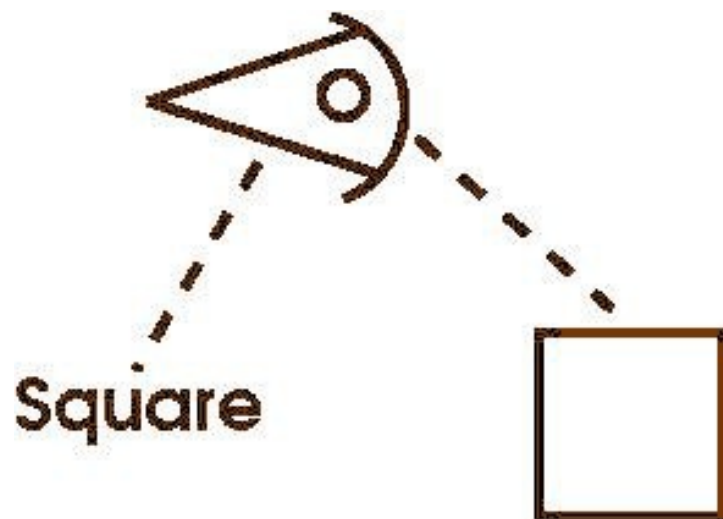


# In Search of the Concept CONCEPT



# Motivations

*“For reasons I'll try to make clear, the heart of a cognitive science is its theory of concepts. And I think that the theory of concepts that cognitive science has classically assumed is in a certain way seriously mistaken.”*



# Framing the Question

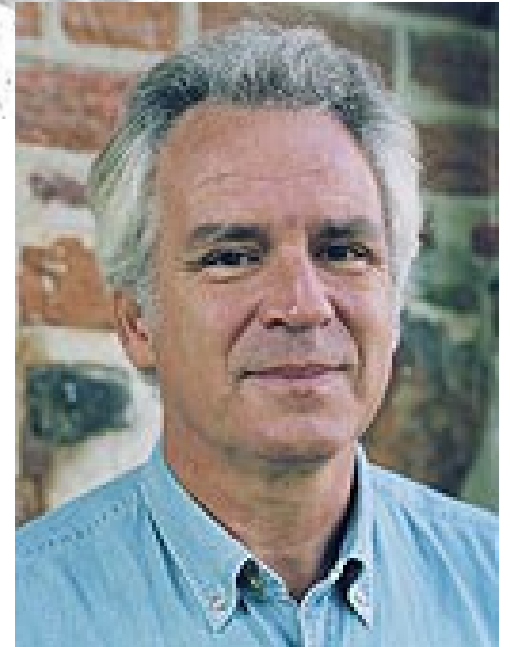
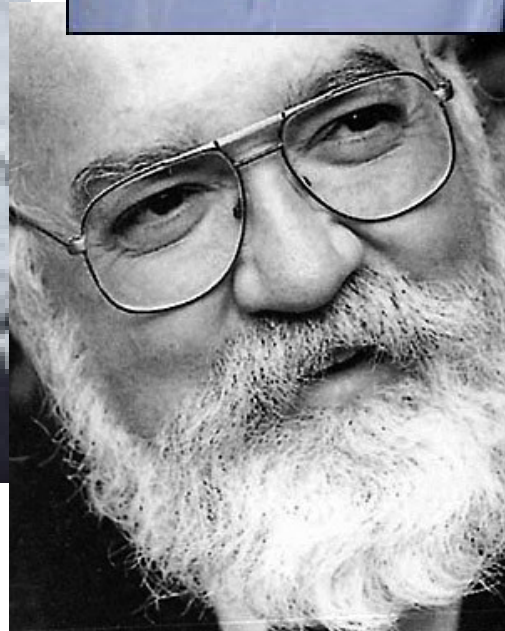
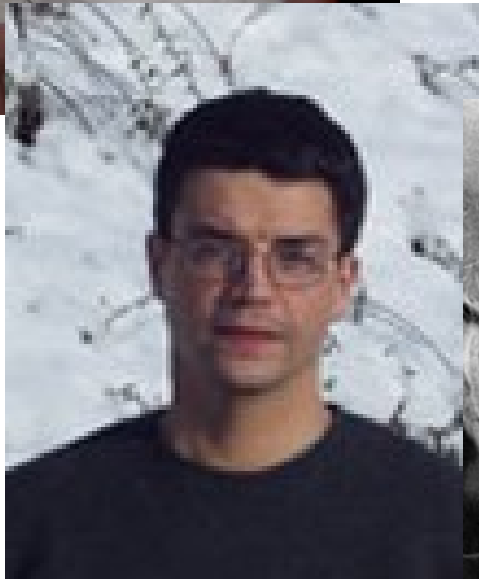
- What is a concept?
- What is our concept of concept (the concept CONCEPT)?
- How should we specify the content of a concept?
- What is our theory of concepts? (Do we even need one?)
- What application are we going to make of our concept CONCEPT?

# Things to Touch Upon

- The role of logic and paradox.
- The role of resemblance (or structural isomorphisms).
- The relation of conceptual to non-conceptual content.
- How my work with Ron on the AIBO may\*\* fit in.

\*\* Steve says does. :-)

# Concepts: Content and Constitution



# What is a Concept?

- **Bermudez: concept = mental representation**; attempted to specify conceptual content by clarifying non-conceptual content, which he said had been badly used and abused.
- **Ashby: concept = category**; contrasted two kinds of category learning, with neural correlates.
- **Prinz: concept = perceptual representation**; defended concept empiricism against concept rationalism re Fodor.
- **Milliken: concept = re-identification**; made much of the role of “useless” information that nevertheless ends up being useful.
- **Dennett: concept = explicit propositions or rules of procedure**; made familiar contrast between source code and compiled code.

# Gärdenfors: Conceptual Spaces

- Modeling concepts in non-language-bound way through the “language” of geometry.
- Concepts are *shapes* within *conceptual spaces*.
- Dimensions are qualitative ones; for colour: hue, brightness, intensity.
- Concepts are convex shapes.
- **Publicity**: no need for any two people to share precisely the same concept.
- Minds meet at the “fixpoint”.

# What is a Concept?

- **Folk Psychology**: idea of something (not the something itself).
- **Philosophy Baseline Model**: sub-propositional components of thought.
- representations --> mental representations.
- “constituents of mental states” (Fodor).

# Standard & Less Standard Extensions

- Might include propositions as a special category of concepts.
- Concepts as scale models.
- Concepts as likenesses of their referents.
- Concepts as patterns (and patterns of patterns, etc.) perceived through the various sense modalities.
- Concepts as perturbations (operationally closed systems).

# Specifying the Content

- On one hand, classical definitionism appealed for a reason.

*when laypeople or theorists reflect on concepts **as** concepts*

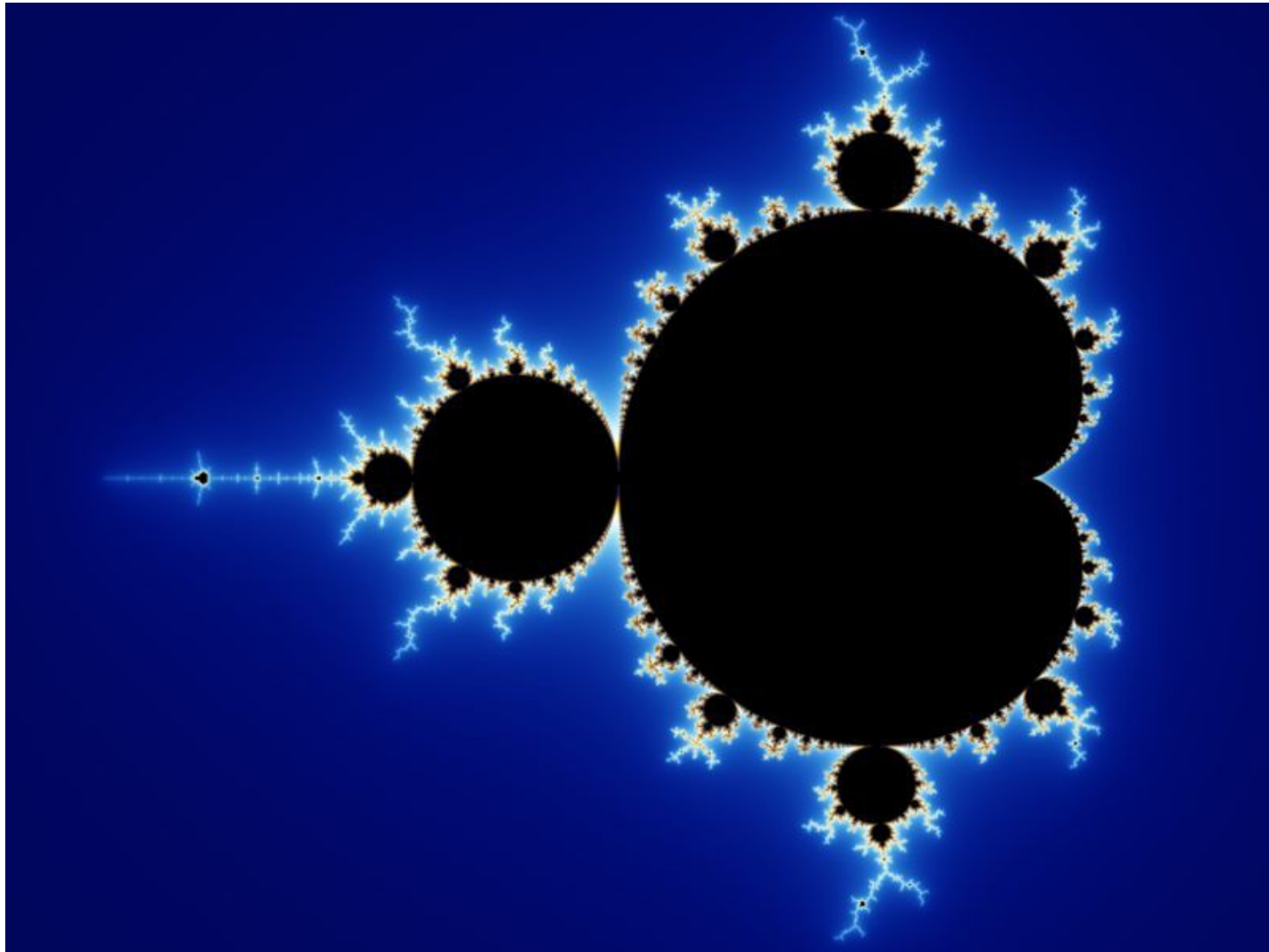
- On the other hand, specifying the content of concepts (solely) **with** concepts invites all the usual paradoxes.
  - The concept of all possible concepts.
  - Grelling's paradox.

# The KISS Principle

*“If concepts are structurely uniform (or uniformly unstructured), a uniform theory of concepts is easier to achieve.” [Furnishing the Mind: p. 94]*



**“How Can Something So Simple  
Yield Something So Complex?”**



# Theories of Concepts

- Classic definitionism: concepts are strings of other concepts.
- Imagism: concepts are “pictures in the head”.
- Theory theory: hypotheses within theories.
- Prototype and exemplar theories.

# Fodor vs. Prinz

- Rationalism vs. concept empiricism.
  - *Prinz* : rationalists can't avoid resort to perceptual representations.
- Informational atomism vs. informational semantics *without* the atomism.
  - *Fodor* : informational semantics just *is* naturally atomistic.
- Is it possible to have the explanatory benefits of both perspectives?

# Representational vs. Non-Representational

- On one hand, “concepts” and “mental representations” are often used interchangeably.
- On the other, people like Inman Harvey (and Mike Beaton?) say that much of the usual talk of “representations” is close to incoherent.
- Maybe it's safe to use representational language for *functional* accounts but not for *operational* ones?

# toggling Between 2 Perspectives

- **Intuition:** (at least) two apparently incommensurable *conceptual* perspectives that we toggle between constantly.
- Central to (understanding) (human) cognition.

*concepts as composed of concepts vs. concepts as  
(conceptually) atoms*

Relates to:

*representational talk is necessary vs. meaningless  
thoughts (cognition) vs. thoughts about thoughts  
(meta-cognition)*

# toggling Between 2 Perspectives Conceptualized vs. Non-Conceptualized

- Current sensory data\* is paradigmatically non-conceptual content. \* (don't want to call it “input”)
- “Experience in the moment”.
- Experience is more than visual experience and visual experience is more than current data from the visual field.

*“And here, too, Prinz's proxytypes-as-models may have their value, confirming our expectations of the world around us: concepts projected over top of non-conceptualised experience and all but obscuring it, so that we might even think sometimes that the non-conceptualised experience does not exist.”*



# Theory into Practice

*What is a concept?*

*What is a concept with respect to application x.*

- **Premise**: The answer one gives depends on the application one needs it for.
  - CYC project gives one answer.
  - A “playground of conceptual building blocks” would give another.
  - BUT: Any answer, to be in any sense complete, will come back to this “togglng” between 2 perspectives.

# Theory into Practice

- Work with Ron on the AIBO\*. \*I wanted to call our system SEER-AIBO or SEER-DOG; Ron's calling it SEER-3.
- Tight loop between theory – implicit model – explicit representation – implemented model – theory.
- So : Setting out some new or revised theory of concepts not enough – need a test environment.

*The proof is in the pudding!*

# Ideas to Take Away

- Concepts are, in one important sense, shapes.
- You can like Jerry and Jesse, too.
- Simple contradictions should be avoided, but paradoxes should be held onto.
- *In particular*, toggling between (at least) two contrasting perspectives on concepts is probably necessary to understanding human cognition.
- You won't know if it flies till you take it for a spin.

