

## Presentation 20: How children acquire words

### Roger Brown's "Original word game" (1958)

1. **Tutor names:** "The tutor names things in accordance with the semantic customs of the community."
2. **Player guesses meaning:** "The player forms hypotheses about the categorical nature of the things named."
3. **Player tests these guesses:** "He tests his hypotheses by trying to name new things correctly."
4. **Tutor corrects player if necessary:** "The tutor compares the player's utterances with his own anticipations of such utterances and, in this way, checks the accuracy of fit between his own categories and those of the player. He improves the [player's] fit by correction."

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### Where do children's first words come from?

Premise 1: Children try to do things with words

- They produce words to have effects
- Words don't just name: they are used to perform speech acts

Premise 2: Children acquire words via educated guesses

- Children hear words
- Children guess at their functions
- Source of hypotheses for functions:  
Functions they already know  
Functions associated with the use of the current word

Premise 3: Words get refined through interaction.

- Children try out words, and guess at interpretations
- These are corrected, refined in interaction with adults

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### So, children acquire the words they need

<b>10-12 months</b>	0 to 5 words
<b>24 months</b>	100 to 600 words
<b>2-6 years</b>	9 to 10 new words a day (total 14,000)
<b>6-17 years</b>	3,000 words a year
<b>10 years on</b>	at school, hear 10,000 new words a year
<b>9-15 years</b>	at school, hear as many as 85,000 roots, nearly 100,000 distinct meanings
<b>Adults</b>	recognize 50,000 to 100,000 words

[Clark 1993, Nagy & Anderson 1984, Templin 1957]

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### Major categories of first words

Nouns	
Food	juice, milk, cookie
Body-parts	eye, ear, nose, mouth
Clothing	shoe, sock, hat, mitten, coat
House animals	cat, dog, duck
Household items	clock, light (parts of common routines)
Toys	ball, block, book, doll
Vehicles	car, boat, truck, train
People	mama, papa, baby (self)
Other words	
Routines	bye, hi, no, night-night, peekaboo, thank you
Activities	uh oh, woof, moo, ouch, baa baa, yum yum, vroom, up, down

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### Children's initial hypotheses about meanings

#### Over-extensions

"doggie"	four-legged animals
"mommy"	all caretakers in family (father, mother, sisters, brother)
"ball"	anything round—letter O, moon, balls, etc.

#### Under-extensions

"kitty"	<b>family cat</b> and no others
"car"	only cars that <b>look like</b> family's car

#### Partial overlap

"here," "there"	correct when speaker and addressee have same perspective
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#### No overlap

"my team"	blanket, from being on team
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### 90% of over-extensions are based on shape

Word	First time	Over-extensions
<b>mooi</b>	moon (E)	→ cakes → round marks on windows → writing on windows, in books → round shapes in books → tooling on leather book covers → round postmarks → letter O
<b>nénin</b>	breast (F)	→ button on garment → point of bare elbow → eye in portrait → face in portrait → face in photo
<b>buti</b>	ball (Serb)	→ ball → radish → stone spheres on park gates
<b>ticktock</b>	watch (E)	→ clock → all clocks & watches → gas-meter → fire-hose on spool → bath scale with round dial
<b>gumene</b>	coat button (Serb)	→ collar stud → door handle → light switch → anything small & round
<b>kottie-baiz</b>	crib bars (E)	→ large toy abacus → toast-rack → picture of columned façade
<b>mum</b>	horse (E)	→ cow → calf → pig → moose → all 4-legged animals

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### Children often repeat a new word after it's offered

D (1;8.2, points at some ants on the floor): *Ant. Ant.*

Father (indicating a small beetle nearby): And that's a bug.

D: **Bug.**

Mother (looking at toy): That dolly is called 'skunk'. skunk.

Naomi (1;8.0): **skunk.**

Mother: okay.



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Eve (1;6.0): *That?*  
Mother: what is that? Spool.  
Eve: **spool.**



Mother: and the last car on a train is called the what?  
Adam (2;3.15): **call too-too train.** [= choo-cho train]  
Mother: it's called the caboose.

Adam: **call boo.**  
Mother: caboose.  
Adam: **caboose**



A (2;4, wanting to have an orange peeled): *Fix it.*  
Mother: You want me to peel it?  
Child: *Uh-huh. Peel it*



## Repeats by child signal uptake of new word

In a study of 700 adult offers of new words to children:

- children repeated the new word *in next turn* **48%** of the time.
- in contrast, children repeated new information in next turn (information new to the addressee, but in familiar words) only **22%** of the time

[Clark 2007]

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## Four Principles of Interpretation

### Principle of salience

Speaker is talking about *something salient* to us at this moment in our joint activity

### Principle of perspective

Speaker is talking about things from a *single perspective*

### Principle of contrast

Every form a speaker uses *contrasts in meaning* with every other form

### Principle of grounding

Speaker will *make sure I understand* what he or she said —if necessary through side sequences and corrections

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## Perils of learning names



(from Malagasy *indry!* 'behold!' or *indry izy!* 'there he is!', mistaken for its name.

The Malagasy name is *babakoto*.)

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## Gricean constraints on hypotheses

### Salience of whole objects, gestalts

- Child sees *whole objects as perceptually salient*

### Salience of one level of abstraction

- Child treats objects at *single level of abstraction*

### Salience of category boundaries

- Child assumes *non-overlapping categories* at one level of abstraction

### Assumption of contrast

- Novel word denotes something different
- Contrasting terms for a referent entail contrasting perspectives on the referent

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## Perceptual sources of hypotheses

### First hypotheses based largely on perceptual features

- appearance
- shape, size, texture
- sounds
- noise made by an object
- touch
- furriness, etc.

### Verb hypotheses based mostly on spatial relations

- normal relations
- normal orientation

### Later hypotheses based on functional properties

- what an object is used for

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## Acquisition of dimensional terms

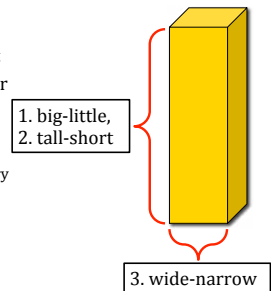
### Dimensional terms

First one dimension singled out  
Dimensions attended to in order of "dominance"

*big-small*, used to refer to all dimensions

then *tall-short*, *long-short* (primary dimensions)

then *wide-narrow*, *thick-thin*, etc. (secondary dimensions)



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## Spatial relational terms

### Default relations

Containers: A belongs in B

Supports: A belongs on B

Others: A belongs with, touching B

First hypotheses:

"in" = in for containers

"in" = on for support

Etc.



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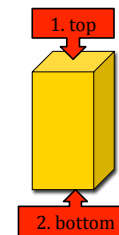
## Complex directional terms

Dominance of dimensions:

1. block with six sides
2. top and bottom and four sides
3. top, bottom, front, back, and two sides

Default preferences

1. Pay attention to tops
2. Pay attention to vertical dimension
3. Difficult to attend to left-right asymmetries



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## Deictic terms

Special difficulties with deictic terms

- shifting reference "I" changes with speaker
- shifting boundaries "here" changes with situation

Successive hypotheses for *here* and *there*:

1. refer to area near child, or other person
2. contrast between *here* and *there*
3. speaker-centered

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## Successive hypotheses for *I* and *you*

**Stage 1** (for some children): *I* = adult; *you* = child

English example (child 1;11)

Mother What do **you** want?  
 Nigel Daddy toothbrush  
 Mother Oh you want Daddy's toothbrush, do you?  
 Nigel Yes ... **you** want to put the frog in the mug.  
 Mother I think the frog is too big for the mug.  
 Nigel Yes **you** can put the duck in the mug ... make bubble .  
 ... make bubble.  
 Mother Tomorrow. Nearly all the water's run out.  
 Nigel **You** want Mummy red toothbrush ... yes **you** can  
 have Mummy old red toothbrush.

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Dutch example (from 2;2 son of van der Geest):

**You** do that (= *I* do that)

**I** must mend that; **you** can't (= you must mend that; *I* can't)

Is this **your** milk? (= Is this my milk?)

**Stage 2:** *I* = speaker; *you* = addressee (correct)

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## Children pay attention to perspective

For a toy horse on wheels (1;7)

(1) *horse* [said when pulling the toy  
 along]

(2) *chair* [said when sitting on its back]



For a waste-paper basket (1;11)

(1) *basket* [when it's standing on the  
 floor]

(2) *hider* [picking it up and putting it over  
 his head]



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## Flexible perspectives

**Case 1:** Shifting perspective *from one level up to another*

"Show me a dog." [child points at dog]

"Is it an animal?" --Yes.



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## Flexible perspectives

**Case 2:** Shifting perspective *from one level down to another*

(a) "Show me a dog." [child points at dog]

"Is it an animal?" --Yes.

(b) "Find me an animal." [child points at rabbit]

"What is it?" --A rabbit!



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## Flexible perspectives

**Case 3:** Shifting perspective *from one domain to another*

(a) "Can you find the cats?" [child points at both cats]

"What is this one?" --A garden-man.

(b) "Find me the mailman." [child points]

"What is this one?" --A pig.



[Clark & Svaib]

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## What if child's vocabulary is too small?

### Stretch known words

#### Overextensions

Many children over-extend words in production

But *not* in comprehension

"What is this?" "doggie" for all three pictures

"Point at the dog" points at the middle picture



[Thompson & Chapman]

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## What if child's vocabulary is too small?

### (2) Invent new words from old words

Children know noun but not verb for action

Children therefore *invent verbs from nouns*

- The man was **keying** the door
- I'm **souping**
- They're **teaing**. = having tea
- **Pillow** me. = throw a pillow at me
- I want to **button** it = press buttons on calculator

Children also invent verbs from adjectives

- I'm **darking** the letters = scribbling over them to make them dark
- She's **rounding** it = making the jump rope into a round circle
- Can you **higher** that? = make that higher

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## What if child's vocabulary is too small?

### (3) Use general purpose words

For objects: deictic words like *this* and *that*

For spatial relations:

- 'n for in, on, under, etc.

For actions: *do*, *make*, *go*

- The clown **do** = asking 0 to make the toy clown do what toy clowns do
- **Make** a that = move hand of clock forward
- **Make** it up = put it up
- It **go** there = the block is lying on the floor

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## Summary

Children are good at playing Roger Brown's  
"original word game"

1. *tutor* names things
2. *player* forms hypotheses about category of things named
3. *player* tests hypotheses by trying to name new things
4. *tutor* checks the accuracy of fit
5. *tutor* improves the [player's] fit by correction

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## Summary

Children make assumptions about the speaker

1. *Saliency* Speaker is talking about ***something salient***
2. *Perspective* Speaker is viewing things from ***one perspective***
3. *Contrast* Every word ***contrasts in meaning*** with every other word
4. *Grounding* Speaker will make sure I understand—if necessary through side sequences and corrections

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