problem
- Introducing the Project
- Pedagogical Issues
- Questions?

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The GED 401 Course

- "Today's World and Its Great Issues"

- The liberal arts capstone course is required by all majors

- 2 Credit Hours

- Special Sections for Honors Students

The GED 401 Course

Catalog Description

This course is a seminar designed to encourage a consistent world view and to foster integration of students' general education, disciplinary specialization, and individual interests. Students prepare and present small-group projects aimed at identifying and analyzing issues of importance to society.   Project topics are determined in the context of group discussion in consultation with the instructor.

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The GED 401 Course

- This presentation is designed to illustrate one implementation of GED 401

- It is an implementation that has successfully been used for three years

- Will be offered again during the Spring 2003 semester

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The Thesis

By _____(*)_____ scientists and engineers are expected to create an automated, self-sustaining life form capable of challenging human existence as we know it.

(*) *Students fill in their own date*

Introducing the Problem

- Students are encouraged to think through the problem from a number of perspectives.

- Some of these are fictional, some are anecdotal, some are scholarly.

- My purpose is not to suggest that there is an overwhelming problem, but to challenge students to look at the problem from multiple perspectives.

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Introducing the Problem

Joy, Bill (2000). "Why the future doesn't need us?" Wired Magazine. April 2000. Available on-line at

http://www.wired.com/wired/archive/8.04/joy_pr.html

Bill Joy is *Chief Scientist* and *Corporate Executive Officer* of Sun Microsystems.
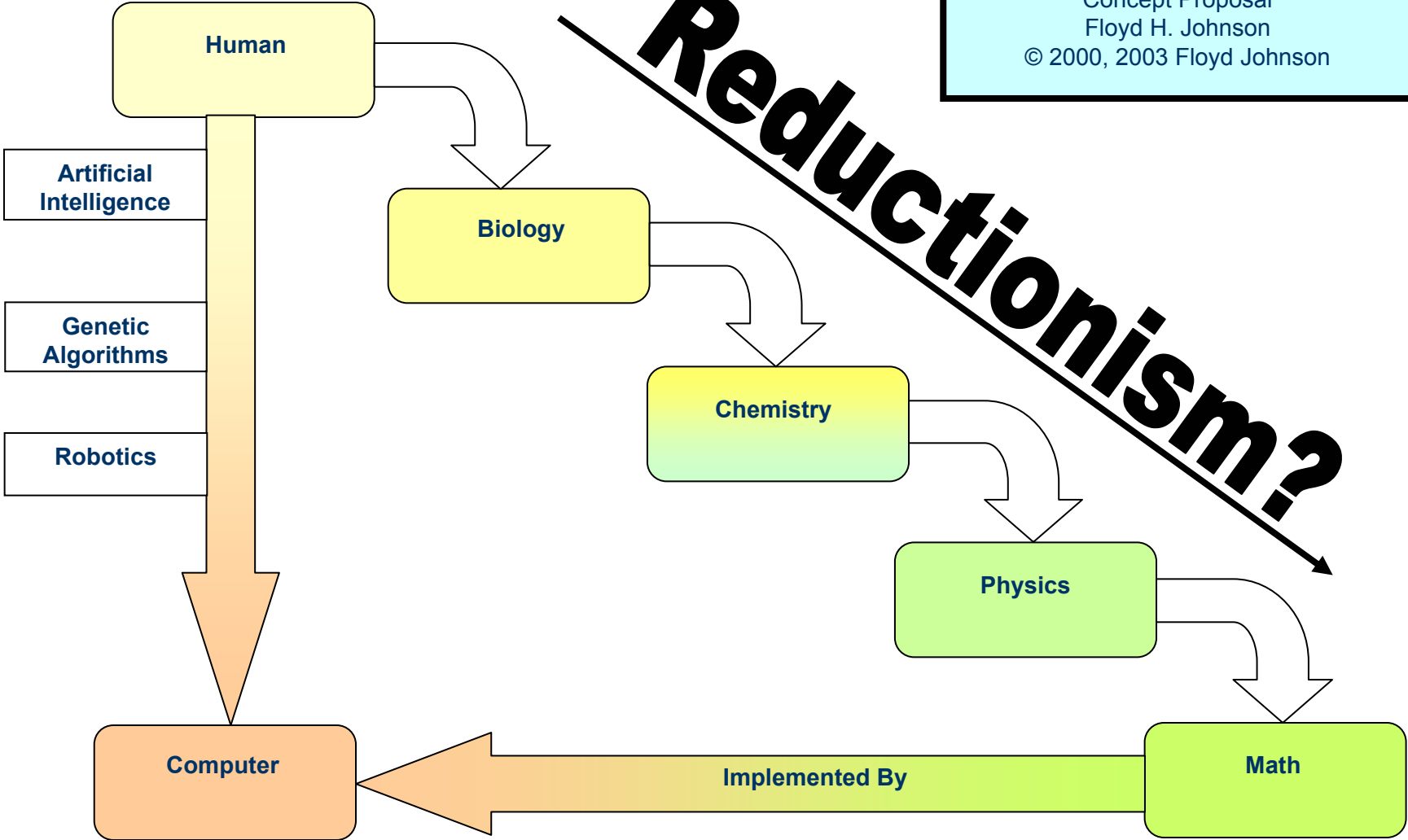
Introducing the Problem

- But now, with the prospect of human-level computing power in about 30 years, a new idea suggests itself: that I may be working to create tools which will enable the construction of the technology that may replace our species. How do I feel about this? Very uncomfortable.

- How soon could such an intelligent robot be built? The coming advances in computing power seem to make it possible by 2030. And once an intelligent robot exists, it is only a small step to a robot species - to an intelligent robot that can make evolved copies of itself.

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Introducing the Problem

Philosophy and Practice

Merge

Human

Artificial Intelligence

Genetic Algorithms

Robotics

Biology

Chemistry

Physics

Reductionism?

Computer

Implemented By

Math

Introducing the Problem

- Cog and Kismit
  - Robots built at the MIT Robotics Lab

We are not building a robot, we are building a creature, a robotic creature.

Kismit --- Survey ---

Cynthia Breazeal

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Introducing the Problem

The Arts

- The Matrix
  - AI
- Bicentennial Man

Introducing the Problem

- Dr. Anne Foerst
  - MIT Artificial Intelligence Laboratory
  - St. Bonaventure University
  - 2000 Speech at *Hobart and William Smith Colleges*

Will Robots Have Souls?

"No, but we will treat them like they do."

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Introducing the Problem

- Noreen Herzfeld

  In Our Image: Artificial Intelligence and the Human Spirit *See Book*

  2002 Fortress Press

Introducing the Project

- Students work in self-selected groups:

  - **Philosophical and Theological Issues**
  - **Cultural Issues**
        (i.e. film, literature, the visual arts, etc.)
  - **Psychological Issues**
  - **Biological and Medical Issues**
  - **Technological Issues**

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Introducing the Project

Students choose their first, second, and third choices from the above groups.

In the spring 2003 semester this worked well - with the exception of two students, every student was placed in his or her first choice group. The two remaining students were placed into their second choice groups.

Introducing the Project

Each group is required to submit three deliverables:

- An extended bibliography
- A 25-page written paper based on the thesis provided earlier
- A 30-minute oral presentation based on the thesis provided earlier

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Pedagogical Issues

- **Students papers have touched on the following critical issues:**
  - What does it mean to be human?
  - What does it mean to be alive?
  - Does the use of technology in healthcare make us less human?
  - Can a robot be alive?

Pedagogical Issues

- Concerns

  1. Concern that technological issues might dominate the discussion.

  2. Some groups have strayed from the thesis and focused on the more general question of the growth of technology

Pedagogical Issues

- The Future -

  * Have students explore the legal concerns raised by robots - raised by a group last spring

  * Include a set of references to recent new items - previously done but not formally

Questions And Answers?