Meaning = Property List

Malcolm Gillis:

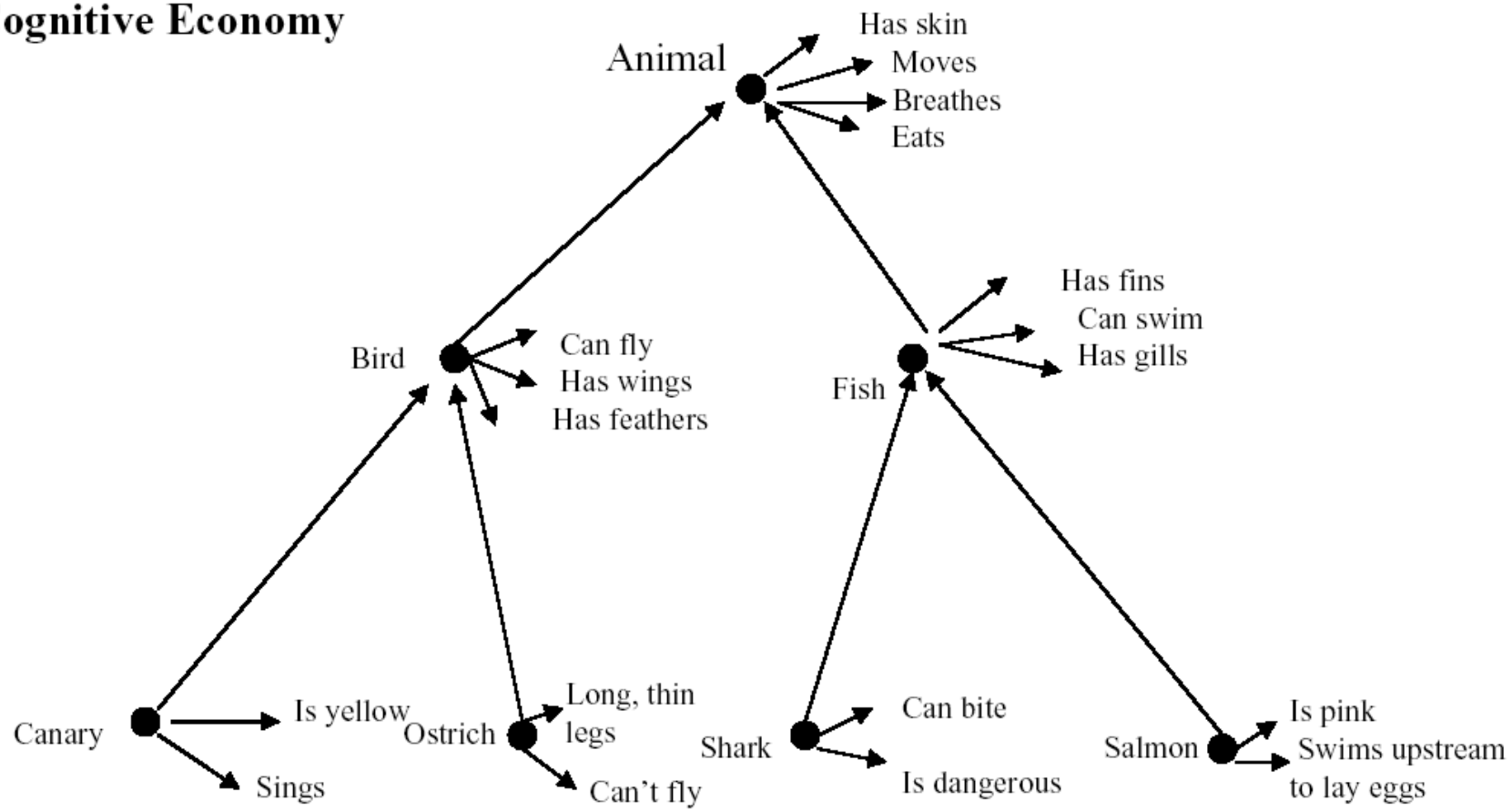
President of Rice
has skin
breathes
moves

Verification task: say yes or no as fast as possible

A canary is yellow.
A robin is green.
A canary can breath.
A book can swim.
A salmon is a fish.
A salmon is an animal.

Property questions
Category membership questions

Cognitive Economy



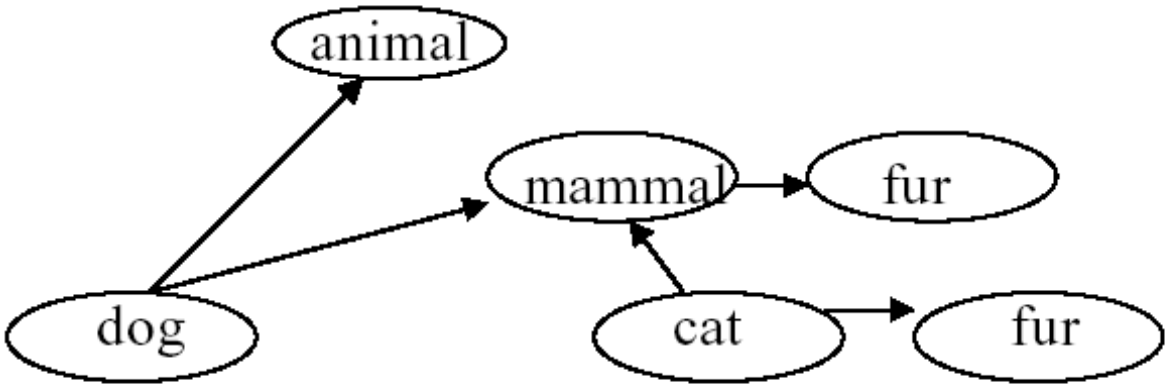
Problems:

A dog is a mammal.
A dog is an animal.

A cat has fur.
A cat purrs.

A robin is a bird.
An ostrich is a bird.

Give up on cognitive economy and strict hierarchy?



Spreading activation model-

1. Needs labelled links - isa, hasa
2. Strength of link depends on familiarity of pairing

Classical View

Defining features -
Necessary and sufficient features for category membership

e.g., Bachelor

human
male
unmarried

Typicality Effects - Rosch (1970s)

Clothing:

Dress
Slacks
Vest
Hat
Belt
Socks

Basis of typicality effects?

Property lists -

No defining features

Family resemblance

Prototypes

Robin:

Red-breast
Small
Wings
Flies
Sings
Builds nest in trees

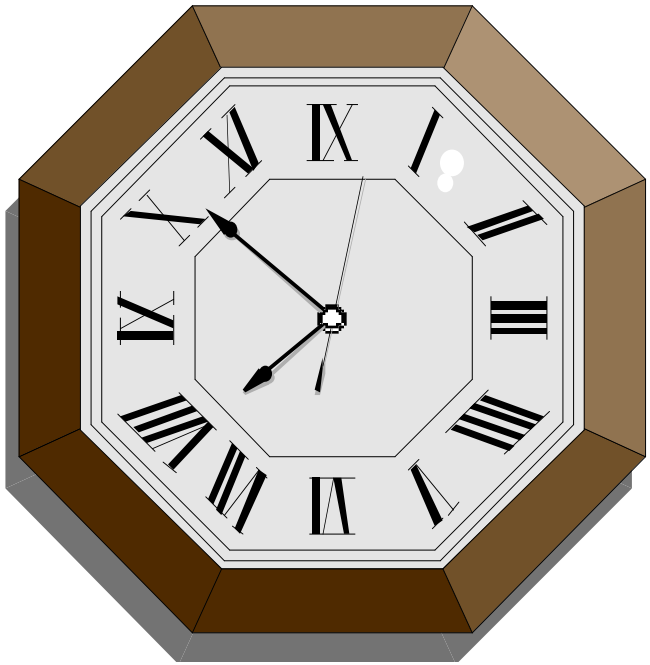
Bird:

Wings
*Small
*Flies
*Sings
*Builds nest in trees

Ostrich:

Large
Wings
Runs (doesn't fly)

Hierarchical Level of Object Identification?



Position in the hierarchy:

Superordinate: furniture (?), household object

Basic: clock

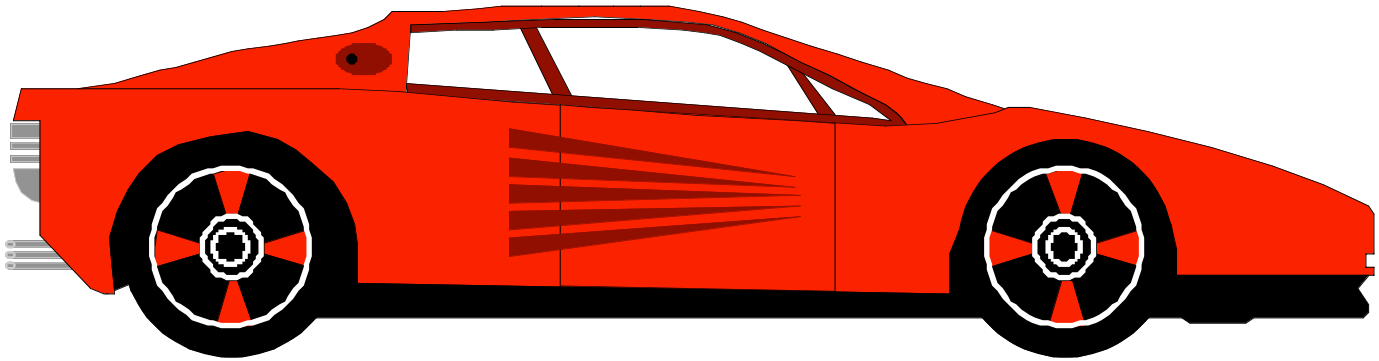
Subordinate: wall clock

Rosch and colleagues:

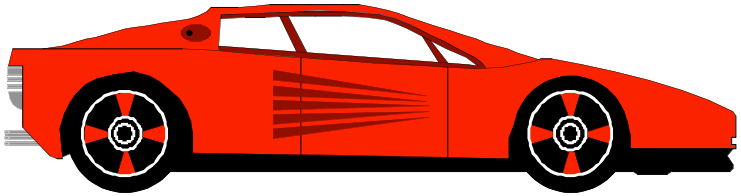
single objects identified most readily at basic level

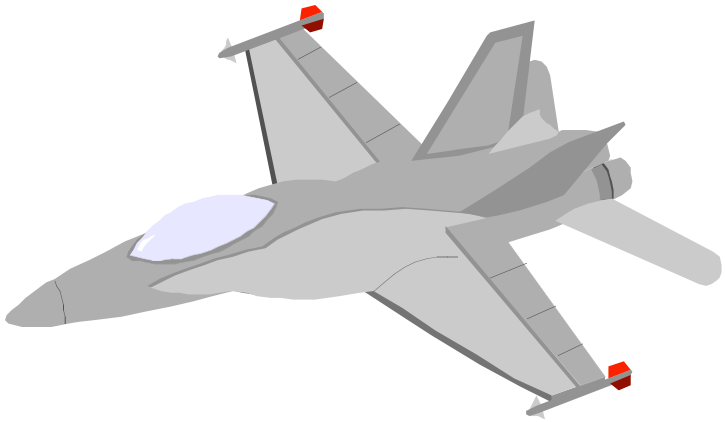
highly similar within category/highly distinctive between

Exceptions?



Groups of items?





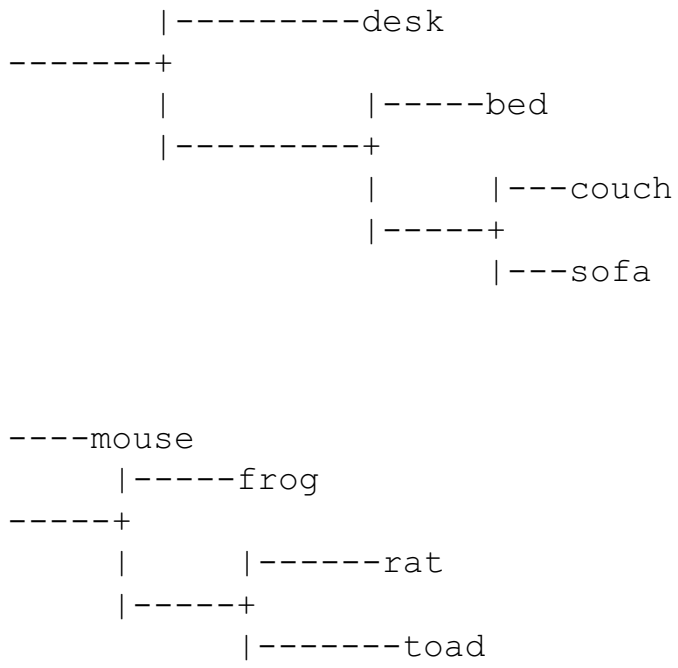
Other approaches to meaning representation:

1. Instance theories (Nosofsky)

2. Theory theory (Medin & Murphy)

3. Multi-dimensional based on association (Landauer, Burgess)

HAL - Hyperspace analogue of language (Burgess)



Selective Semantic Deficits

"Semantic dementia"

Semantics disrupted
Other language abilities preserved (syntax, phonology),
Good episodic memory, visual-spatial, general problem solving

Effects of brain damage on levels of hierarchy?

damage goes from lowest to highest level of hierarchy
(Warrington, 1975; Warrington & Shallice, 1979)

category (animal vs. object) > weight, size judgments

RW (Jonsdottir & Martin, 1996)

Naming items vs. groups

Basic - 59% correct
Superordinate - 28% correct

Errors on superordinate:
48% no response
24% semantically related (vegetable for fruit)
5% unrelated
23% enumerates items - “saw and hammer” “blouse, shirt, dress, pants” “cheese and food, but they’re all different”

Vehicles:

1. Picture word matching

Superordinate: 60% correct
Basic: 90% correct
Attribute level: 100% correct

2. Choose the vehicle from two pictures
Distractors had wheels (plow, toy duck)

70% correct

Recognition vs. Naming at Superordinate and Basic

Recognition - animal (mammal) vs. object:

Legs, eyes, head, ear, tail, mouth, fur (any preserved)

Naming at superordinate:

Requires more specific knowledge
Concept of superordinate

Category - specific deficits

Caramazza & Shelton (1999)
Naming percent correct

Animal - 34%
Body part - 92%
Clothing - 100%
Fruit - 100%
Furniture - 100%
Other - 87%

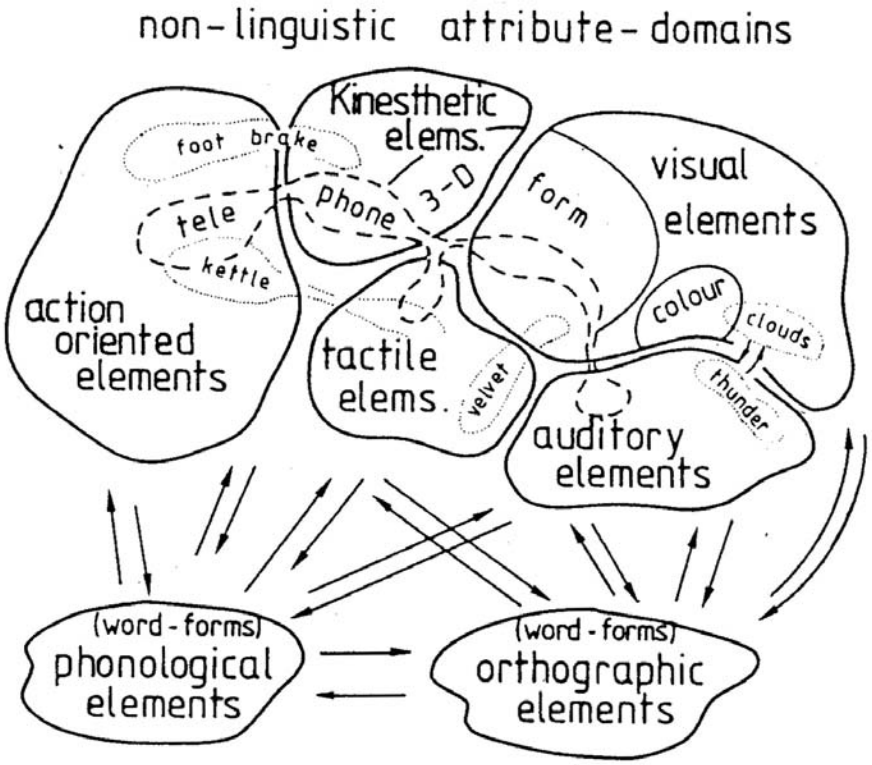


Figure 12.7. Allport's (1985) model of the accessing of semantic representations in word comprehension. Reprinted from Allport (1985) by permission of Churchill Livingstone.

Sensory - Functional Theory

Organized Unitary Content Hypothesis

Category-Specific Representations - Evolutionary Basis