COGS 200

An Introduction to Cognitive Systems

Two Great Mysteries

- How is it possible for a material creature to display the properties that are essential to life?

James Watson
(1928 -)

Francis Crick
(1916 - 2004)

"It has not escaped our notice that the specific pairing we have postulated immediately suggests a possible copying mechanism for the genetic material"

Watson and Crick, 1953

Two Great Mysteries

- How is it possible for a material creature to display the properties that are essential to life?

- How is it possible for a material creature to display the properties that are essential to the mind?

"We can certainly conceive of a machine so constructed that it utters words [...] But it is not conceivable that such a machine could produce different arrangements of words so as to give an appropriately meaningful answer to whatever is said in its presence, as even the dullest men can do."
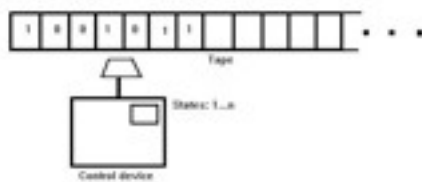
Descartes, *Discourse on The Method (1637)*

Alan Turing

1912-1954

Claude Shannon

1916-2001

"It was suggested tentatively that the question, 'Can machines think?' should be replaced by 'Are there imaginable digital computers which would do well in the imitation game?'"

Turing, 1950

"The original question, 'Can machines think?' I believe to be too meaningless to deserve discussion. Nevertheless, I believe that at the end of the century the use of words and general educated opinion will have altered so much that one will be able to speak of machines thinking without expecting to be contradicted"

(p. 442)

"Descartes' dualism is motivated by his desire to explain rationality and the will; he did not see how a thinking thing, the author of thoughts and deliberative actions, could be contained in the brain. With the advent of modern computer science, which translated reasoning into logic and logic into electronic chip, there has been less anxiety about explaining reasoning mechanically."

(Prinz, 2012, p. 8)

Noam Chomsky

1928 -

Claude Lévi-Strauss

1908-2009

"Syntax does not wait until it has been possible to enumerate a theoretically unlimited series of events before becoming manifest, because syntax consists in the body of rules which presides over the generation of those events. And it is precisely a syntax of South American mythology that I wanted to outline."

(*The Raw and The Cooked*, 1964, p. 16)

F. R. Leavis
1895-1978

Lord Charles Snow
1905-1980

- "an utter lack of intellectual distinction, and an embarassing vulgarity of style"

- "intellectually as undistinguished as it is possible to be"

- "utterly without a glimmer of what creative literature is, or why it matters"

"I was, I confess, a little amused when, sitting at a formal lunch next to the director of City Art Gallery, I was told by him, in the tone of one saying something very impressive: 'A computer can write a poem'

- I replied, very naturally, that I couldn't accept that, adding that it was one of the things that I knew to be impossible.

When he responded by being angry, fierce and authoritative, I reflected that he was German, if an émigré, and that in any case his business was *Kunst* and he hadn't said that a computer could paint a work of art."

(Leavis, 1971)

Two Great Mysteries

- How is it possible for a material creature to display the properties that are essential to life?

- How is it possible for a material creature to display the properties that are essential to the mind?

Cognitive *Systems?*

- COGS is not quite the same as Cognitive Science.

- Cognitive Science is the study of how information processing in the brain gives rise to intelligence.

- We aren't especially interested in the brain.

Cognitive *Systems?*

- Nor is COGS quite the same as Artificial Intelligence.

- Artificial Intelligence is largely concerned with software engineering.

- We're more concerned with actual human conduct.

Cognitive Systems Research

- Using Optic Flow Analysis to predict dangerous behaviour in crowds at concerts and protests.

- Developing haptic navigation aids for blind swimmers.

- Using visual analytic software to explore large databases of dream reports.

- Using text analysis algorithms to summarize online product reviews.

- Developing new tools for musical performance from dynamic analyses of musicians.

- Applying sport psychology in the development of immersive video games.

Four Disciplines

- Linguistics
- Psychology
- Computer Science
- Philosophy

Personnel

- Christopher Mole
- Buchanan E 369
- Friday, 9-10 (or by appointment)

Personnel

- Laurel Fais
- Audain Art Centre, 4037
- Tuesdays 12-1:15.

Personnel

- Bob Woodham
- ICIS/CS Room 119.
- Monday, 1 - 2:30

Personnel

- Katya Feffer
- COGS Lab
- Wednesday 2-3

Personnel

- David Marino
- COGS Lab
- Friday 2-3