Lin102

Week 01: Introduction; Syntactic Categories

1. Explain how productivity and systematicity relate to the study of language

Productivity: Language allows the creation and understanding of new words and sentences

Systematicity: Language follows structured rules, making sentences predictable and understandable.

2. Describe prescriptive versus descriptive approaches to the study of language

Prescriptive: Defines how language should use based on social norms(e.g. avoiding sentence-ending prepositions)

Descriptive: Observes and describes how language is actually use by native speakers without judgment

3. Name and describe the different multiple levels of representation involved with language

Speech Sounds (phonetics and phonology): How sounds are produced and patterned

Word formation (morphology): How word are structured and formed

Phrase and sentence structure (syntax): How words combine into meaningful structures

Meaning(Semantics): Interpretation of words and sentences

Use in context (Pragmatics): How meaning changes depending on context.

4. Name and describe the different subfields of linguistics

Theoretical linguistics: Examines structural properties of language

Psycholinguistics: Studies cognitive processes in language comprehension and production.

Developmental linguistics: Investigates first language acquisition

5. State the kinds of questions asked and methods in theoretical

Theoretical linguistics:

- What are the possible and impossible patterns in language
- What kind of mental grammar must speakers have?
- Use fieldwork, elicitation, and formal models

Psycholinguistics:

- How do people produce and understand language
- How do children acquire language
- Uses experimental methods and quantitative models

6. Distinguish between a grammatical and ungrammatical

Grammatical: Follows the language's syntactic rules

Ungrammatical: Violate syntactic rules and is marked with an asterisk*

7. Distinguish between grammaticality and acceptability

Grammaticality: whether a sentence follows the rules of grammar

Acceptability: Whether a sentence sounds natural to speakers. A sentence can be grammatical but unacceptable

8. Explain what is represented with interlinear glossing

Interlinear glossing provides a structured way to analyze sentences in unfamiliar languages

It comes with three lines:

1. original sentence
2. word-for-word (or morpheme-for-morpheme) gloss
3. Translation
4. Explain the importance of syntactic categories

Syntactic Categories classify words based on their function in a sentence, helping identify correct sentence structure

10. Identify the syntactic category of a word in a sentence

Use Morphological tests (e.g. plural "-s" for nouns, "-ing" for verbs) and syntactic distribution (e.g. nouns follow determiners)

11. Explain why meaning is problematic when determining the syntactic category of a word

Traditional Definitions (e.g. "nouns are people, places or things") do not always hold (e.g. "betrayal" and "deforestation" are nouns but describe actions)

12. State the tests (morphology, syntactic distribution) used to determine the syntactic category of a word

Morphology: Affixes that attach to words help identify categories (e.g. "-ing" for verbs, "-er" for adj/adv)

Syntactic distribution: words that appear in similar positions belong to the same category. (e.g. "Det *Verb" the* will stand for nouns)

13. Explain what distinguishing environment means

A position in a sentence where only a specific category of words can appear

14. Distinguish between lexical vs functional categories

Lexical categories: Content words(nouns, verbs, adj, adv). Open class (new words can be added)

Functional categories: Grammatical words (det, prepositions, conjunctions, complementizers). Closed class

15. Explain how syntactic categories and distribution can differ across languages

Different languages have different syntactic patterns

Example: In English, adj comes before the nouns, but in Spanish, they come after.

Week 02: Words (Morphology)

1. Explain how a unit can be identified as a morpheme in a language

A morpheme is the smallest unit of meaning in a language

To be a morpheme, the unit must contribute meaning to the word (e.g. "-est" in "smallest" means "most small")

2. Describe how morphological complexity differs across languages

Languages vary in how much meaning is packed into words:

- Analytic (isolating) language: Each morpheme is a separate word (e.g. Yoruba)
- Synthetic languages: words contain multiple morphemes

3. Determine the different morphemes in a language other than English based on a dataset

Identify recurring patterns of meaning and function in words

4. Identify whether morphemes are roots vs stems/bases vs affixes (and their different types), whether they are free/bound

Root: Core meaning (e.g. "dark" in "darkened").

Base/Stem: Form to which affixes attach (e.g. "darken" is the base for "-ed" in darkened)

Affixes:

- Prefixes (e.g. "un-" in unhappy)
- Suffixes
- Infixes (e.g. "binili" is base from "bili" but add "ni" in between)
- Circumfixes (e.g. "kabataan" from "bata" in Tagalog)

Free Morpheme: Can stand alone ("walk")

Bound Morpheme: Must attach to another unit ("-ed" in "walked")

5. Identify the different allomorphs of a morpheme based on a dataset

Allomorphs are different forms of the same morpheme.

Example: English plural -s has allomorphs [-s], [-z] and [-iz] in "cats", "dogs", and "buses"

6. Draw morphological trees to represent the morphological structure of words (including compounds)

- Example tree for **"darkened"**:

less 复制 编辑

```less
     V
    / \
   A   Aff
  |     |
```

7. Draw morphological trees to represent words (and compounds) that are structurally ambiguous, and explain the meanings that correspond to the trees

For example "un-do-able", it can be "un- [doable]" or "[undo-able]"

8. Distinguish between inflection and derivation

Inflection: Does not change word category or meaning (e.g. "walk -> walks")

Derivation: Creates a new word or category (e.g. "happy -> happiness", "write" -> "writer")

9. Identify whether an affix is inflectional or derivational

Inflectional affixes: -s (plural), -ed (past tense), -ing (progressive), -er/-est (comparatives)

Derivational affixes: un-, -ment, -ize, -ify (change category or meanings)

10. Distinguish between exocentric and endocentric compound

Endocentric: Meaning comes from one of the parts (e.g. "dog food" is a type of food)

Exocentric: Meaning is not derived from any part (e.g. "redneck" is not a type of neck)

11. State some criteria that distinguish between compounds vs phrases

Stress: Compounds are stressed on the first element ("White House" vs. "white house")

Modification: Phrases allow modification ("very white house" but not "very White House")

Inflection: Inflection appears inside phrases but not inside compounds ("whiter house" but not "*Whiter House")

12. Name other morphological or word formation processes besides affixation and compounding

- Internal Change: sing -> sang, foot -> feet
- Suppletion: go -> went, is -> are
- Reduplication: Tagalog "takbo" -> "tatakbo"(will run)

13. Explain the findings of the Wug Test

Children apply productive morphology even to nonsense words

Example: If shown a picture of a "wug", children say "wugs" for the plural, showing they unconsciously apply morphological rules

Week 03: Phrasal Structure

1. Describe what constituents are and their importance in syntax

Constituents are groups of words that function as a single unit in a sentence

They help determine sentence structure and explain ambiguity (e.g. "While Quy dressed the baby laughed" vs. "While Quy dressed, the baby laughed")

2. Correctly apply constituency tests to a string of words tested for constituency

Constituency tests help determine if a string of words from s a constituent

Here are possible constituency test:

- Substitution: Replace with a pronoun (e.g. "The girl in the red hat" -> "she")

- Movement: move the phrase to a different position (e.g. "To Quy, they will give a new fork")
- Fragment: Can it be an answer to a question?
- Coordination: Can it be joined with another phrase of the same type? (Use and etc.)

3. Correctly describe the procedures in conducting different constituency tests

Substitution: Replace a phrase with a pro-form (e.g. pronoun for NP, "do so" for VP, "there" for PP)

Movement: Move the phrase while keeping the sentence grammatical.

Fragment: Ask a question and see if the phrase can stand alone as an answer

Coordination: If two phrases can be joined by "and/or/but", they are likely constituents

4. Correctly interpret the results of a constituency test (Practice)

If a phrase passes a constituency test, it is a constituent. Otherwise, it is not

5. Describe what a phrase is, and the different ways to indicate constituent/phrase boundaries

A phrase is a constituent centered around a head word

Common ways to indicate boundaries:

- Brackets: [The cat] [sat on the mat]
- Tree diagrams: Hierarchical representation of phrases

6. Describe the relations between nodes in a tree using the appropriate labels (parent/child/sister, head/dependent)

- Parent: A node directly above another (e.g. VP is the parent of V and NP)
- Child: A node directly below another
- Sister: Two nodes at the same level under the same parent (e.g. V and NP under NP)
- Head: the core word of a phrase (e.g. "cat" in the "the black cat")
- Dependent: Words that modify the head (e.g. "the black" in "the black cat" is dependent)

7. Explain what phrase structure rules are

Phrase structure rules define how words and phrases combine to form a sentences.

Example for NP: NP -> (Det) (AdjP+) N (PP+)

8. Identify the different notations in phrase structure rules (arrow, parentheses, plus, brackets)

-> means goes to

() means optional element

- means repetition is allowed

Brackets [] indicate phrase boundaries

9. Draw tree diagrams for different English sentences based on phrase structure rules (Practice)
10. Explain what recursion is and how this recursive property relates to the generativity in grammar

Recursion allow phrases to embed inside themselves.

11. Correctly represent phrasal structures in trees (NP, VP, AP, AdvP, PP, TP)
12. Name the elements that are identified as T(ense) in TPs

Tense (T) includes:

- Present/Past (e.g. "walks" vs. "walked")
- Modals: ("will", "may", "might")

Week 04: Clausal Structure

1. Describe sentences that are structurally ambiguous

Structural ambiguity occurs when a sentence has multiple possible tree structures, leading to different interpretations

2. Draw trees to represent sentences that are structurally ambiguous, and explain the meanings that correspond to the trees (Practice)
3. Correctly use constituency tests to determine the correct tree diagrams for sentences/clauses (Practice)
4. Describe what subcategorization is

Objects are an example of a special type of dependent know as a complement

Subcategorization refers to how verbs and other heads select specific types of complements

Example:

- "Dev read the book" -> Verb read subcategories for an NP complement
- "Dev thought [that the book was interesting]" -> Verb thought subcategories for a CP complement

5. Formulate subcategorization frames (using the notations) for verbs based on data

- Intransitive verb: V, means the verb can't have any NP after
- Transitive verb V NP, it has to have a noun after
- Ambitransitive verb: V (NP), it can both have and not have.

Frames indicate what complements a verb takes:

- Transitive: V -> (NP)
- Ditransitive: Verbs that subcategorize for two complements: E.g. V -> (NP) (NP)
- Clause-taking verbs:
- V -> CP (e.g. "She know [that the book was interesting]")
- V -> NP CP (e.g. "she told me [that the book was interesting]")

6. Identify the clauses in a sentence

Count the main verbs in a sentence:

- "Lin left." -> 1 clause
- "Lin might have left and Sam won." -> 2 clause

7. Identify types of clauses (independent/dependent, matrix/embedded, root, finite/non-finite, subject/complement/adjunct) in a sentence

- Independent clause: Can stand along (e.g. "The bell rang")

- Dependent clause: cannot stand along (e.g. "After Sam left")
- Matrix clause: Contains another clause (e.g. "Ahmed said that Lin left")
- Embedded clause: Appears inside another clause (e.g. "that Lin left" in "Ahmed said that Lin left")
- Finite clause: Has a tensed verb(e.g. "lex makes wine" in "David says that Lex makes wine")
- Non-finite clause: Has an untensed verb (e.g. "for lex to make wine" in "David prefers for lex to make wine")
- Subject clause: Subject of the sentence (e.g. [That Haru smiled] surprised the child)
- Complement clause: Object of the verb: Haru knew [that the child smiled]
- Adjunct clause: Expresses time, reason, cause, etc. Can appear in various positions. (e.g. when Haru arrived, after the child arrived)

8. Identify relative clauses, and identify where the gap is in a relative clause

Relative clauses modify nouns.

Example:

The cat chased that mouse [that runs fast]

Gap notation:

The mouse [that _ runs fast]

The pizza [that I made _]

9. Correctly represent clausal structures in trees (using CPs and other phrases: NP, VP, AP, AdvP, PP, TP)
10. Explain why CPs are considered as constituents
11. They can function as a single syntactic unit
12. CPs can appear as arguments of verbs, just like noun phrases (NPs)
13. They can be moved as a whole (constituent tests)
14. Can use substitution test and movement test to test it out
15. Name the different subcategories of Cs [+Q], [-Q]

[+Q], [-Q] is are subcategories for C

One is to tell whether they mark the clause as declarative, i.e. a statement/assertion or interrogative, i.e. a question.

[that she will leave] is declarative [-Q], [if she will leave] is interrogative [+Q]

[-Q]: declarative, [+Q]: interrogative

12. Determine the tense and aspect of verbs; whether a verb is main/auxiliary verb; whether a sentence is active/passive; which ones are subjects/predicates

Tense:

Tense	Description	Example
Present	Action happening now	She walks to school
Past	Action completed in the past	He ran yesterday.
Future	Action yet to happen	They will go tomorrow

Aspect

Aspect	Structure	Meaning	Example
Simple	Just the verb	Neutral/default	She sings well
Progressive	BE + -ing participle	Ongoing action	She is singing well
Perfect	HAVE + past participle	Completed before reference point	She has sung many times
Perfect prog	HAVE + BEEN + -ing participle	Ongoing action with past completion	She has been singing all day

Main vs. Auxiliary Verbs

verb Type	Role	Examples
Main verb	Carries the core meaning	She ran fast
Auxiliary Verb	Supports the main verb	She is running, They have gone

Auxiliary verb including: be, have, do, and modals(will, can, must, should)

Active vs. Passive Voice

Voice	Structure	Example
Active	Subject does the action	The chef cooked the meal
Passive	Subject receives the action	The meal was cooked by the chef

Passive clues:

BE (is, was, were, been, etc.) + past participle

Optional agent introduced by "by"

Identifying Subject and Predicate

Subject: the doer or topic of the sentence

Predicate: Everything else -- usually the verb and what follows it.

Example:

The dog chased the cat.

Subject: The dog

Predicate: chased the cat

Main verb: chased

Tense: past

Aspect: simple

Voice: Active

13. Formulate phrase structure rules based on data that is not English
14. Determine whether a language is head-initial/final/mixed, and determine a language's basic word order

Week 05: Parsing Ambiguity

1. Describe the questions that are commonly answered in psycholinguistics

Psycholinguistics studies how the human mind processes language

Common questions include:

- What mental representations are involved in language comprehension and production?
- How do cognitive processes (e.g. memory, attention, visual processing) interact with language?
- How is syntactic structure assigned to sentences during real-time comprehension?
- Why does parsing break down in certain cases?

2. Name some of the behavioral measures commonly collected in psycholinguistic methods

- Reading times: How long people take to read words in a sentence
- Comprehension errors: Errors made when interpreting ambiguous sentences
- Eye-tracking: Recording where and for how long a person looks while reading
- Neurological measures:
- Magnetic fields (MEG)
- Electrical activity (EEG)
- Blood flow changes (fMRI)

3. Differentiate between global vs local ambiguity

- Global Ambiguity: The entire sentence remains ambiguous even after reading it.
- Local Ambiguity: The sentence is ambiguous only up to a certain point, after which it is resolved

4. Explain why locally ambiguous sentences have processing difficulty

The parser initially misinterprets the sentence and has to reanalyze it once disambiguating information appears

Reading time studies show slower processing at the point where ambiguity is resolved

Garden Path Effects occur when readers are misled into an incorrect interpretation

5. Explain what incremental processing is

Incremental processing means that the parser assigns structure as it reads, without waiting for the full sentence.

The parser makes early decisions that may later turn out to be incorrect.

6. Identify the types of local ambiguities that can give rise to garden path effects

Embedded object / Matrix subject ambiguity,

"While Anna dressed, the baby fell"

After "While Anna dressed", the parser expects "Anna" to be the subject of the main clause.

But then comes "the baby fell" - revealing "Anna dressed" was a complete subordinate clause, and "the baby" is actually the subject of the main clause

Clue:

- Subordinating conjunction (e.g. while) at the start
- Expected the embedded to be the subject of the main clause, but in the later sentence we figured out that it is just the subject for embedded.

Main clause / Reduced relative ambiguity

"The horse raced past the barn fell"

The confusion comes from the main verb. Before it was expected the "raced" as the main verb. Then after the "fell" we know that "raced past the barn" is a reduced relative clause "The horse that _ was raced past the barn fell"

Clue:

- Ambiguity between a main verb and a reduced relative clause structure

NP/ Sentence ambiguity

"Lin saw the answer was incomplete"

Initially, "the answer" seems like the object NP of "saw"

But "was incomplete" shows that "the answer" is the subject of an embedded sentence:

Clue:

- Just like the ambiguity says, this is for those ambiguity that initially thought is a NP but turns out it is a sentence.

7. Describe what the garden path model proposes about syntactic parsing

Two-stage parsing model:

1. Stage 1:
2. The parser only considers syntax
3. It chooses the simplest structure using Minimal Attachment and Late Closure
4. Stage 2:
5. If the sentence doesn't make sense, the parser reanalyzes it.
6. Differentiate between late closure and minimal attachment

Late Closure:

The parser attaches new words to the phrase currently being processed.

Example:

The steak with the sauce that was tasty didn't win a prize

The parser prefers to attach "that was tasty" to "the sauce", not "the steak"

Minimal Attachment:

The parser chooses the structure with the fewest nodes.

Example:

"[The student knew the answer] was incomplete"

The parser prefers "the answer" as an NP rather than interpreting "the answer was incomplete" as a sentence

9. Use the principles of the garden-path model to explain how syntactic ambiguity is resolved in a sentence and whether there will be processing difficulty in a sentence or not

Processing difficulty occurs when the parser is forced to reanalyze a sentence.

Example: "The horse raced past the barn fell"

Garden Path Model Prediction:

The parser first assumes "raced" is the main verb

When "fell" appears, the sentence must be reanalyzed

This causes processing difficulty.

Week 06: Parsing Ambiguity (cont., on constraint-based models),

1. Explain how the constraint-based model differs from the garden-path model

Garden-Path model:

Type: Two stage model

Assumption:

The parser builds only one initial structure using syntax alone, without reference to meaning or context.

If this structure later turns out to be incorrect, reanalysis is needed

Constraint-Based Model:

Type: One stage model

Assumptions:

The parser considers multiple sources of information simultaneously, including:

- Syntax
- Semantics
- Verb subcategorization frequencies
- Context/discourse
- Visual information

The parser may consider multiple interpretations in parallel and choose the most probable one.

✅ **Summary Table:**

Aspect	Garden-Path Model	Constraint-Based Model
Structure building	Syntax-only (initially)	Syntax + multiple info sources
Stages	Two-stage	One-stage
Structures considered	One at a time	Multiple simultaneously
Cause of delay	Reanalysis due to incorrect parse	Competition or uncertainty among options
Adaptability	Rigid and blind to context	Flexible and context-sensitive

2. Use the principles of the constraint-based model to explain how syntactic ambiguity is resolved in a sentence and whether there will be processing difficulty in a sentence or not

The parser weighs multiple cues simultaneously to resolve ambiguities:

- Analysis the thematic roles (does the subject plausibly perform the verb action?)
- Frequency of subcategorization (how verbs usually behave)
- Contextual information (narrative clues, prior sentences)

If the cues strongly support one interpretation, the parser quickly selects it, which means low processing difficulty.

Like "The horse raced past the barn fell"

Garden-path model predicts confusion because "raced" is mis-parsed as main verb(since horse could related to race)

If the cues compete or mislead (like the garden-path sentences), processing slows due to structure competition.

Like "The treasure buried in the sand was lost"

No confusion - parser expects a passive structure because "treasure" is unlikely to bury anything. Most likely, it is the one being buried.

3. Explain how the different types of information sources (thematic relations, frequency of subcategorization frames, context effects) impact processing, according to the constraint-based model

Thematic Relations:

- Do participants match the likely roles?
- If yes -> parse is easy
- If mismatch -> parser may shift interpretation
- e.g. The treasure buried in the sand -> treasure fits passive -> no confusion

Subcategorization Frame Frequencies

- How verbs are typically followed (NP or CP?)
- e.g. "Knew the answer was wrong" vs. "realized the answer was wrong"

- know -> prefer NP (know something) -> parser expects noun, is confused by full clause
- realize -> prefers S/CP -> parser expects clause -> smooth processing

4. Differentiate between D-structure and S-structure

D-Structure (Deep Structure):

The output of phrase structure rules

Basic syntactic organization before movement

S-Structure (Surface Structure):

Result after movement operations

What we see and hear in actual speech

Captures sentence word order after transformations

Movement operations transform D-structure -> S-structure

5. Define T-to-C movement, phrasal movement, and wh- movement

T-to-C Movement (Head Movement):

- Tense/auxiliary element (T) move to Complementizer (C)
- Happens in yes/no questions
- e.g. "Sam will sing. -> Will Sam sing?"

Phrasal movement:

- Movement of whole phrases (not just heads)
- e.g. in passive sentences:
- "Franny ate the cookie" -> "The cookie was eaten (By Franny)"

Wh-movement:

- Movement of wh-phrase (who, what, where, etc.) to Spec-CP
- e.g. "Franny will eat what"-> "What will Franny eat?"

6. Identify sentences that require T-to-C movement and wh- movement

Here are some examples:

T-to-C movement

"Can the cat climb this tree?"

"Will Sam sing"

"Does John run?"

Wh-movement

"What will Yasmin bake?"

"Who did Franny say studies Kurdish?"

"Where did the bell ring?"

7. Identify where the gaps are in wh-questions

Wh-movement leaves a gap at its original position in the sentence:

- Undo the sentence to a declarative to find the gap

Examples:

- "Who did Franny say _ studies Kurdish" -> Gap is subject

8. Identify what types of gaps there are in wh-questions (subject, object complement, PP object complement, adjunct)

🧱 8. Types of Gaps in Wh-Questions

Type	Example
Subject gap	“Who did Franny say __ studies Kurdish?”
Object complement gap	“What cheese did Franny eat __?”
PP object complement gap	“Who did Franny talk to __?”
Adjunct gap	“Where did the bell ring __?”

9. Identify sentences that involve pied-piping

Pied-piping: the wh-word moves together with other material

Contrast: Preposition Stranding = wh-word moves alone, preposition stays

Examples:

- With pied-piping:
- To which country did Aleah send the package __?
- Without pied-piping (preposition stranded)
- Which country did Aleah send the package to __?

10. Draw S-structure trees for various sentences involving T-to- C movement or wh-movement

Check the tutorials to see examples.

Week 08: Movement (continued), Parsing Gaps

1. Identify sentences that have wh-movement but do not have

T-to-C movement

Not all wh-movement involves T-to-C movement

Example: Embedded wh-questions

- "Alex asks [who Sam will see]" -> no T-to-C movement
- *"Alex asks [who will Sam see]"-> ungrammatical because C is already filled

In these embedded clauses, C already contains a Complementizer, so T cannot move into C

2. Describe what in-situ and multiple wh-questions are

In-situ wh-questions: The wh-phrase stays in its original position (No fronting)

Common in Mandarin, Japanese, Korean

In English, only used in echo questions:

- "Kim put the book on which table?"
- "Sue bought what materials"

Multiple wh-questions:

English allows only one wh-phrase to move:

- Allowed: "what did Becky put where?"
- Not allowed: "What where did Becky put?"

Some languages (e.g. Bulgarian) allow multiple fronted wh-phrases

3. Identify where the gaps are in relative clauses

Relative clauses are formed via wh-movement, leaving behind a gap

The gap appears where the head noun plays a syntactic role in the relative clause:

- Subject gap: "the student [who _ sneezed]"
- Object gap: "the student [who we admire _]"
- PP object gap: "the student [who we wrote to __]"
- Indirect object gap: "the customers [who we gave __ a coffee]"

4. Identify what types of relative clause gaps there are

Type	Example Sentence
Subject	“the student [who __ sneezed]”
Object	“the student [who we admire __]”
PP Object	“the student [who we wrote to __]”
Indirect Object	“the customers [who we gave __ a free coffee]”

5. Explain what the Accessibility Hierarchy is

A universal ranking of syntactic positions based on how accessible they are for relativization:

$$Subject > direct\ object > indirect\ object \vee object\ of\ a\ preposition$$

Prediction:

- If a language allows gaps in a lower position, it will also allow them in higher positions.
- But not necessarily the other way aroung

6. Determine, based on given data, where the cut-off point is in

the Accessibility Hierarchy

Languages differ in where they "cut off" access to lower gap types:

- Some only allow subject and object gaps, hence cut-off point is the object
- Others allow all the way to PP or indirect object gaps

It is determined by looking at the lowest gap a language permits

7. Make predictions based on data according to the

Accessibility Hierarchy

If a language allows a PP object gap, then it must allow

- Subject, direct object, indirect object gaps

If a language allows only the subject gap, then it will not allows other gaps

8. Draw S-structure trees for various sentences involving

topicalization and relative clauses

Drawing problem

9. Describe what long-distance dependencies are

Occur when a wh-phrase (filter) is far from its gap

Example:

"Which pizza did you say that Sam ate __"

The dependency crosses clauses -> make processing harder

10. Describe what the processing tendencies of the incremental

parser are when it comes to parsing sentences involving

gaps

Human sentence parser process word by word (incrementally)

When encountering a filter (e.g. "which pizza"), the parser begins predicting where the gap will be

This process is guess-based:

- If the guess is right -> smooth processing
- If wrong -> processing difficulty (garden-path effect)

11. Explain what the active filler hypothesis is

The parser actively looks for a gap immediately after a filter is encountered

It does not wait for full info

Predicts:

- Early gap = easier processing
- Delayed gap = harder processing

Example:

- "What did the actor rehearse __ in the theatre?" → ✓ easier
- "What did the actor rehearse for __ in the theatre?" → ❌ harder

12. Explain what memory-based approaches propose about

processing difficulty of sentences with gaps

Sentences with long-distance filter-gap dependencies require the parser to

- Hold the filter in working memory until the gap is found

The longer the delay, or the more material between filter and gap, the harder the sentence is to process

13. Determine which sentences are easier or more difficult to

process according to active filler hypothesis or memory-

based approaches

Sentence Type	Active Filler Hypothesis	Memory-Based Approach	Difficulty
"What did you eat __?"	Gap found early	Short memory hold	Easy
"What did you rehearse for __?"	Gap delayed	Longer memory hold	Hard
Subject Gap Relative Clause	Gap comes early	No NP interruption	Easy
Object Gap Relative Clause	Gap comes after NP	NP interrupts	Hard

Week 09: Formal Semantics

1. Explain the notions of reference and sense with respect to

language in general as well as individual word

Sense:

The conceptual content of descriptive meaning of a word/expression

Example: "taco" -> hand-sized Mexican dish with meat, veggies, etc.

Reference:

The actual object or individual in the world that the word points to.

"Taco" may refer to a specific taco you see or eat.

2. Describe the difference between a common noun and a definite description, including proper names

Common Noun: Refers to sets of entities (e.g. "tacos", "cats")

Definite Description: Rigidly identifies a specific individual with descriptive content (e.g. "the uncle of Frodo Baggins")

Proper Names: Rigidly designate individuals without descriptive content (e.g. "Mike")

Note both proper names and definite descriptions refer to individuals, but only definite descriptions have sense.

3. Distinguish between analytical sentences, contradictions,

and synthetic sentences

Type	Truth Condition	Example
Analytical	Always true by meaning alone	"Siblings are brothers or sisters"
Contradiction	Always false by meaning alone	"duck is not a duck"
Synthetic	truth value depends on real-world facts	"There is a cat on the windowsill"

4. Understand the differences in truth conditions between

contradictory and contrary relations between propositions

Type	Can Both Be True?	Can Both Be False?	Example
Contradictory	❌	❌	“Guillaume is the king of France.” / “He is not...”
Contrary	❌	✅	“Martin’s canary likes seeds.” / “Martin has no canary.”

5. Define entailment and presupposition, including types of

entailments (asymmetrical vs. paraphrase)

Entailment:

A logical inference:

If sentence A is true -> sentence B must be true

Types:

Asymmetrical: One entails the other but not vice-versa

"Issac is a big bear" -> "Issac is a bear"

Paraphrase (Mutual entailment):

"Antigua is warmer than BA" "BA is colder than Antigua"

"Antigua is warmer than BA" ↔ "BA is colder than Antigua"

Presupposition:

Background assumption already accepted in conversation (common ground)

Example:

_ "Cristina's dog is a golden retriever"

We could know that Cristina has a dog

6. Identify presupposition triggers

Trigger type	Examples
Definite Descriptions	"The PM of Canada", "Petro's hat"
Factive Verbs	"regrets", "realize", "know"
Aspectual Verbs	"stop", "start"
Temporal Clauses	"before", "after", "while"
Lexical Items	"again", "too", "still"

7. Apply the negation and question tests to pairs of

propositions to see if the logical inference (the second in the

pair) drawn is that of presupposition or entailment

Test	How it works	Example	Result
Negation	Entailment disappears under negation, presupposition remains	"Cristina's dog is not a golden retriever"	Presupposes: "Cristina has a dog"
Question	Entailment disappears under negation, presupposition remains	"Is Cristina's dog a golden retriever"	Presupposes: "Cristina has a dog"

Week 10: Lexical Semantics

1. Understand and define different approaches to lexical

semantics

Theory	Core Idea
Necessary & Sufficient conditions	Lexical meaning = definition-like semantic features
Conceptual Semantics	Words link to mental concepts rather than pure dictionary definitions

Generative Lexicon	Lexical entries are rich, structured, connected to cognition
Prototype Theory	Word meaning

2. Distinguish between different types of lexical ambiguity

Type	Description	Example
Polysemy	One word, related senses	"foot" (of body, of mountain)
Homonymy	Different words, same form	"row" (with oars vs. in a line)

Note Polysemy shows shared meaning; Homonymy does not

3. Discuss synonyms and their behaviour with respect to literal

and idiomatic meaning

Synonyms: Words that can be swapped without changing sentence meaning

e.g. "pail" and "bucket"

- "Juan filled the bucket" = "Juan filled the pail"

But Synonyms are not interchangeable in idioms

- "Juan kicked the pail" (idiom fails)
- Idioms = non-compositional -> meaning sum of parts

Idioms = non-compositional -> meaning ≠ sum of parts

4. Identify different kinds of antonyms

Type	Explanation	Example Pair
Simple/Complementary	Can't be both or neither	on/off
Gradable	Can be in between	hot/cold; rich/poor
Converse	Same event, reversed roles	buy/sell; parent/child
Reverse	Opposite direction/motion	fill/empty; enter/exit

5. Understand hyponymy and meronymy

Relation	Meaning	Example
Hyponymy	Type-of relationship	beagle -> dog; stallion(male horse) -> horse
Taxonomy	Hyponymy + "Kind of "	"A beagle is a kind of dog"
Meronymy	Part-of relationship	finger -> hand; leaf -> tree

Hyponymy leads to asymmetrical entailments (e.g. "X is a stallion" entails "X is a horse")

6. Distinguish between verb-framing and satellite-framing

languages using diagnostics and definitions from the slides

Feature	Satellite-Framing(e.g. English)	Verb-Framing (e.g. Spanish, French)
How Path is expressed	In satellite (PPs like "into the room")	In the verb itself
Manner expression	Verb expresses manner (e.g. run, swim, float)	Ver expresses path(e.g. enter, descend)
Example	"He ran into the room"	

Diagnostic:

In English:

🟢 "The bottle floated *into the tunnel.*" (OK)

In Spanish:

❌ "La botella flotó *en el túnel.*" (Only means location, not endpoint)

7. Discuss cross-linguistic typology of prepositional meaning

and its impact on child acquisition

⚖️ **Cross-linguistic variation in contact/containment**

Language	Containment	Contact (Support)
English	"in"	"on"
Dutch	"in"	**"op"** (support), **"aan"** (hanging), **"om"** (encircling)

- Dutch encodes **more fine-grained spatial meanings**
- This makes words like **aan** and **om**:
  - **Typologically rare**
  - **Harder to learn** (per Typological Prevalence Hypothesis)

👶 **Impact on child acquisition:**

- Dutch children:
  - **Overextend** "op" (the more general one)
  - Rarely confuse "aan"/"om" with others
- **Abstract/non-spatial uses** (e.g., "denken aan = think about") learned later

Week 11: Pragmatics

1. Distinguish utterances from sentences

Utterances 言谈: (Sentence but with implied meaning, utterance implies sentence)

A real-world use of a sentence in a particular context, with implied meaning

Sentence:

A linguistic form: a string of words with grammatical structure, abstract and context-free

"I have an exam tomorrow." -> Sentence

As an answer to "Want to go to the movies?" -> Utterance = polite refusal

2. Distinguish between utterance meaning and implied

meaning in different conversational contexts

Utterance meaning depends on context

Implied meaning is what we infer, often unstated directly

Conversational implicature arises when meaning is inferred based on context and speaker intent

Example:

A: "Want to go dancing?"

B: "I have a driver's test tomorrow."

-> Implied answer "No" based on context

3. Define pragmatics, lexical semantics, and formal semantics

Term	Definition
Pragmatics	Study of how context contributes to meaning in language use
Lexical Semantics	Study of word sense and meaning relations (e.g. synonyms, antonyms)
Formal Semantics	Study of truth conditions and how sentence meaning is constructed logically

4. Define conversational implicatures and give examples

Conversational Implicature: an implied meaning derived from context, not explicitly stated

Defeasible (can be canceled)

Not logically entailed

5. Identify different Gricean Maxims and the cooperative

principle in action

Cooperative Principle: Speakers contribute in a way that's appropriate for the conversation.

Maxim	Guideline
Quality	Be truthful; don't lie or say things without evidence
Quantity	Say as much as needed, but no more
Relevance	Be relevant to the topic
Manner	Be clear, brief, and unambiguous

6. Distinguish between types of inferences by applying tests,

including the defeasibility and reinforcement tests

Test	Implicature	Entailment	Presupposition
Defeasibility	✅ Cancelable	❌ Not cancelable	❌ Not cancelable
Reinforceability	✅ Can restate	❌ Redundant	❌ Redundant
Negation/Question	❌ Not preserved	❌ Not preserved	✅ Preserved

Reinforce ability is a test used in pragmatics to distinguish implicatures from entailments and presuppositions

A statement has reinforce ability if:

You can explicitly state the implied meaning without sounding redundant, contradictory, or odd.

For example:

A: "Some of the students passed the exam."

B: "...but not all of them."

The phrase "some of " implicates "not all".

Saying "not all" reinforces the implicature

7. Identify scalar implicatures with predicates on a scale of

more to less specific

Scalar Implicatures:

Arise from words that lie on a scale of informativeness

Use a weaker term implies stronger term is not true

Sentence	Implicature
The water is warm	Not hot
Some of the boys came	Not all of the boys came
Roxy saw most of the movie	Not all of the movie

8. Discuss variation in conversational implicatures in contexts

of cultural diversity and neurodiversity

Neurodiversity:

- Autistic (自闭症) adults may use different strategies for drawing implicatures
- May show preference for literal interpretation
- Example study:
  A: "Could you hear the trains"

B: "There were a lot of trains."

Non-autistic: infer "No"

Autistic: more likely "I don't know" or literal "Yes"

Cultural Variation

Cultural norms affect how implicatures are drawn

Example from Kyoto:

"Would you like anything else?" = Polite way of saying "It's time to go"

Week 12: Morphosyntactic Variation and Change

1. Define variationist sociolinguistics

A methodological approach to understanding how language varies depending on :

- Linguistic factors (e.g. word order, pronunciation)
- Social factors (e.g. region, age, class identity)

Focuses on language in use (not just idealized grammar)

2. Explain the difference between variant and variable

Term	Meaning
Variable	The abstract choice point in language (e.g. how to end "-ing" words)
Variant	The actual form realized in speech (e.g. [ɪn] vs. [ɪŋ])

3. Discuss the nuances between the terms language, dialect,

and variety with respect to mutual intelligibility and social

value judgments

Language: Often politically defined (not just linguistic)

Dialect (方言): Sub-variety of language, tied to social/geographical groups

But not inferior; all people speak in dialects

Variety: Neutral term used in sociolinguistics

Mutual intelligibility doesn't always define language/dialect

4. Explain the difference between synonyms, variants, and

categorical alternation

Type	Description
Synonyms	Words with similar meanings, but usually different connotations (e.g. "pail" vs. "bucket")
Variants	Forms that alternate systematically in usage (e.g. "eh" vs. "innit")
Categorical Alternation	Ruled-based alternation where context predicts which form is used (e.g., [aɪ] → [ʌɪ] before voiceless sounds in Canadian Raising)

5. Identify types of variation in style and register

Variation based on formality, social role , and interactional context

Register = situational variety (e.g. formal, casual)

Style shifting = changing how we speak based on who we talk to

Examples:

"Sir" vs. "Buddy"

"tu" vs. "vous" in French

Formal speech with professors vs. slang with friends

6. Distinguish between synchronic and diachronic studies of

language as well as real-time and apparent time studies

Study Type	Description
Synchronic	Language data from a single point in time
Diachronic	Language change over time
Real-Time	Track actual people over time

7. Discuss the role of language variation in language change

over time vs. stable variation

Variation: Multiple forms coexists (e.g. "goin" vs. "going")

Language change: One variant eventually replaces another (e.g. "goose" vowel shift)

Sometimes variations is stable (eg. "-ing" variants)

Sometimes it leads to change over time

8. Identify different pressures of change and reasons for language change

Source	Examples
External	Contact with other languages, social pressure ("Change from above")
Internal	Changes from within language (grammar, pronunciation, new words)
Other causes	Acquisition patterns, semantic shift, prestige & identity

9. Define grammaticalization and be familiar with different ways to diagnose it

A historical process where content words become grammatical forms

Example:

"by side" -> "beside" (preposition)

Diagnostic Features:

1. Decategorialization: loses original grammatical category
2. Extension: used in new contexts
3. Desemantization: loses original meaning
4. Phonological erosion: loses sounds
5. Understand and discuss English and Nahuatl case studies of

grammaticalization covered in class

✅ English — "beside":

Stage	Form & Meaning
Old English	*siden* = noun ("side")
Early Modern	"beside" = adverb ("aside")
Modern	"beside" = preposition ("next to")

- Shows **all four** signs of grammaticalization

✅ Nahuatl:

- **Relational nouns** are turning into **prepositions**
  - e.g., *i-pani* ("its-spine") → *pan* ("on")
- Signs of grammaticalization:
  - Word order shift (noun → preposition position)
  - Loss of inflection (e.g., possessive prefixes)
  - Phonological erosion