

Index card question for today

What is an example of a feature that Wittgenstein mentions characterizes some games but not others?

Think 53: Food Talks

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Wittgenstein and Word Meaning

Thursday, April 20, 2017

What do words mean?

- First thought: look in a dictionary
- <http://www.oed.com/>

Words, Lemmas, and Senses

lemma

sense

pepper, *n.*

Pronunciation: BRIT. /'pepə/, U.S. /'pepər/

Forms: OE **peopor** (*rare*), OE **pipcer** (transmission error), OE **pipor**, OE **pipur** (*rare* .

Frequency (in current use):

Etymology: A borrowing from Latin. **Etymon:** Latin *piper*.

< classical Latin *piper*, a loanword < Indo-Aryan (as is ancient Greek *πίπερι*); compare Sar

I. The spice or the plant.

1.

a. A hot pungent spice derived from the prepared fruits (peppercorns) of the pepper plant, *Piper nigrum* (see sense 2a), used from early times to season food, either whole or ground to powder (often in association with salt). Also (locally, chiefly with distinguishing word): a similar spice derived from the fruits of certain other species of the genus *Piper*; the fruits themselves.

The ground spice from *Piper nigrum* comes in two forms, the more pungent *black pepper*, produced from black peppercorns, and the milder *white pepper*, produced from white peppercorns: see **BLACK adj.** and **n.** Special uses 5a, **PEPPERCORN n.** 1a, and **WHITE adj.** and **n.**¹ Special uses 7b(a).

2.

a. The plant *Piper nigrum* (family Piperaceae), a climbing shrub indigenous to South Asia and also cultivated elsewhere in the tropics, which has alternate stalked entire leaves, with pendulous spikes of small green flowers opposite the leaves, succeeded by small berries turning red when ripe. Also more widely: any plant of the genus *Piper* or the family Piperaceae.

b.

Usu. with distinguishing word: any of numerous plants of other families having hot pungent fruits or leaves which resemble pepper (1a) in taste and in some cases are used as a substitute for it.

c. U.S. The California pepper tree, *Schinus molle*. Cf. **PEPPER TREE n.**

3. Any of various forms of capsicum, esp. *Capsicum annuum* var. *annuum*. Originally (chiefly with distinguishing word): any variety of the *C. annuum* Longum group, with elongated fruits having a hot, pungent taste, the source of cayenne, chilli powder, paprika, etc., or of the perennial *C. frutescens*, the source of Tabasco sauce. Now frequently (more fully **sweet pepper**): any variety of the *C. annuum* Grossum group, with large, bell-shaped or apple-shaped, mild-flavoured fruits, usually ripening to red, orange, or yellow and eaten raw in salads or cooked as a vegetable. Also: the fruit of any of these capsicums.

Sweet peppers are often used in their green immature state (more fully **green pepper**), but some new varieties remain green when ripe.

Lemma pepper

Sense 1: spice from pepper plant

Sense 2: the pepper plant itself

Sense 3: another similar plant (Jamaican pepper)

Sense 4: another plant with peppercorns (California pepper)

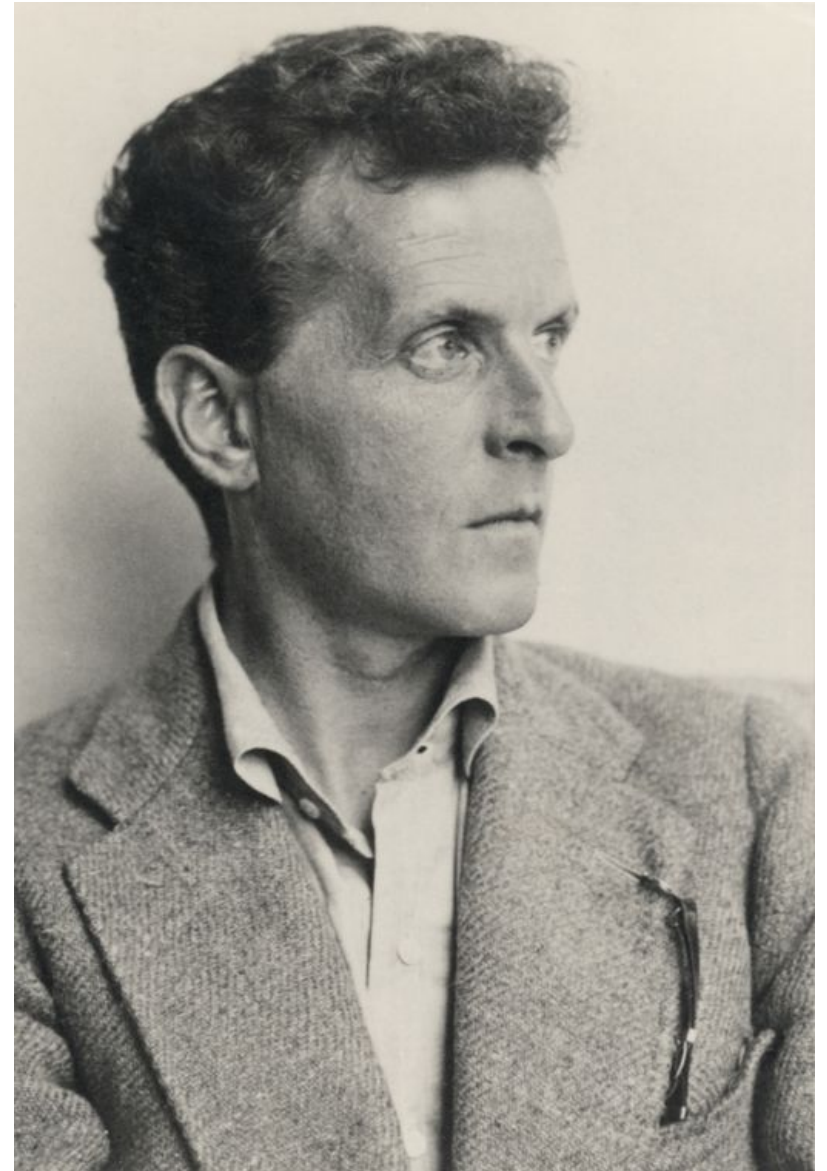
Sense 5: *capsicum* (i.e. chili, paprika, bell pepper, etc)

A sense or “concept” is the meaning component of a word

- But what is that meaning?

Ludwig Wittgenstein (1889-1951)

- Philosopher of language
- In his late years, a proponent of studying “ordinary language”
- Our reading is from his *Philosophical Investigations*
- Part I completed in 1945, published posthumously in 1953



Wittgenstein the person

- History:
 - Born in Vienna 1889 to a very wealthy family
 - Youngest of 8, 3 brothers committed suicide
 - He considered it as well, and consistently feared mental illness
 - Family later escaped in the 30s to England
- Anecdotes
 - Wittgenstein arrives at Cambridge to study with Russell
 - Constantly follows him home after classes still talking
 - Once famously threatens Karl Popper with a hot poker
 - Kept leaving academics (to be a gardener, a hospital porter, soldier, rural schoolteacher etc.)
 - Alan Turing calls him a “very peculiar man”

Wittgenstein in Cambridge lectures

"It is hardly correct to speak of these meetings as 'lectures', although this is what Wittgenstein called them. For one thing, he was carrying on original research in these meetings... Often the meetings consisted mainly of dialogue. Sometimes, however, when he was trying to draw a thought out of himself, he would prohibit, with a peremptory motion of the hand, any questions or remarks. There were frequent and prolonged periods of silence, with only an occasional mutter from Wittgenstein, and the stillest attention from the others. During these silences, Wittgenstein was extremely tense and active. His gaze was concentrated; his face was alive; his hands made arresting movements; his expression was stern. One knew that one was in the presence of extreme seriousness, absorption, and force of intellect... Wittgenstein was a frightening person at these classes."

Malcolm "Ludwig Wittgenstein: A Memoir"

What do words mean?

At the beginning of *Philosophical Investigations*, Wittgenstein quotes St. Augustine about how he learned as a child what words mean:

“When my elders named some object, and accordingly moved toward something, I saw this and I grasped that the thing was called by the sound they uttered when they meant to point it out. Their intention was shown by their bodily movements... Thus as I heard words repeatedly used in their proper places in various sentences, I gradually learnt to understand what objects they signified”

Augustine, *Confessions*, I, 8, (~ 400CE)

Augustine's theory of meaning, according to Wittgenstein

- “Words name objects” and “Sentences are combinations of such names”
- Wittgenstein thinks this is a very primitive model of meaning, only imaginable for simple nouns like “table” and “chair” and not “this”.
- PI #38: “Naming appears as a queer connection of a word with an object. And you get such a queer connection when the philosopher tries to bring out the relation between name and thing by staring at an object in front of him and repeating a name or even the word “this” innumerable times. **For philosophical problems arise when language *goes on holiday.***”

Philosophical problems arise when
language *goes on holiday*

PI #43:

"The meaning of a word is its use in
the language"

Classical (“Aristotelian”) Theory of Concepts

The meaning of a word:

a concept defined by **necessary** and **sufficient** conditions

- A **necessary** condition for being an X is a condition C that X must satisfy in order for it to be an X.
 - If not C, then not X
 - “Having four sides” is necessary to be a square.
- A **sufficient** condition for being an X is condition such that if something satisfies condition C, then it must be an X.
 - If and only if C, then X
 - The following necessary conditions, jointly, are sufficient to be a square
 - x has (exactly) four sides
 - each of x's sides is straight
 - x is a closed figure
 - x lies in a plane
 - each of x's sides is equal in length to each of the others
 - each of x's interior angles is equal to the others (right angles)
 - the sides of x are joined at their ends

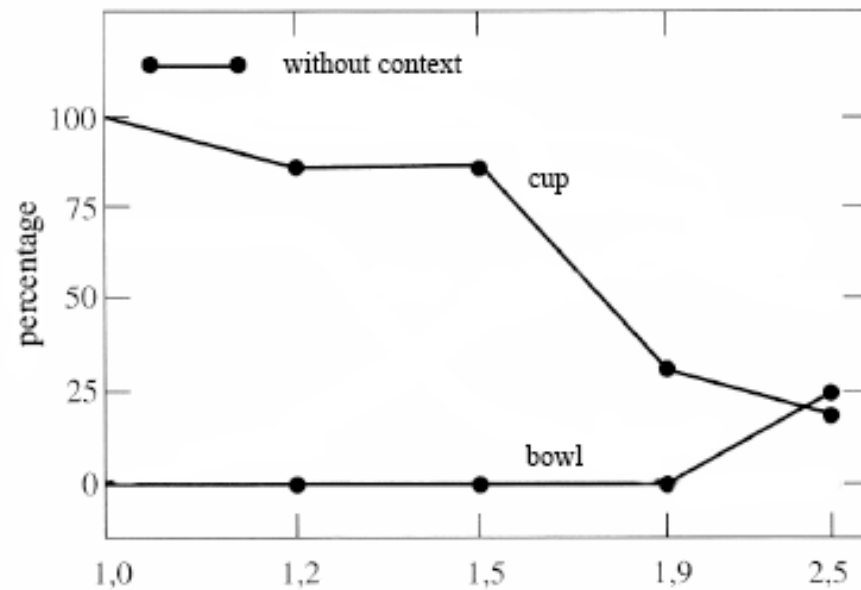
Example
from
Norman
Swartz,
SFU

The features are complex and may be context-dependent

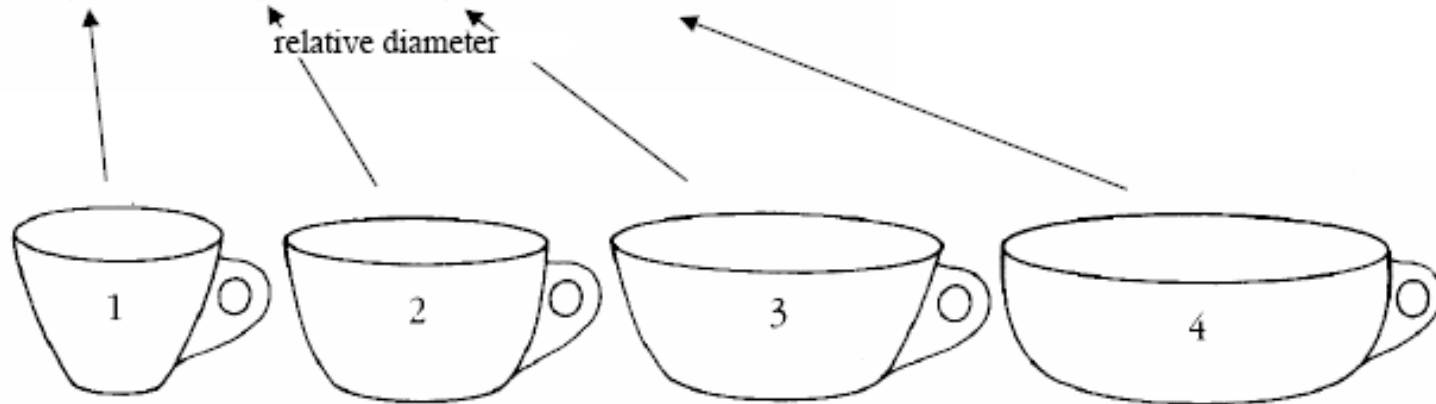
- William Labov. 1975
- What are these?
- Cup or bowl?



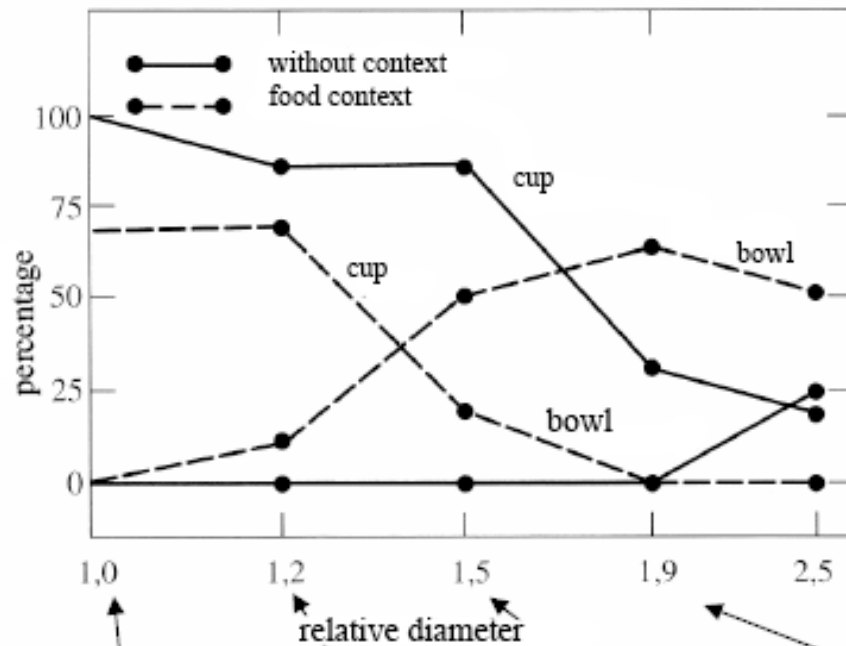
The category depends on complex features of the object (diameter, etc)



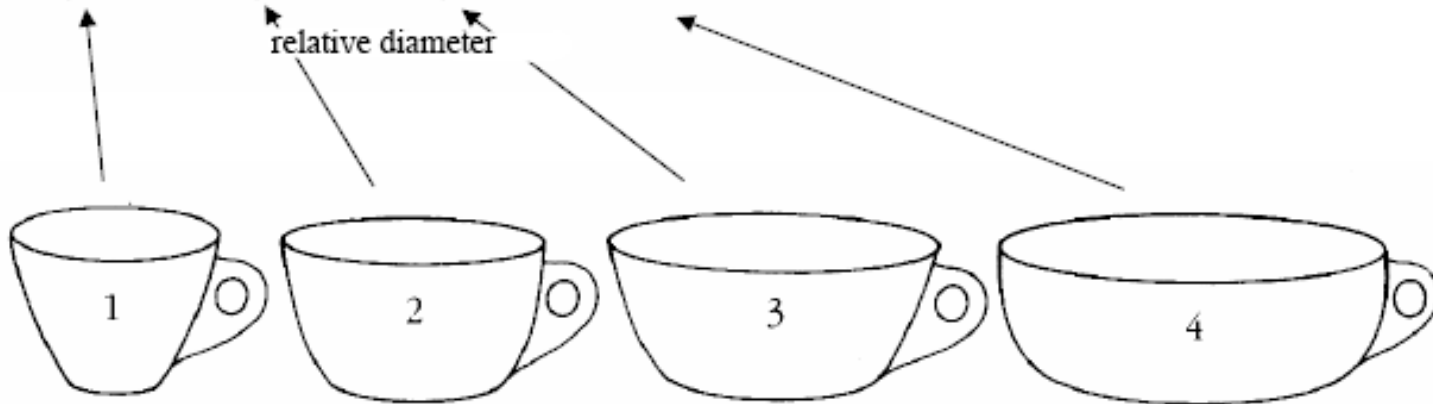
Where does the category „cup“ end?



The category depends on the context!
(If there is food in it, it's a bowl)



Boundaries between
cups and bowls
are context sensitive



Labov's definition of cup

The term *cup* is used to denote round containers with a ratio of depth to width of $1 \pm r$ where $r \leq r_b$, and $r_b = \alpha_1 + \alpha_2 + \dots + \alpha_n$ and α_i is a positive quality when the feature i is present and 0 otherwise.

- feature
- 1 = with one handle
 - 2 = made of opaque vitreous material
 - 3 = used for consumption of food
 - 4 = used for the consumption of liquid food
 - 5 = used for consumption of hot liquid food
 - 6 = with a saucer
 - 7 = tapering
 - 8 = circular in cross-section

Cup is used variably to denote such containers with ratios width to depth $1 \pm r$ where $r_b \leq r \leq r_1$ with a probability of $r_1 - r/r_t - r_b$. The quantity $1 \pm r_b$ expresses the distance from the modal value of width to height.

What is a bachelor?



Necessary and sufficient conditions

What are the conditions that define “Bachelor”?

- Unmarried
- Male
- Adult
- Human

Necessary and sufficient conditions
can be difficult

What are the conditions that define
“Bachelor”?

- Unmarried
- Male
- Adult
- Human

Victor is an unmarried adult male, but has been living with his girlfriend Roberta for 30 years in a happy relationship. Is Victor a bachelor?

Necessary and sufficient conditions
can be difficult

What are the conditions that define
“Bachelor”?

- Unmarried
- Male
- Adult
- Human

Victor is an unmarried adult
male. He is a monk living in a
monastery. Is Victor a bachelor?

Wittgenstein's thought experiment on "game"

PI #66:

"Don't say "there must be something common, or they would not be called `games'" —but *look and see* whether there is anything common to all"

Is it amusing?

Is there competition?

Is there long-term strategy?

Is skill required?

Must luck play a role?

Are there cards?

Is there a ball?

Family Resemblance

Game 1	Game 2	Game 3	Game 4
ABC	BCD	ACD	ABD

“each item has at least one, and probably several, elements in common with one or more items, but no, or few, elements are common to all items” Rosch and Mervis

Categories are extensible

- They don't have finite boundaries.
- New types of games can be created at any point:
"Video games"
- Even in math, where we have precise definitions, they can change
"Number"
 - Originally meant integers
 - Then extended to rational numbers
 - Then real, complex, transfinite, etc.

Another problem with classical categories

- Categories lie at different levels of abstraction
- And one level seems distinguished from the others, better than the others for many purposes
- This level is called the "basic level", and these are "basic level categories"

Name these items



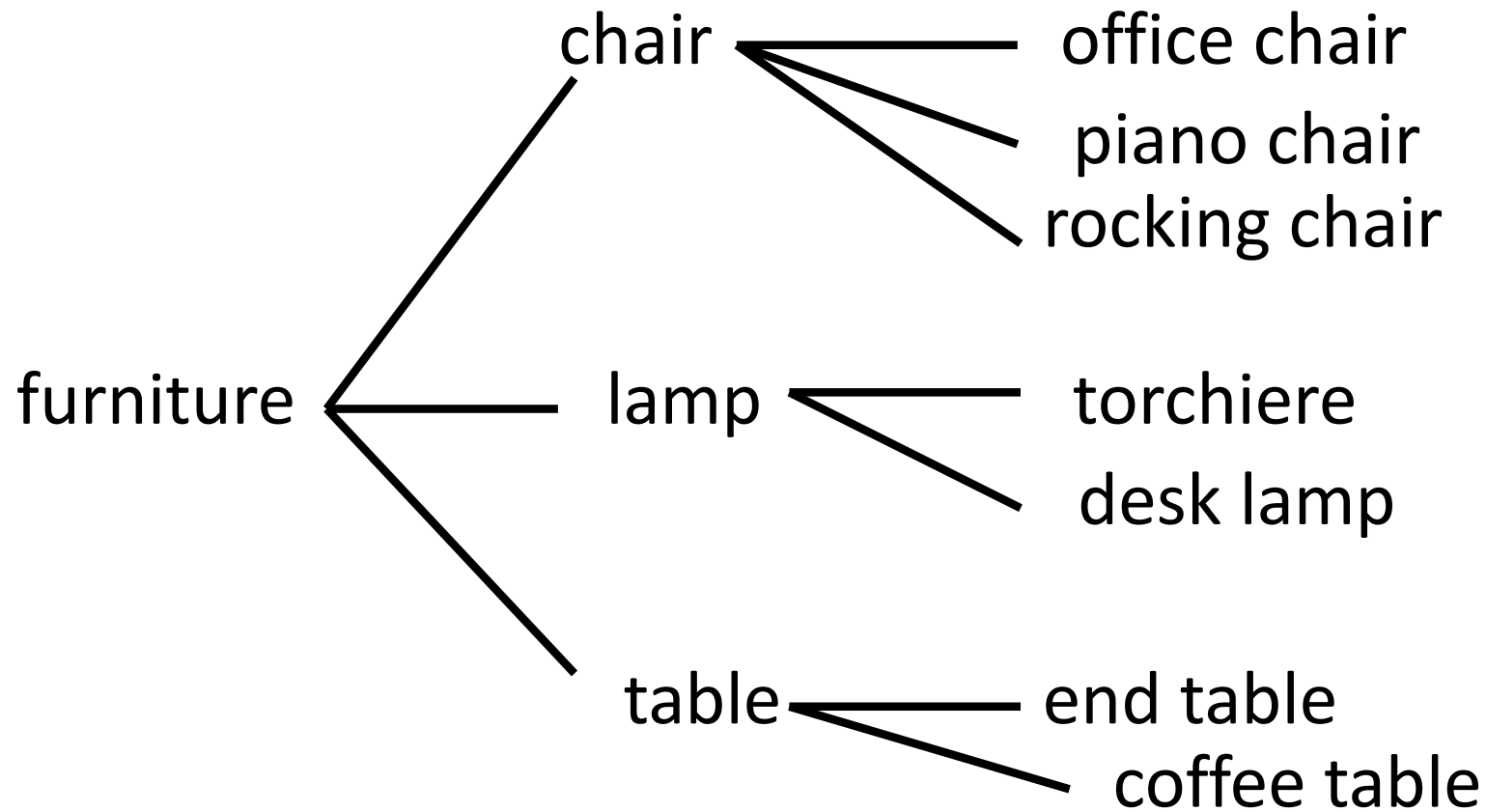
Roger Brown (1925-1997)

- Psychologist of Language
- “How Shall a Thing be Called (1958)

“The dime in my pocket is not only a *dime*. It is also *money*, a *metal object*, a *thing*, and, moving to subordinates, it is a *1952 dime*, in fact a *particular 1952 dime* with a unique pattern of scratches, discolorations, and smooth places. The dog on the lawn is not only a *dog*, but is also a *boxer*, a *quadruped*, an *animate being*” (p. 14)



Basic Level Categories



Superordinate

Basic

Subordinate

More subordinate examples

Granny Smith

Hatchback

Manx cat

Dessert spoon

Brown on the “basic level”

- While a dime *can* be called a *coin* or *money* or a *1952 dime*, we somehow feel that *dime* is its real name. The other categorizations seem like achievements of the imagination” (Brown 1965, p 320)
- Such “real names” are shorter, more likely to be used.
- They also correlate with non-linguistic action
 - In charades we might symbolize flowers by leaning forward and sniffing, or cats by stroking the air as if petting them
 - But there are no actions that distinguish different species of flowers from one other, or varieties of cats

Cluster of Interactional Properties

- Basic level things are “human-sized”
- Consider chairs
 - We know how to interact with a chair (sitting)
 - Not so clear for superordinate categories like furniture
 - “Imagine a furniture without thinking of a bed/table/chair/specific basic-level category”

The basic level according to Brown

- Is the level of distinctive actions
- Is the level which is learned earliest and at which things are first named
- It is the level at which names are shortest and used most frequently
- Is a natural level of categorization, as opposed to a level created by “achievements of the imagination”

Brent Berlin

Berlin B, Breedlove D and Raven P. 1974. Principles of Tzeltal plant classification. APress, 1974.

Berlin B. Ethnobiological classification. 1978. In: Rosch E and Lloyd B (eds) Cognition and categorization.



- Looked at speakers of Tzeltal in Tenejapa
- Tzeltal: a Mayan language spoken in Chiapas, Mexico
- Notice that the **genus** (oak, maple, rabbit, raccoon) was psychologically basic
- For example in a naming task
 - consultants could name 40-50 plants,
 - but tended to name genus (oak, maple)
 - not species (sugar maple, live oak),
 - even though they could, and had names for them

Genus as the middle level of **folk taxonomy**

Unique beginner: *plant, animal*

Life form: *tree, bush, bird, fish*

Intermediate: *leaf-bearing tree, needle-bearing tree*

Genus: *pine, oak, maple, elm*

Species: *sugar maple, live oak*

Varietal: *cutleaf staghorn sumac*

The genus

- People name things more readily at that level
- Languages have simpler names for things at that level
- Categories at that level have greater cultural significance
- Things are remembered more readily at that level
- At that level, things are perceived holistically, while at a lower level, specific details (distinctive features) have to be picked out to distinguish, for example, among the kinds of oak
- Children learn genus names for plants first
- Folk categories correspond to scientific categories at this level, but not others

Folk categories correspond to scientific categories at the genus level

- Not a coincidence: Linnaeus used psychological criteria in defining genus
- A J. Cain (1958) "Logic and Memory in Linnaeus's System of Taxonomy" (p 148)
 - "The *Essential Character* of a genus is that which gives some characteristic peculiar to it... which will instantly serve to distinguish it from all others"
 - i.e., **perception**, like the use of the shape of the fruit, which is easy to perceive and describe
 - And the botanist and zoologist "must know and remember all genera"

Folk categories correspond to scientific categories at the genus level

- In other words, the genus is the level of biological taxonomy at which humans could most easily perceive, agree on, remember, and name the discontinuities
- The genus is the psychological **basic level** of folk biology.

Basic level categories

Perception:

- The highest level at which category members have similarly perceived overall shapes

Interaction:

- The highest level at which a person uses similar motor actions for interacting with category members

Knowledge Organization:

- The level at which subjects are fastest at identifying category members
- The level with the most commonly used labels for members

Communication:

- The first level named and understood by children
- The level with the shortest words
- The level used in neural contexts

Languages seem to be very sensitive to these taxonomies

Different languages mark nouns with classes

- Called “gender” if there are 2 or 3 classes
 - Masculine, feminine, neuter
- Called “noun classes” if more than 2-3 (Chinese, Japanese, Bantu)
 - Chinese has around 125
 - 匹 pi "classifier for horses"
 - 本 ben "classifier for books"
 - 只 zhi "classifier for animals"

Languages seem to be very sensitive to these taxonomies

- We saw in Yoshiko's lecture in week 1 that noun classes affect people's conceptions
 - German speakers think of bridges differently than Spanish speakers
 - German (fem.) – beautiful, elegant, fragile, peaceful, pretty, slender
 - Spanish (masc.) – big, dangerous, long, strong, sturdy, towering
- There is also a relationship to word taxonomies

German has 3 genders

Masculine der Apfel (the apple)

Feminine die Traube (the grape)

Neuter das Obst (the fruit)

Genders mark the taxonomic level

Zubin and Koepcke 1986 “Gender and folk taxonomy”

German Neuter gender (“das”) used for very abstract words

das Ding	‘thing’	das Teil	‘part’
das Dings	‘whatchamacallit’	das Werk	‘creation’
das Element	‘element’	das Wesen	‘being’
das Gebilde	‘product’	das Zeug	‘implement’
das Gerät	‘implement, apparatus’		
das Geschöpf	‘creation’		
das Glied	‘part, member’	<i>masc/fem-gender</i>	
das Gut	‘goods’	der Gegenstand	‘object’
das Objekt	‘object’	der Körper	‘body’
das Stück	‘piece’	die Sache	‘thing’

Neuter gender used for superordinates

Superordinate

das Instrument
'musical instrument'

das Obst 'fruit'

das Werkzeug 'tool'

das Gemüse 'vegetable'

das Kleid/das Kleidungsstück
'piece of clothing';
die Kleidung 'clothing' (mass)

das Möbel/das Möbelstück
'furniture'

Basic Level

die Gitarre 'guitar'
die Trompete 'trumpet'
die Trommel 'drum'

der Apfel 'apple'
die Pflaume 'plum'
die Traube 'grape'

der Hammer 'hammer'
die Säge 'saw'
der Schraubenzieher 'screwdriver'

der Spinat 'spinach'
die Erbse 'pea'
der Kohl 'cabbage'

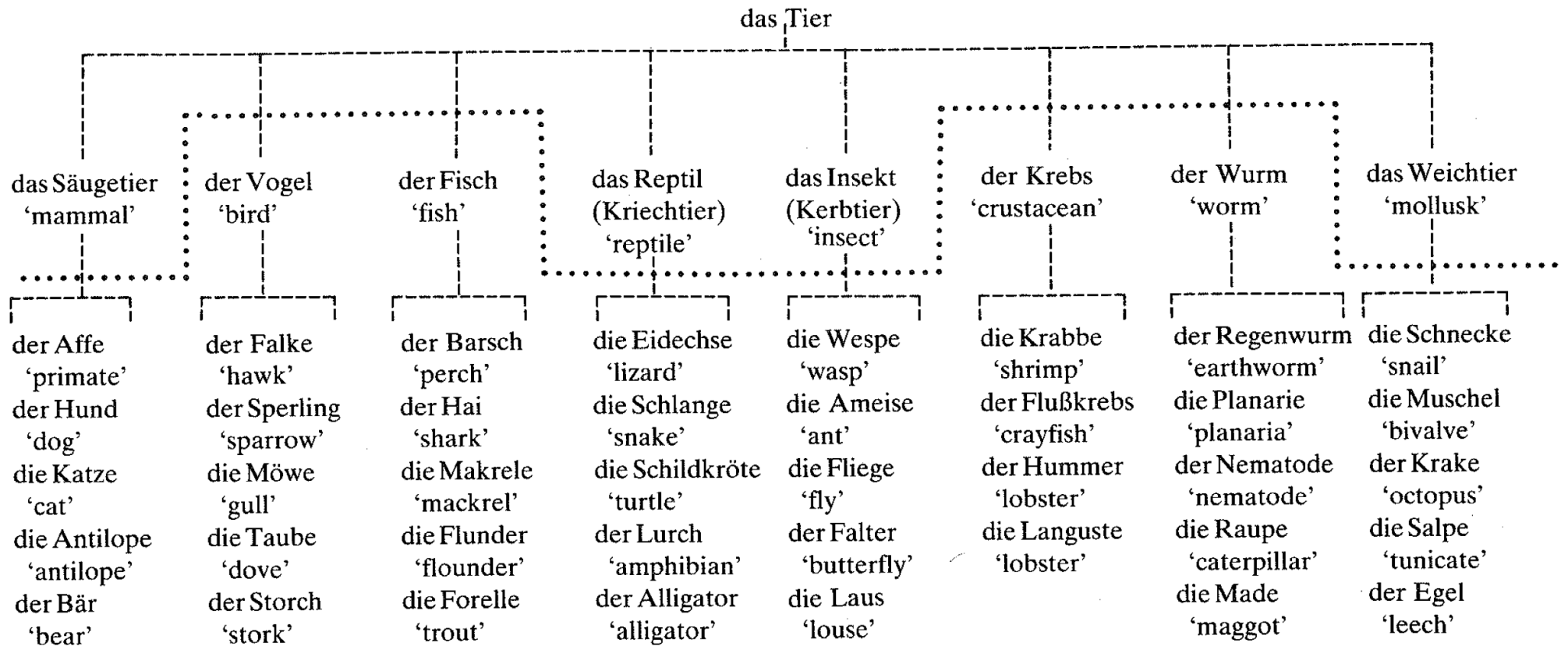
die Hose 'pants'
der Strumpf 'sock'
das Hemd 'shirt'

der Tisch 'table'
der Stuhl 'chair'
die Lampe 'lamp'

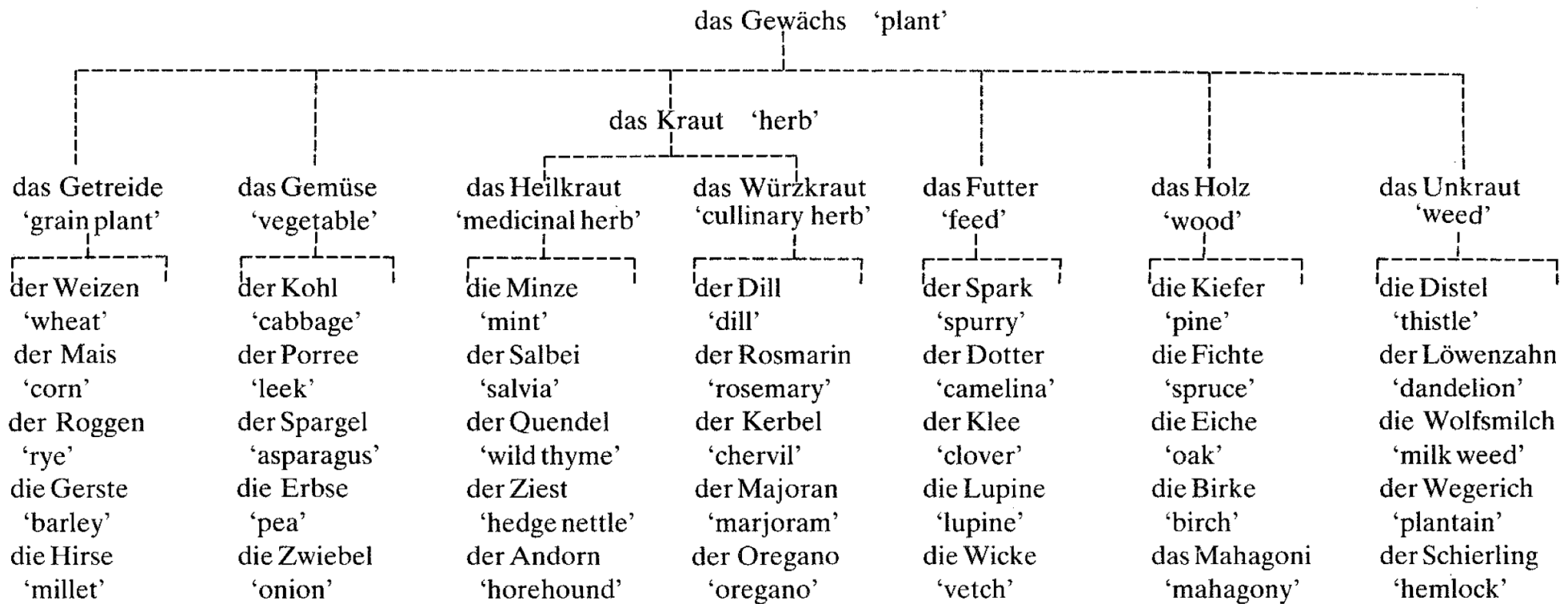
Conflict between Berlin and Rosch definition of basic levels

Berlin:	<i>unique beginner</i>	<i>life form</i>	<i>generic</i>
Rosch:	<i>superordinate</i>	<i>basic level</i>	<i>subordinate</i>
	das Tier 'animal'	der Fisch 'fish'	der Karpfen 'carp' die Forelle 'trout' etc.
		der Vogel 'bird'	die Eule 'owl' der Sperling 'sparrow' etc.

Neuters as superordinate



Neuters as superordinate



Neuters as superordinate



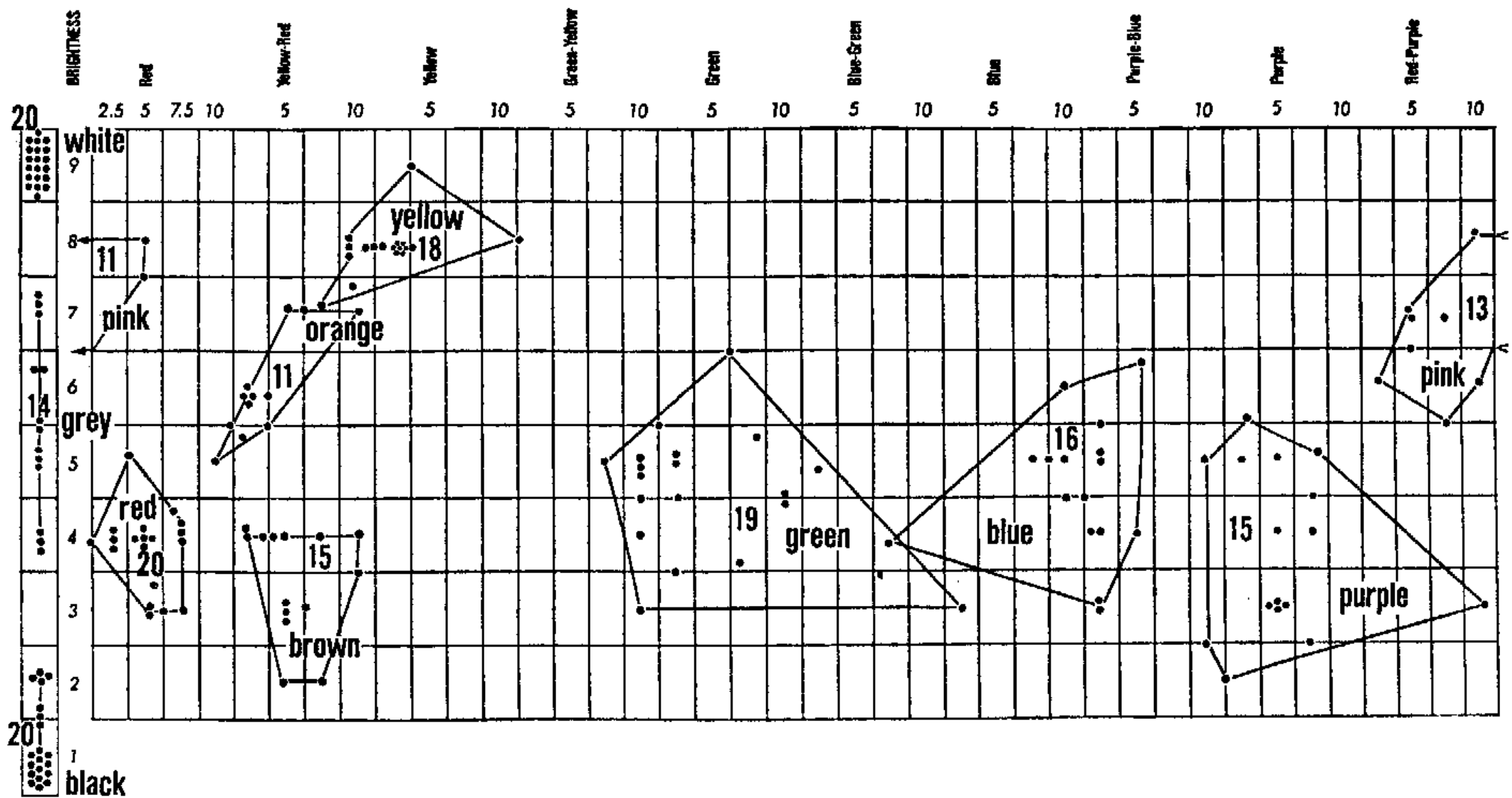
Yet another problem with classical categories

- Categories seem to have internal structure
- For example:
Some members of a category are “better examples” than others

Focal colors: Berlin and Kay

- If colors simply had necessary and sufficient conditions
- "Blue" would just be anything in a category of particular wavelengths
- When Berlin and Kay asked speakers of different languages asked to say what is the “best example” of blue.

Berlin and Kay 1969: People can tell you the “best” example of blue



Implication

- People can tell you which is the “best example” of blue
- Means that the category “blue” is not uniform.
- It has internal structure of some sort

A categorization experiment?

- Is this a bird?



A categorization experiment?

- Is this a bird?



A categorization experiment?

- Is this a bird?



A categorization experiment

- Is this a bird?



A categorization experiment

- Is this a bird?



Eleanor Rosch

- Psychologist at UC Berkeley
- Found that some categories have more “representative members”
- She called them “prototypes”
- A wide variety of experimental results has shown that concepts exhibit prototype effects



Rosch, E., Mervis, C. B., Gray, W., Johnson, D., & Boyes-Braem, P. (1976). Basic objects in natural categories. *Cognitive Psychology*, 8, 382-439

Rosch, E., & Mervis, C. B. (1975). Family resemblances: Studies in the internal structure of categories. *Cognitive Psychology*, 7, 573-605

Prototype effects

Rate the following from 1-7 as examples of **vegetables**

- 1: very good example
- 2: good example
- 3: fairly good example
- 4: moderately good example
- 5: fairly poor example
- 6: bad example
- 7: very bad example/not an example

- Turnip, eggplant, rhubarb, pea, zucchini, parsley, potato, lemon, tomato, carrot, cabbage
- (Carrot was the prototype, at least for Battig and Montegue 1969)

Goodness of Exemplar tasks: Answer with “Yes” or “No”

- All robins are birds
- All fish can swim
- Some birds can swim
- A bat is a bird
- All birds can fly
- Some birds are fish
- An ostrich is a bird
- All birds are robins

Measure the time it takes people to answer

Results of these Goodness-of-Exemplar tasks

- **Order of mention:** prototypical member mentioned earlier
- **Overall frequency:** mentioned more frequently
- **Order of acquisition:** prototypical members acquired first by children
- **Vocabulary learning:** is better if definitions of new words rely on prototypes
- **Speed of verification:** faster for prototypes
- **Direct rating:** Participants rate on a scale of 1 to 7 how good an example of a category (e.g., BIRD) something is.
- **Asymmetry in similarity rating:** Less prototypical members are more similar to prototypes than the reverse.

Another problem with classical categories

- The focus on necessary and sufficient conditions
- Is a focus on **attributes** or **properties** as if they exist out there in the world
 - Suggests that members of a category are similar because they have similar attributes
 - Similarity is what makes them all members
- But this ignores the knowledge that people bring to the category.

What makes an animal unclean?

- Murphy and Medin 1985 “The role of theories in Conceptual Coherence”
- Dietary rules from Leviticus
 - Unclean:** camels, ostriches, crocodiles, mice, sharks, eels
 - Clean:** gazelles, frogs, most fish, grasshoppers, some locusts
- If these were classical categories, we should be able to come up with shared attributes that make the class of “clean animals” coherent

The “Theory Theory”

- Categories are coherent to the extent that humans have a coherent explanatory structure for them
- “Gender, Pocky, Noun Classes”
- “Things you might study in *Food Talks*”
- Labov’s cup versus mug
 - A cup is something whose purpose is drinking and so it should have the appropriate shape for drinking;
 - A bowl’s purpose is eating with a spoon
 - Our understanding of how and why we interact with cups and mugs explains Labov’s complex equation
 - Instead of Labov’s list of arbitrary features: a theory

The “Theory Theory” applied to unclean foods



- Mary Douglas. 1966. “Purity and Danger”
- There should be a correlation between habitat, biological structure, and locomotion
 - Creatures of the water should have fins and scales, and swim
 - Creatures of the land should have four legs and jump or walk
 - Creatures of the air should fly with feathered wings
- Hence:
 - Ostriches are unclean because they don’t fly
 - Crocodiles are unclean because their front appendages look like hands and yet they walk on all fours
 - Clean animals don’t cohere by virtue of being similar in visual properties, but by corresponding to the explanatory theory,

A final question about names: who gets to decide?

Is a tomato a fruit or a vegetable?

The idea of the “division of linguistic labor”

The role of the social in determining meaning

“The division of linguistic labor” for
meaning: **fruit**

Botanically: (American Heritage
dictionary):

“The ripened ovary or ovaries of a
seed-bearing plant, together with
accessory parts, containing the seeds
and occurring in a wide variety of
forms.”

“The division of linguistic labor” for meaning: **fruit**

Legally: Supreme court Nix v. Hedden, 149 U.S. 304 (1893)

Is tomato a fruit or a vegetable wrt the Tariff Act of 1883, which taxed imported vegetables but not fruit:

- “The court takes judicial notice of the ordinary meaning of all words in our tongue...**Tomatoes are "vegetables," and not "fruit," within the meaning of the Tariff Act ...**
- ...In the common language of the people, whether sellers or consumers of provisions, all these are **vegetables** which are **grown in kitchen gardens**, and which, whether eaten cooked or raw, are, like potatoes, carrots, parsnips, turnips, beets, cauliflower, cabbage, celery, and lettuce, **usually served at dinner in, with, or after the soup, fish, or meats which constitute the principal part of the repast**, and not, like fruits generally, as **dessert**.

Conclusion: Aspects of word meaning

- Meanings are associated with senses of lemmas, not with words
- Classical categories
 - Necessary and sufficient conditions
 - Complex functions of features/properties
- Family Resemblance
- Prototype effects
- Basic Levels
- Explanatory theories
- Division of linguistic labor

After you finish the reading for next Tuesday:

- If you hear someone say:

“Reviewers praised the chef.”

What do you think the reviewers praised?

- If the praise was:

“Nice haircut!”

Why is this funny?