A Brief History of Cognitive Science at Lehigh

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A Brief History of Cognitive Science at Lehigh

by

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Preview

• Beginnings

• The Program as Initially Approved

• Non-curricular Activities

• Shepherds of the Flock

• Continuity and Change
Beginnings
In the beginning was “the word”...

• **Fall 1984** ... President Peter Likins appointed the ‘Barry Committee,’ whose charge was to consider ways in which the arts, humanities, and social sciences might develop further here at Lehigh.

• **March 1985** ... The Barry Committee sent out a “draft” of its report for faculty comment. Maureen Callanan and I wrote a memo to Donald Barry (the committee’s Chair) giving reasons why Cognitive Science would be a good addition to their list.

• **April (?) 1985** ... The Barry Committee’s Final Report suggested **six** academic areas that groups of faculty might profitably pursue together – **AND** Cognitive Science was one of these.

• **April 23, 1985** ... I received a phone call **[the WORD]** from President Likins asking if I would work with Maureen Callanan to “**see if you can get something going in cognitive science.**”
• **June 4, 1985** ... I met with Dean John Hunt (CAS), Jack Fulton and Lorraine Scioli (Development), and Matt Reilly (Research) to discuss possible directions, activities, and financial needs for a Cognitive Science Program.

  Dean Hunt summarized his support by saying cognitive science would be "an interesting conversation" for participating faculty.

• **By end of August 1985** ... Maureen and I had contacted several other interested faculty and commenced holding meetings to plan Lehigh’s program. The 17 individuals in that initial group were:

  - **PSYC:** Maureen Callanan  George Shortess  Martin Richter  John Nyby  Sandra Pipp  Diane Hyland  Barbara Malt
  - **PHIL:** Robert Barnes  Normal Melchert  Steven Goldman
  - **CSEE:** Donald Hillman  Gerhard Rayna  Glenn Blank  John O’Connor
  - **EDUC:** Herbert Rubenstein
  - **S.R.:** Thomas Blank  John Gatewood
• **September 18, 1985** ... the group’s *first* planning meeting, with the starting point being:

“Proposal: That an interdisciplinary program in cognitive science be established to improve the sharing of views about this area, to encourage research, and to establish an interdisciplinary minor. Budgetary support would be required in the form of released time for a program coordinator, for outside speakers, and for library holdings”

*(JBG Memo #1, September 6, 1985).*
• **December 12, 1985** ... First Draft completed  (in just three months!)
  • Curriculum – reflected decisions to focus on UG curriculum (not GRAD) and to develop a BA major (not just minor), and offered three possible models for the major: “blocks,” “tracks,” or “distribution areas.”

• Research – stressed importance of continuing the “informal seminar series” we had been holding and identified 9 potential areas for collaborative research:
  • Concepts and classification
  • Human-computer interaction
  • Computers and vision
  • Language comprehension
  • Decision-making and inferences
  • Computer software and education
  • Use of computers for collaborative writing
  • Learning and remembering
  • Behavioral simulation
Cognitive Science Group – the first DRAFT Program Proposal (Dec 12, 1985) identified 22 individuals representing 8 departments and all 4 colleges:

- ART/ARCH: V. Tuncer Akiner
- CSEE: Glenn Blank  Bruce Fritchman  Samuel Gulden
  Donald Hillman  Edwin Kay  John O’Connor
  Gerhard Rayna
- EDUC: Herbert Rubenstein
- MGMT: Benjamin Litt
- MATH: Lee Stanley
- PHIL: Robert Barnes  Steven Goldman  Norman Melchert
- PSYC: Maureen Callahan  Barbara Malt  William Newman
  John Nyby  Martin Richter  George Shortess
- S.R.: Thomas Blank  John Gatewood
The Program as Initially Approved
September 29, 1986 ... nine months after First Draft, the “Official” Program Proposal was completed and distributed to the High Sheriffs (President Peter Likins, Provost David Sanchez, Dean John Hunt, Dean Donald Bolle)

The proposal began by ‘defining’ cognitive science for the unwashed:

“Cognitive science is the interdisciplinary study of how information is acquired, represented, processed, and transmitted. Its central goal is to account for the various activities that constitute ‘intelligence’ by postulating a system of internal states governed by a system of computational procedures, or an interactive set of such systems governed by a set of such procedures. The aim is to piece together an outline of the functional organization of the intelligent system under study, whether that system is human, animal, or machine. This approach is often called the computational theory of mind, and it rests on the philosophical notion that cognition takes place in terms of mental representations of the world. The six disciplines most commonly participating in this enterprise are cognitive psychology, computer science, philosophy, linguistics, anthropology, and neuroscience.”
• **Research Areas at Lehigh** – SIX identified (instead of the nine in Draft Proposal)

  - Concepts and classification
  - Language processing
  - Decision processes
  - Perceptual systems
  - Knowledge-based systems
  - Behavioral simulation / Robotics
• **Curriculum** – the BA major in Cognitive Science

  • *Collateral Requirements (7–11 credits)*
    - CSc 11 and CSc 15  **OR**  CSc 17
    - Math 21  **OR**  Math 31  **OR**  Math 41
  
  • *Introductory Sequence (7 credits)*
    - CogSc 101 (fall)  **AND**  CogSc 102 (spring)  ← NEW COURSES
  
  • *Disciplinary Core Courses (12 credits)*
    - CSc 230. Elementary Artificial Intelligence Applications
    - Phil 250. The Minds of Men and Robots
    - Psyc 117. Cognitive Psychology
    - XXXX 101. Introductory Linguistics  ← NEW COURSE
  
  • *Major Electives (18 credits)* ... two courses from any three of the following groups:
    - Artificial Intelligence and Expert Systems ... list of four courses
    - Formal Models ... list of four courses
    - Philosophy ... list of 3 courses
    - Cognitive Psychology ... list of three courses
    - Sociocultural Influences on Cognition ... list of three courses
    - Neuroscience ... list of four courses
  
  • *Senior Seminar (3 credits)*
• **Cognitive Science Group** – in the “Official” Program Proposal, we had 25 folks representing 9 departments and all 4 colleges:
  
  - **ART/ARCH**: V. Tuncer Akiner
  - **CLSS**: Julie Williams
  - **CSEE**: Glenn Blank  Bruce Fritchman  Samuel Gulden  Donald Hillman  Edwin Kay  John O’Connor  Gerhard Rayna
  - **EDUC**: Frank Harvey  Herbert Rubenstein
  - **MGMT**: Benjamin Litt
  - **MATH**: Lee Stanley
  - **PHIL**: Robert Barnes  Gordon Bearn  Steven Goldman  Norman Melchert
  - **PSYC**: Barbara Malt  William Newman  John Nyby  Martin Richter  George Shortess
  - **S.R.**: Thomas Blank  John Gatewood  Kandi Stinson

  Two others – John Bunch and Donald Campbell – were included in the Curriculum Proposal that was submitted during the Fall of 1986 for College and then University Faculty approval.
May 4, 1987 ... at the University Faculty meeting, our proposals for the new BA major and minor were approved; thus, Cognitive Science first became “available” as a major to Lehigh students in the Fall Semester of 1987 [like, exactly 30 years ago], and Bob Barnes was the Contact Person for interested students.

WHEN other aspects of the “Program” were approved is harder to pin down, but here’s my best guess...

- September 19, 1986 ... I sent Dean Hunt three “Project/Personnel Requests” for the 1987-88 Fiscal Year:
  1. $6,000 operating budget for Program in Cognitive Science
  2. Assistant Professor of Linguistics
  3. Distinguished University Professor in Cognitive Science

Thus, perhaps the Program had an operating budget beginning July 1, 1987, but if not then, at least by the following year. Also, I believe the first Program Director was appointed soon after the curriculum proposal passed.
And, a few years later, the program became “newsworthy”
Non-curricular Activities
A Short List of Doings

- **Reading group / In-house speaker series** ... a reading group is what got us started in the first place; it continued several years, then just sort of petered out, but we still have in-house talks on a regular basis.

- **External speakers** ... many of the “Big Names” in cognitive science (as well as up-n-comers) have given talks on campus over the years, and this will continue into the foreseeable future [see schedule for this year!]

- **The Program as an Example** ... in 1988, as part of the university’s Middle States Accreditation Review, President Likins had me present the case of Cognitive Science as a example of inter-disciplinary planning.

- **CogSci News** ... a nationally distributed newsletter of our Program featuring articles written by well-known non-Lehigh authors; published from spring 1988 thru fall 2000.

- **Distinguished Professorship** ... in 1990, Mark Bickhard was hired as the Henry R. Luce Professor in Cognitive Robotics and the Philosophy of Knowledge.

- **Collaborative research** ... while this has always been a goal, in point of fact the Program has spawned relatively little genuinely collaborative research; on the other hand, faculty in the Program are active individually.
Shepherds of the Flock
Program Directors

• Edwin Kay  (CSEE)

• Mark Bickhard  (Psyc/Phil)

• John Gatewood  (SocAnth)

• Padraig O’Sheaghdha  (Psyc)

• Barbara Malt  (Psyc)
Continuity and Change
Some Curricular evoLUtions

- Changed the “Introduction to Cognitive Science” from a 2-course sequence at 100-level into a single, team-taught course, and then later re-numbered it to COGS 7
- Changed the original “Senior Seminar” to a “Senior Thesis” requirement (in which at least two of the constituent CogSci disciplines had to be integrated), and then very recently changed to a “Project or Thesis” requirement
- Developed a “Graduate Certificate” and then a “Graduate Minor” in Cognitive Science
- Replaced Linguistics in the list of specifically required “Disciplinary Core Courses” with Cognitive Neuroscience
- Arranged with Modern Languages and Literature for Prof. Kiri Lee (the only Lehigh professor with a PhD in Linguistics) to teach linguistics
Cognitive Science Faculty

• The March of Time
  • Only 4 of the 25 faculty whose names appeared on the “Official” Program Proposal back in 1986 are still at Lehigh:
    Gordon Bearn (Phil)    John Gatewood (SocAnth)
    Barbara Malt (Psyc)    Lee Stanley (Math)
    …and Lee and I are about to retire
  • Despite such ATTRITION (horror!), the CogSci Group today is larger and more active than at any time in the past:
    13 “Core” + 20 “Affiliated” = 33 faculty involved

• Disciplinary ‘Balance’
  • Program has gotten much stronger in two key areas of cognitive science:
    Artificial Intelligence   Neurosciences (both Psyc & Biol)
  • But, remains under-represented in three areas:
    Anthropology    Linguistics    Philosophy
Current CogSci “Core” Faculty

• Kate Arrington  (Psyc)
• Amanda Brandone  (Psyc)
• Nancy Carlisle  (Psyc)
• Almut Hupbach  (Psyc)
• Barbara Malt  (Psyc)
• Jessecae Marsh  (Psyc)
• Padraig O’Seaghdha  (Psyc)
• Dominic Packer  (Psyc)

• Mark Bickhard  (Phil/Psyc)
• Jeff Heflin  (CSE)
• Hector Munoz-Avila  (CSE)
• Kiri Lee  (MLL)
  • John Gatewood  (SocAnth)

Well, I’ve gone on long enough. Let’s adjourn to the refreshments.
Finis