Syntax 2
What happens when you encounter these sentences? --

1. the horse raced past the barn fell

2. the man who hunts ducks out occasionally

3. flying planes can be dangerous
Describe what’s happening in this sentence:

This is the man who the policeman who was walking his beat which was in a tough neighborhood saw in a streetcar up.
Goals of syntax:

not to list the total set of all possible sentences in a language, but the more interesting questions –

• what constitutes knowledge of language? (what the speaker knows about language)
• how is that knowledge acquired
• and how is it put to use? how do we go from knowledge (interior language) to speech, from langue to parole, from competence to performance?
**generative grammar** is a theory that explains how language is possible, how any child can learn any language using the same mental blueprint – it has explanatory adequacy

**generative grammar** = a set of rules for generate all the sentences of a language

what do we mean by *rules*?
by *generate*?

explanatory adequacy: the theory explains the possible in language and excludes the impossible

it explains why

*What did you buy?*

is a possible English sentence and

*What did you buy bread and?*

is not.
The concept of **universal grammar**—

- language distinguishes humans from all other animals
- all humans acquire language in much the same way
- all human languages share certain fundamental properties (linguistic universals)

How can we explain this phenomenon?

What are some universals of language?

- all languages consist of groupings of words, not linear strings

Trains are linear, and you can move each piece of a train randomly without affecting its function. But the words of our language work in connected groupings that function together and move together.

- babies don’t imitate grown-ups as they learn language; rather, they seem to use language data to figure out the rules of their particular language
- the cognitive toolkit that allows them to do this is what we call “universal grammar”
The sentence as a unit of structure:

obviously there are larger units as well: a conversation, a book, a speech;

and smaller ones, morphemes and phonemes

Groupings of words in sentences are called **constituents**

The constituents are arranged in **hierarchical structures** within the sentence.

Some constituents can be embedded within others in a hierarchy:

\[
\text{the perplexed students reread the chapter in the book} >
\]

\[
[\text{the perplexed students}] [\text{reread the chapter in the book}]
\]

\[
([\text{the}] [\text{perplexed students}]) ([\text{reread}] [\text{the chapter in the book}])
\]

\[
([\text{the}] [{\text{perplexed}\{\text{students}\}}]) ([\text{reread}] [{\text{the} <\text{chapter}> <\text{in}\{\text{the} \ \{\text{book}\}\} >})
\]
Constituent structure:

the hierarchies of a Sentence--

sentence > clause > phrase > word

English has 5 types of phrases: NP, VP, AdjP, AdvP, PrepP

• every sentence consists of at least one clause
• every full clause consists of a NP that functions as the subject, and a VP that functions as the predicate
• what are subjects and predicates?
• can you have a sentence with only one word?

**principle** of structural dependency:

sentence structure in all languages depends on *groupings* of words rather than linear strings
clauses and sentences

**independent clause:** may be a sentence itself, called a **simple sentence:**

*the perplexed students reread the chapter*

or it may be joined to another independent clause to form a **compound sentence:**

1. *the students were perplexed and they reread the chapter*
2. *the chapter perplexed the students, so they reread it*
3. *the students were perplexed; they reread the chapter*
Types of dependent clauses

**dependent clause:** (subordinate cl) cannot stand alone; it is embedded or inserted into an independent clause to form a complex sentence; to modify a constituent within the independent clause, or to modify the entire independent clause

- **adverbial clause:** often introduced by a subordinating conj (when, because, after, if, although)

  > After they reread the chapter, the students felt much less perplexed.

- **relative clause:** typically introduced by a relative pronoun (that, which, who, whom, whose)

  > The instructor, who loved syntax, tried to make that love contagious.

- **complementizer clause:** often introduced by that or wh- word (whether, what, when)

  > The students thought that the instructor was a little off.
These dependent clauses may be reduced into participial, gerund, and infinitive phrases:

Having reread the chapter, the students felt much less perplexed. The instructor, loving syntax, tried to make that love contagious. The students thought the instructor to be a little off.

As phrases, these structures don’t have a full or inflected verb; instead they use

a participle: having reread the chapter

a gerund: loving syntax

an infinitive: to be a little off
One test of a constituent: can a single word substitute for it? Can it stand alone? Can it move as a group?

*The perplexed students reread the chapter.*

*They reread the chapter.*

Who reread the chapter?

*They reread it.*

What did they reread?

*They did.*

Have they done it yet? Yes? What?

A single word can’t substitute for reread the:

*The students did chapter*

or for the perplexed
Grammatical and acceptable

We know that

*the fabulous teacher*

is a noun phrase

and we know that

* * teacher fabulous the*

* * the teacher fabulous*

are not.

How do we know this?
We know that

\[ \text{Colorless green ideas sleep furiously} \]

is on some level a grammatical English sentence.

But we also know that “it does not compute.”

The notion that a sentence must be both grammatical and acceptable, that it must fit our understanding of what constitutes an English utterance and that it also must make some kind of sense.

Can you make sense out of this utterance?

\[ \text{Colorless green ideas sleep furiously} \]
Phrase Structure Rules

they describe the allowable constituents of a language, and they take the form
type of phrase > allowable elements in the phrase

Some allowable NPs:

NP > N  smoke

NP > Det N  the smoke

NP > Det Adj N  the thick smoke

NP > Det Adj Adj N  PP  the thick black smoke in the kitchen

So a general English NP rule would look like this:

NP > (Det) (Adj) N (PP)
Basic PS Rules of English:

\[ S \rightarrow NP\ VP \]

\[ NP \rightarrow (Det)\ (Adj+)\ N\ (PP+) \]

\[ ADJP \rightarrow (ADV)\ ADJ \]

\[ VP \rightarrow (ADVP+)\ V\ (NP/S)\ (PP+)\ (ADVP+) \]

\[ ADVP \rightarrow (ADV)\ ADV \]

\[ PP \rightarrow P\ NP \]
Form and function: just as a word can look like a noun and function like an adjective, sentence constituents must be analyzed both for their form and their function --

- nominals: all constituents acting like nouns
- adjectivals: all constituents acting like adjs
- adverbials: constituents acting like advs
Clause types:

Nominals:

NP    I heard this weird noise.
PP    The noise came from in the car.
complementizer    I know that the noise came from there.
infinite phrase    I want to know what the noise is.
gerund phrase    Hearing the noise freaked me out.

Adjectivals:

ADJP    I have an incredibly crazy cat.
NP    I found my cat in the school basement
PP    My cat likes twist-ties from plastic bags.
rel clause    She eats cereal that falls on the floor.
infinite clause    She disobeys my command to stop biting my feet.
participial phrase    She is a cat possessed by imaginary friends.
Adverbials:

ADVP  She swims in arctic waters *ridiculously* often.
PP    She protects her face *with* petroleum jelly.
NP    She plans to swim *tomorrow*.
Adv clause  Doctors were stunned *when* they *heard* about *her*.
infin phrase  They ran tests *to* figure *out* how *she* does *it*.
participial phrase  She went *swimming in* an icy lake.
Basic clause types:

<table>
<thead>
<tr>
<th>PS Description</th>
<th>Functional Description</th>
<th>Type of Verb</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP VP</td>
<td>S V</td>
<td>intransitive</td>
<td><em>We studied</em></td>
</tr>
<tr>
<td>NP [V NP] vp</td>
<td>S V O&lt;sub&gt;d&lt;/sub&gt;</td>
<td>transitive</td>
<td><em>We studied grammar</em></td>
</tr>
<tr>
<td>NP [V NP NP] vp</td>
<td>S V O&lt;sub&gt;i&lt;/sub&gt;O&lt;sub&gt;d&lt;/sub&gt;</td>
<td>ditransitive</td>
<td><em>We gave her our homework</em></td>
</tr>
<tr>
<td>NP [V NP/AdjP] vp</td>
<td>S V Pred</td>
<td>linking</td>
<td><em>We are good students</em></td>
</tr>
<tr>
<td>NP [V NP NP/AdjP] vp</td>
<td>S V O Pred</td>
<td>object-predicative</td>
<td><em>She called us brilliant</em></td>
</tr>
</tbody>
</table>
A phrase-structure tree diagram:

Perplexed students reread the chapter.
The perplexed students reread the chapter in the book.
Analyzing the NPs the perplexed students and the chapter in the book, from The perplexed students reread the chapter in the book.
Differences in tree structures can disambiguate a sentence. Here are two ways of chunking *old horse farm*:
light house keeper
An NP with two adjectives: *big complicated trees*
We arrange the components in a different hierarchy if the NP *big complicated trees* refers to *complicated trees* that are *big* rather than *small*:
Why does this matter?

Syntactic ambiguity can be a problem that has real-life consequences. Consider this:

Subsection (b) (2) of the federal law against child pornography (18 US Code § 2252) provides that violators are to be sentenced to up to ten years in prison, except that the sentence is increased (to at least ten years and not less than thirty) if the defendant had previously been convicted under various other laws, including any state law

“relating to aggravated sexual abuse, sexual abuse, or abusive sexual conduct involving a minor or ward”.
In a case currently before the US Supreme Court, **Lockhart v. United States**, petitioner Lockhart claims that since he had a previous state conviction for sexually abusing an adult woman, he should be liable for a sentence of “up to ten years.” But the government claims he should be liable for a sentence of “up to thirty years.”

Here, again, is the part of the law that is ambiguous:

> “relating to aggravated sexual abuse, sexual abuse, or abusive sexual conduct involving a minor or ward”.

The question the Court must decide is, *What part of the law does “involving a minor” refer to?*

Does it only refer to the last of the offences, “abusive sexual conduct involving a minor.” That’s what Lockhart would prefer, since he’d then get a shorter sentence.

Or does it refer to all three categories of offense: “aggravated sexual abuse, sexual abuse, or abusive sexual conduct”? That’s what the government would prefer, since that would allow them to increase prison sentences across the board.”
This is how the government wants the Court to read the statute.
This is how Lockhart wants the Court to read the statute.
Should “involving a minor or ward” only apply to the NP it is closest to?

Or should it apply to the whole set of NPs?

How would you resolve the ambiguity of the reference for “involving a minor or ward?”
To what does the relative clause “involving a minor or ward” relate?

only to the final NP, “abusive sexual conduct”?

or to all three NPs, “aggravated sexual abuse, sexual abuse, or abusive sexual conduct”? 
Turns out, Lockhart won. Using the “rule of the last antecedent,” which states that

   a limiting clause or phrase . . . should ordinarily be read as modifying only
   the noun or phrase that it immediately follows

The Supreme Court found against Lockhart. It rejects “the rule of lenity” – a tie
goes to the defendant – because that only applies when there is no other
indicator of a reading.

Consequently, Lockhart is eligible for the full 10-year penalty.
when did the event happen?

*The perplexed students reread the chapter over the weekend.*
The unpredictable actress tripped the cop with the prop.

Two readings require two different underlying structures:

1. The actress trips the cop who has the prop.
2. The actress uses the prop to trip the cop.
In the NP *old men and women*,

who are you calling old?
Complex PS Trees: three types—adverbial, relative, and complementizers

An **adverbial clause** can modify the entire S:

*We studied because we had the test the next day.*

The adverbial whose head word is *because*: it’s the reason why we studied

The adverbial whose head word is *day*: that’s the time when *the test* is scheduled.
Relative clauses:

I had an epiphany that changed my attitude about grammar.

The relative clause begins with a relative pronoun, typically *who, whose, whom, which, that*:
I diagrammed the sentence that the teacher provided.

The relative clause begins with *that*. What’s the difference?
Here the relative is the subject of the clause:

Here the relative is the object of the clause:
Restrictive and nonrestrictive relative clauses:

A **restrictive relative clauses** specifies the referent of the N or NP, what the N or NP refers to.

In this example, the relative clause *that the teacher provided* distinguishes one specific sentence, the one that the student diagrammed, from the universe of possible sentences.

*I diagrammed the sentence that the teacher provided*

A nonrestrictive relative clause simply gives additional information about the N or NP but does not limit the referent:

*Hannah needs to buy the required book, which she found on Amazon.*

The relative clause, *which she found on Amazon*, gives additional information about the book that Hannah must buy, but she could certainly buy a different copy of the book somewhere else.
A complementizer clause:

introduced by the complementizer *that* (functions differently from relative pronoun *that*)

*We think that the grammar fairy has all the answers.*
Reduced subordinate clauses:

An *infinitive phrase*:

*We want to know the intricacies of grammar.*
**Gerund and participial phrases** can also be reduced clauses:

*We like it. + We study gerund phrases > We like studying gerund phrases.*

*We used the book that contains goofy example sentences > We used the book containing goofy example sentences.*

*We were stunned by the PS tree that was drawn on the board > We were stunned by the PS tree drawn on the board.*
Gerund phrases can function as NPs:

*We love learning grammar.*

*Gerunds make learning grammar fun*

*Writing example sentences is harder than you think.*

Present participial phrases:

*We need sentences exemplifying present participial phrases.*

*I want answers falling out of the sky.*

Past participial phrases:

*The answers provided in the book did not fall from the sky.*

*The trees drawn below should help.*
Tense and Aux

an additional node dominated by S
tense is carried by aux, if there is one, or MV if there isn’t an aux

*I have run ten miles*

The auxiliary *have* carries the tense marker

*My legs didn’t want to run anymore.*

The auxiliary *did* carries the tense marker

*They gave out at milepost 23.*

The main verb, *gave*, carries the tense marker; there is no auxiliary verb.
Empty or dummy subjects (or objects?): (expletive it and there)

What is the it in It’s raining?

It’s three o’clock?

It seems to me . . .

There is a tide in the affairs of man which, taken at the flood, leads on to fortune...

How about objects: Screw it.
Transformations – a set of rules for going from underlying PS to surface structure realizations of sentences:

What are you saying?

PS rules have the object after the V, but in the question above, the object is the first element of the sentence.

PS rules also predict that the aux will come after the subject:

You are saying what.

Transformations are rules that we apply to get from the underlying universal English structure for all sentences,

S > NP VP

to What are you saying, which has the realized, or surface structure, form VP NP.
**wh- questions:** the wh- word is fronted; if there’s no aux, we add dummy *DO*

- you said *x*
- what did you say?
- I am not a crook.

**negation:** the negative word *not* is inserted, typically after first aux (or after be) or dummy *do* is added:

- I want to get out of here fast + neg >
  - *I don’t want to get out of here fast.*
  - I am getting sleepy >
  - *I’m not getting sleepy*

**wh-question and negation combined:**

- You understand part of this + neg + question >
  - *What part of this do you not understand?*
yes-no questions: invert aux and subject; if there’s no aux, insert do before main v, then invert

You are getting very sleepy + question >

Are you getting very sleepy?

You like obscure grammatical terminology + question >

Do you like obscure grammatical terminology?

tag questions: first aux is repeated in tag,

This makes me look fat, doesn’t it?
**active voice / passive voice:** two voices to express but a single thought

In the passive, the direct object of the active becomes the subject of the sentence, the verb is replaced by a form of BE plus the past participle, and the subject is made the object in a prepositional phrase:

\[
\begin{align*}
\text{John took me for a ride} \\
\text{I was (got) taken for a ride (by John).}
\end{align*}
\]

\[
\begin{align*}
\text{Brutus killed Caesar} \\
\text{Caesar was killed by Brutus.}
\end{align*}
\]

**Agent:** the doer of the action  
**Patient:** the done-to, or recipient of the action

In the passive voice, the agent is optionally deletable.

\[
\begin{align*}
\text{Caesar was killed.} \\
\text{I got taken for a ride.}
\end{align*}
\]
Writers are often told, “Avoid the passive voice.” Here’s an example from Strunk and White, *The Elements of Style*:

10. Use the *active* voice.

The *active* voice is usually more direct and vigorous than the passive:

I shall always remember my first visit to Boston.
This is much better than
My first visit to Boston will always be remembered by me.

The latter sentence is less direct, less bold, and less concise.
If the writer tries to make it more concise by omitting “by me,”

My first visit to Boston will always be remembered,
it becomes indefinite: is it the writer, or some person undisclosed, or the world at large, that will always remember this visit?
Strunk recognized there was a place for the passive, and he even used the passive to talk about it:

In “Politics and the English Language,” George Orwell calls the passive one of the “swindles and perversions” of modern writing, though he uses an agentless passive to condemn the construction:

“The passive voice is wherever possible used in preference to the active.”

What’s so bad about the passive?
relative pronoun deletion (for restrictives):

I understand the last section that I read
I understand the last section I read

verb particle movement:

I looked up the number
I looked the number up