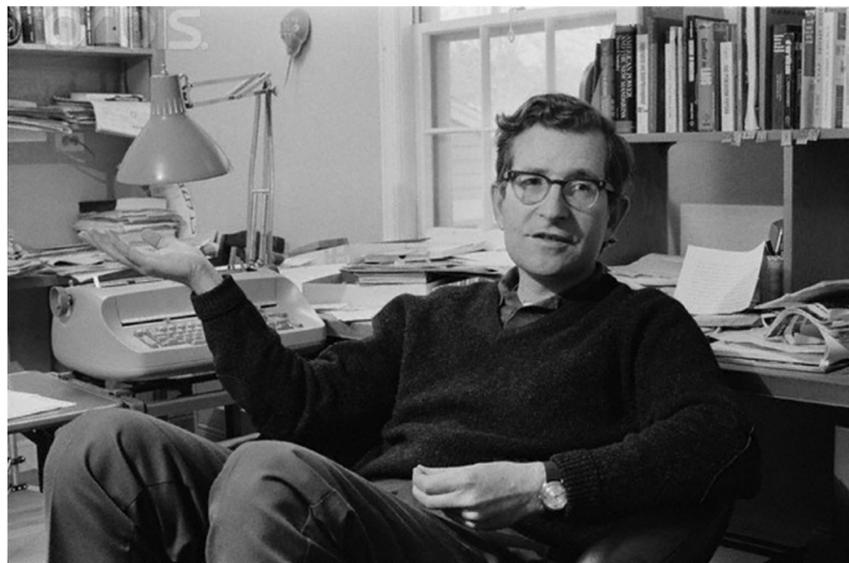


Generative Linguistics

- Linguistics is a branch of cognitive psychology.
- It is the study of a psychological system—a “mental organ” called the “language faculty”.
- This is the system that allows us to produce and understand complex and precise pieces of language.
- It is also the system that allows us to acquire language in the first place.



Noam Chomsky



Barbara Partee



Lila Gleitmann



Janet Fodor

“...the shift in focus [represented by generative grammar] was from from behavior or the products of behavior to states of the mind/brain that enter into behavior...”

- (i) What constitutes knowledge of language?
- (ii) How is knowledge of language acquired?
- (iii) How is knowledge of language put to use?

(i) What constitutes knowledge of language?

(ii) How is knowledge of language acquired?

(iii) How is knowledge of language put to use?

“The answer to the first question is given by a particular generative grammar, a theory concerned with the state of the person who knows a particular language.”

(i) What constitutes knowledge of language?

(ii) How is knowledge of language acquired?

(iii) How is knowledge of language put to use?

“The answer to the second is given by a specification of a UG [Universal Grammar] along with an account of the ways in which its principles interact with experience to yield a particular language; UG is a theory of the ‘initial state’ of the language faculty, prior to any linguistic experience.”

(i) What constitutes knowledge of language?

(ii) How is knowledge of language acquired?

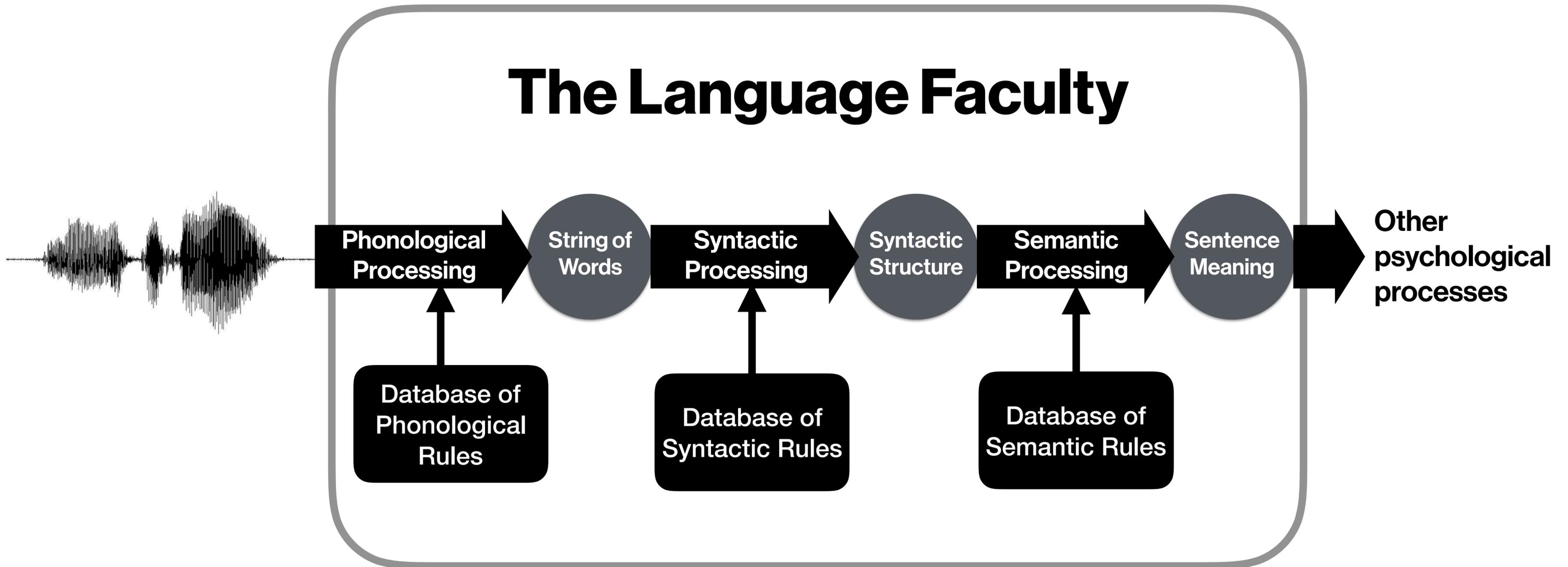
(iii) How is knowledge of language put to use?

“The answer to the third question would be a theory of how the knowledge of language attained enters into the expression of thought and the understanding of presented specimens of language, and derivatively, into communication and other special uses of language.”

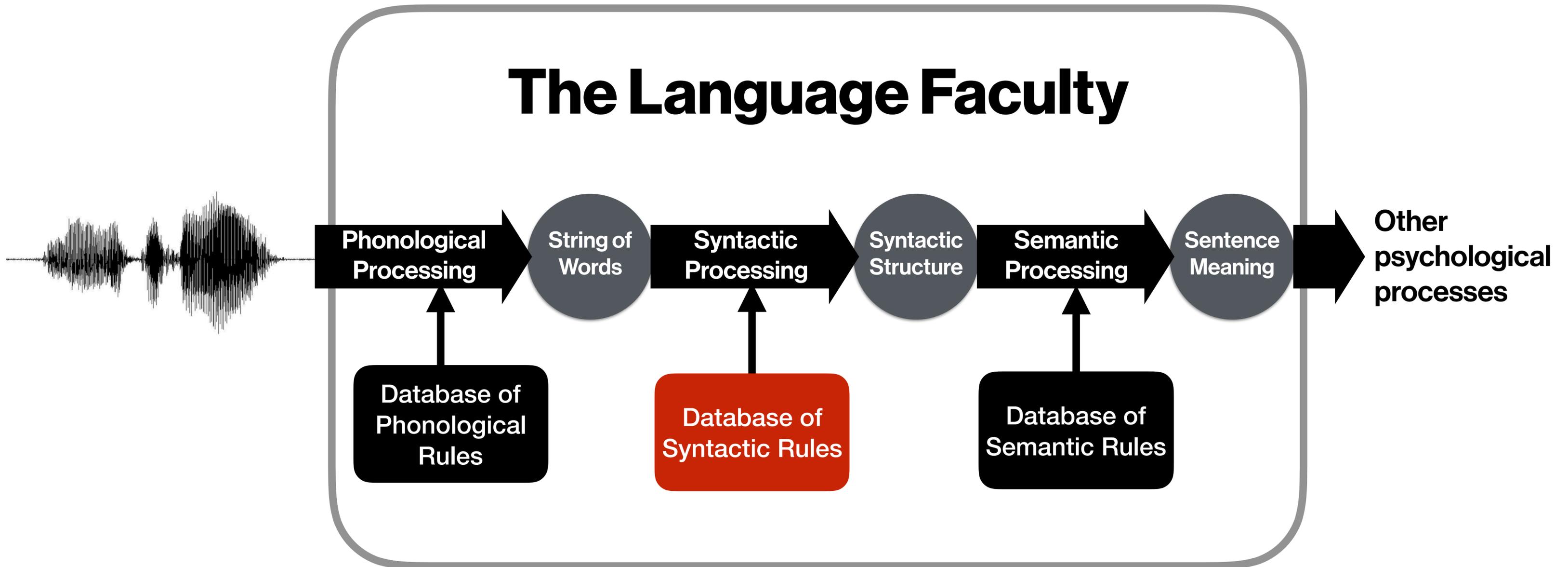
Language of Thought vs. Generative Linguistics

- Generative linguistics is a theory of our ability to acquire and use language of the kind that we speak out loud.
- The language-of-thought hypothesis is a theory about something else: the language in which we think.
- Important: Don't confuse the two!

Sentence Perception



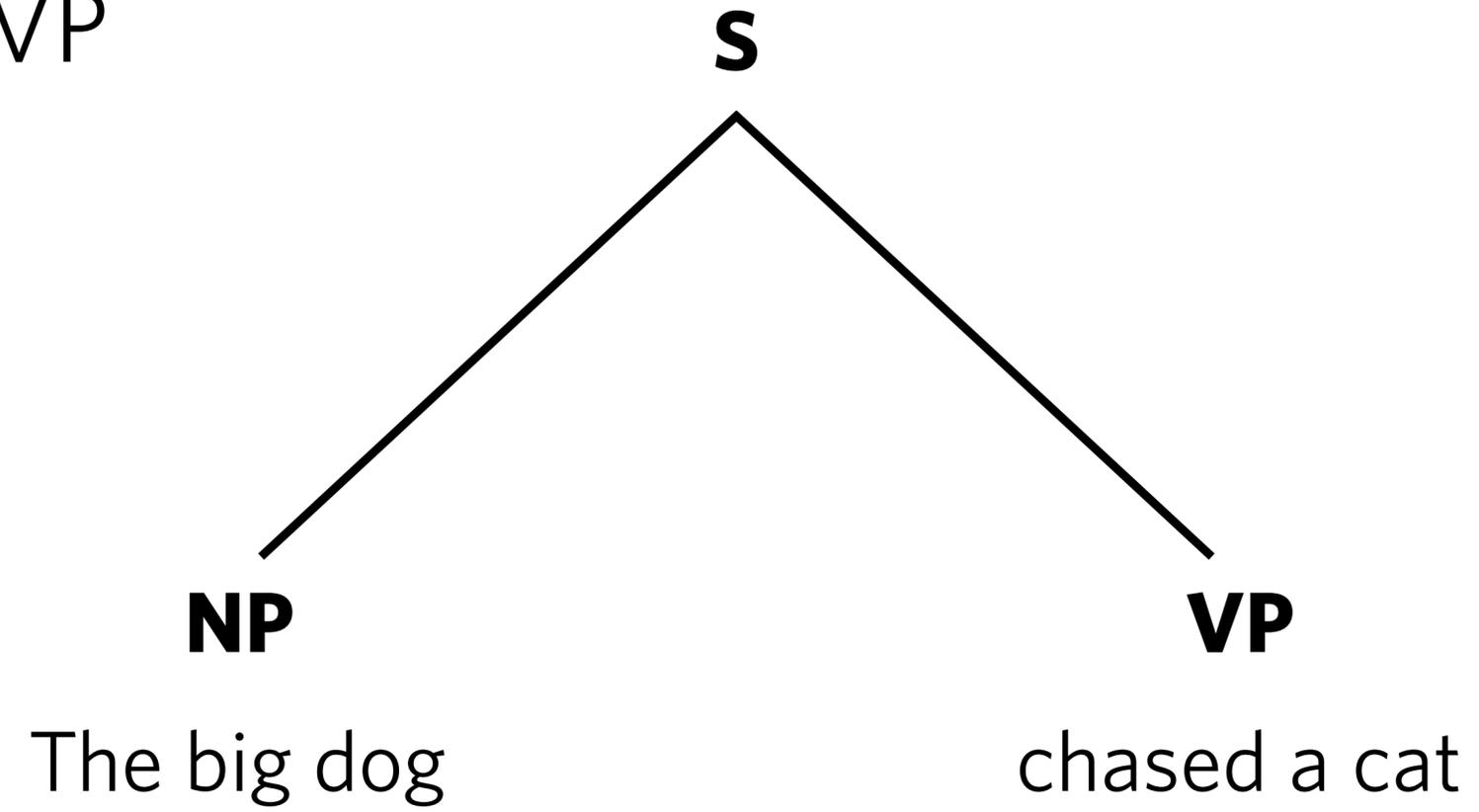
Sentence Perception



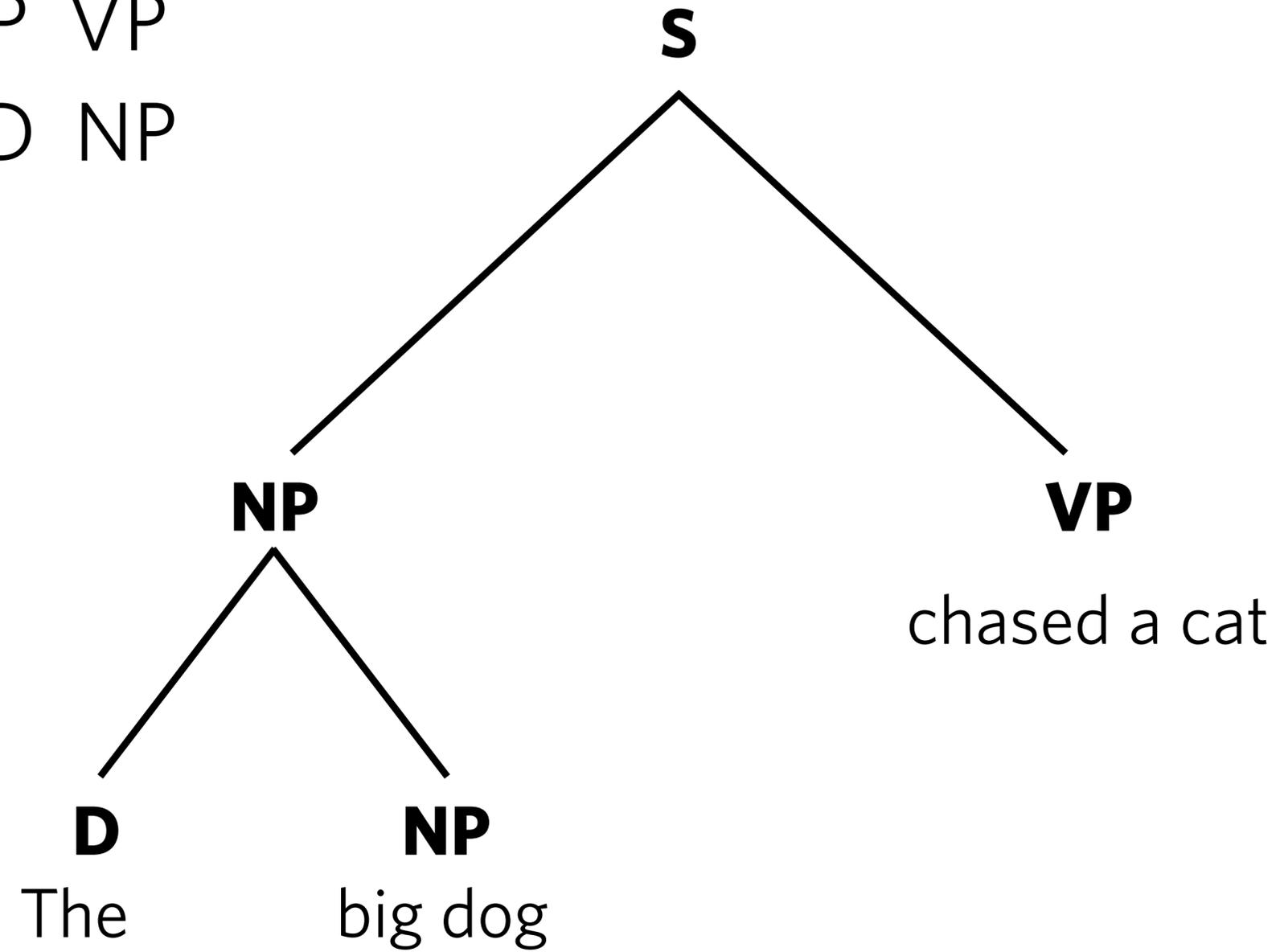
S(entence)

The big dog chased a cat

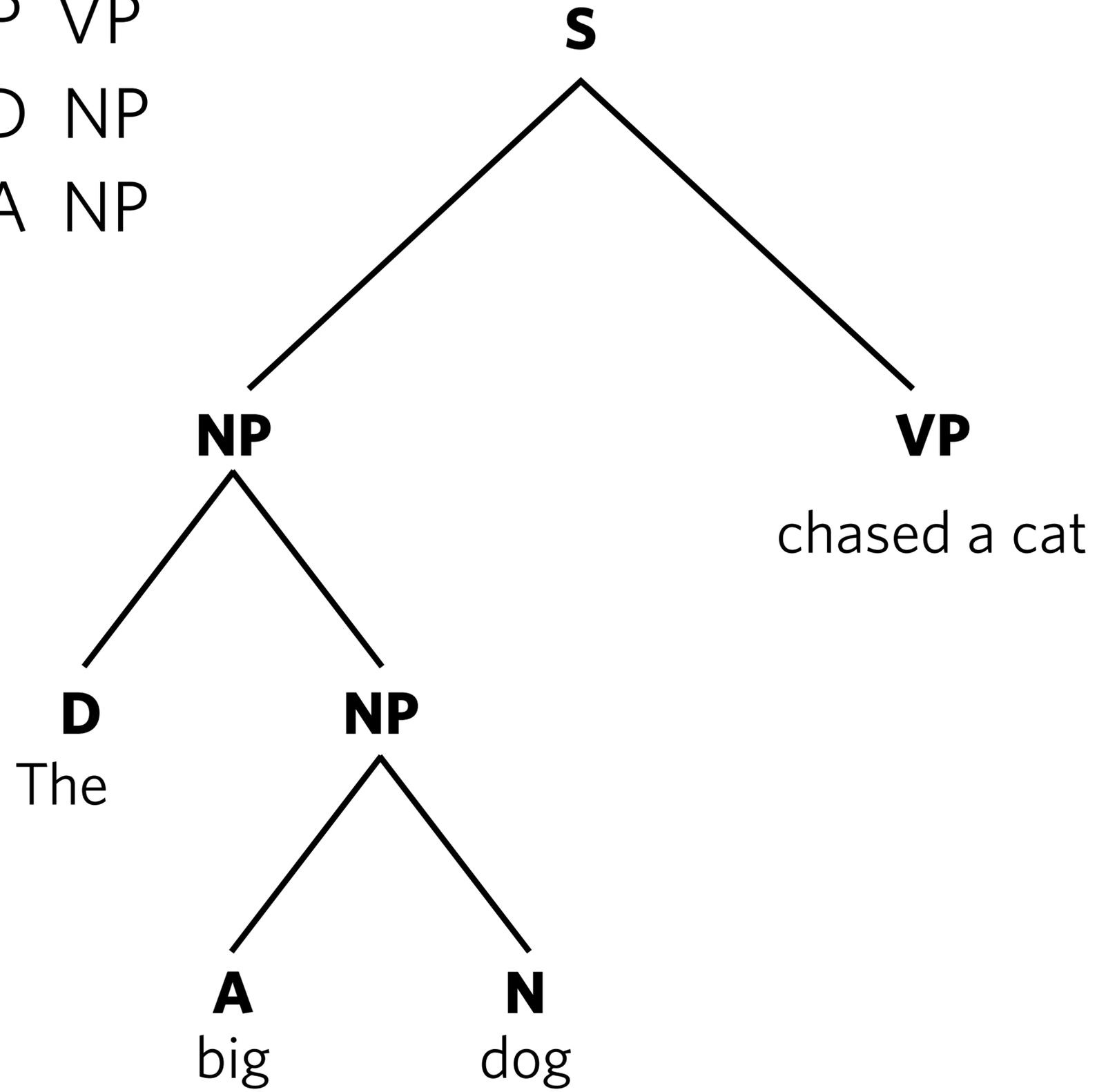
$S \rightarrow NP VP$



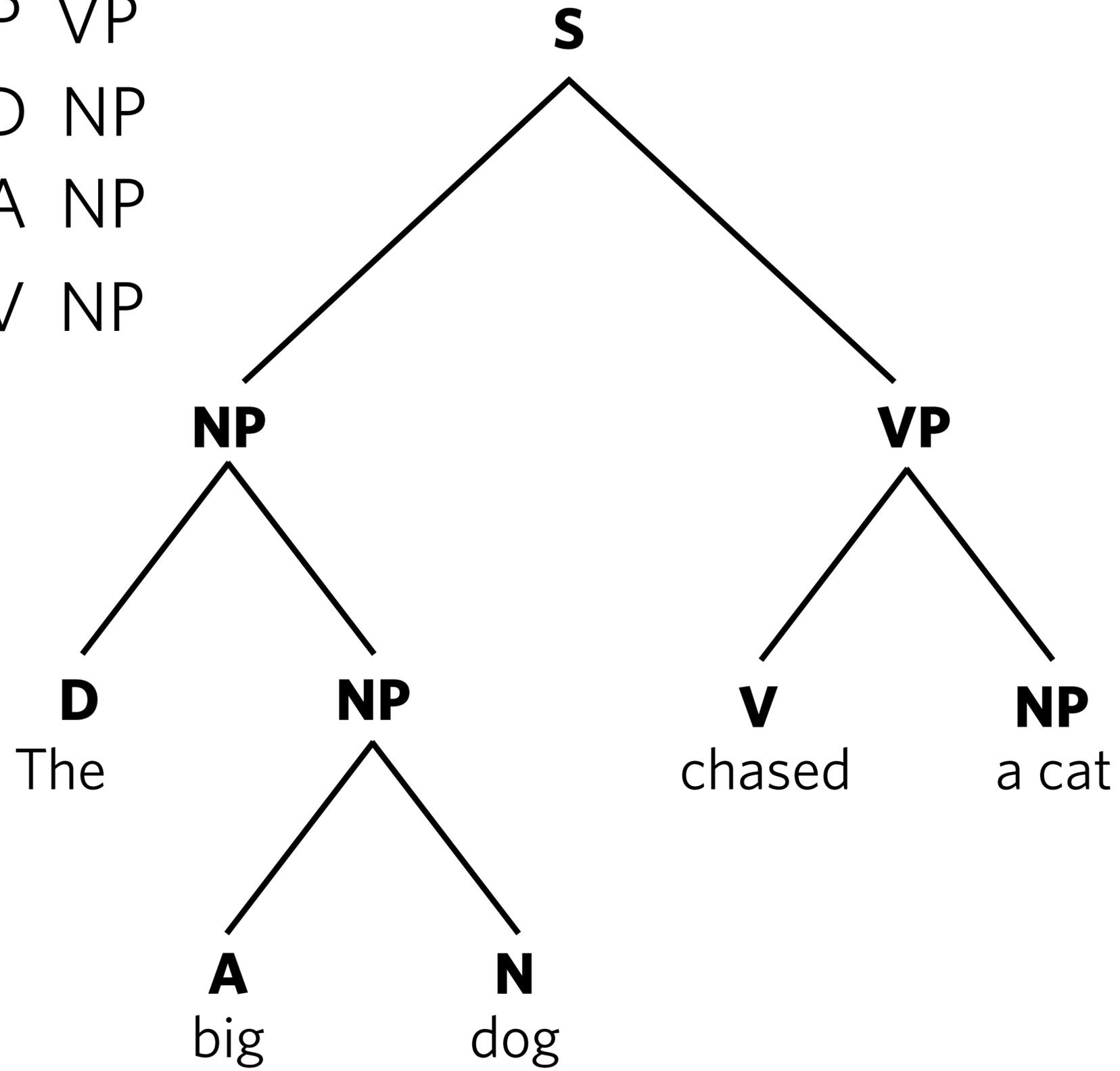
$S \rightarrow NP VP$
 $NP \rightarrow D NP$



$S \rightarrow NP VP$
 $NP \rightarrow D NP$
 $NP \rightarrow A NP$



$S \rightarrow NP VP$
 $NP \rightarrow D NP$
 $NP \rightarrow A NP$
 $VP \rightarrow V NP$

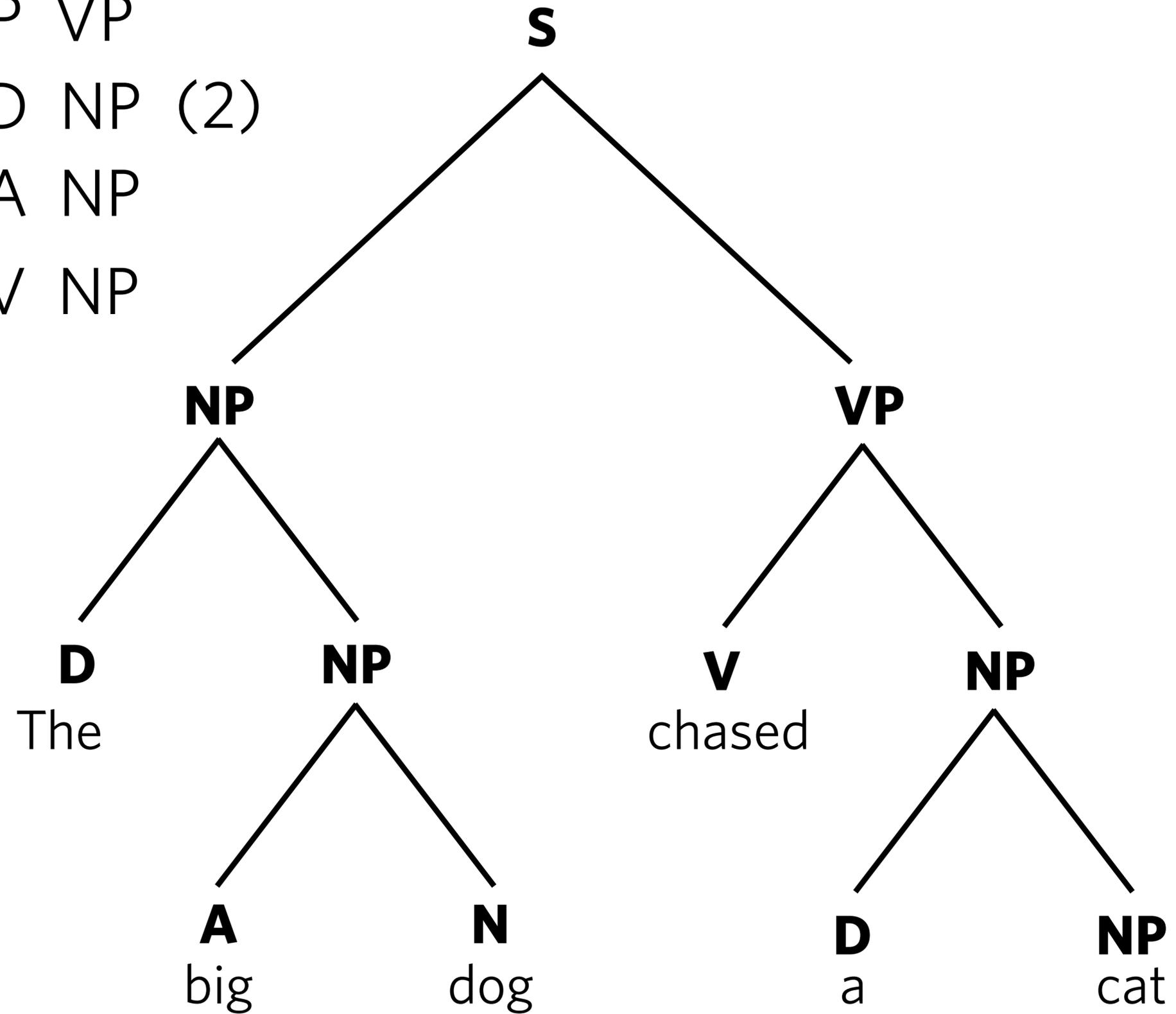


$S \rightarrow NP VP$

$NP \rightarrow D NP$ (2)

$NP \rightarrow A NP$

$VP \rightarrow V NP$



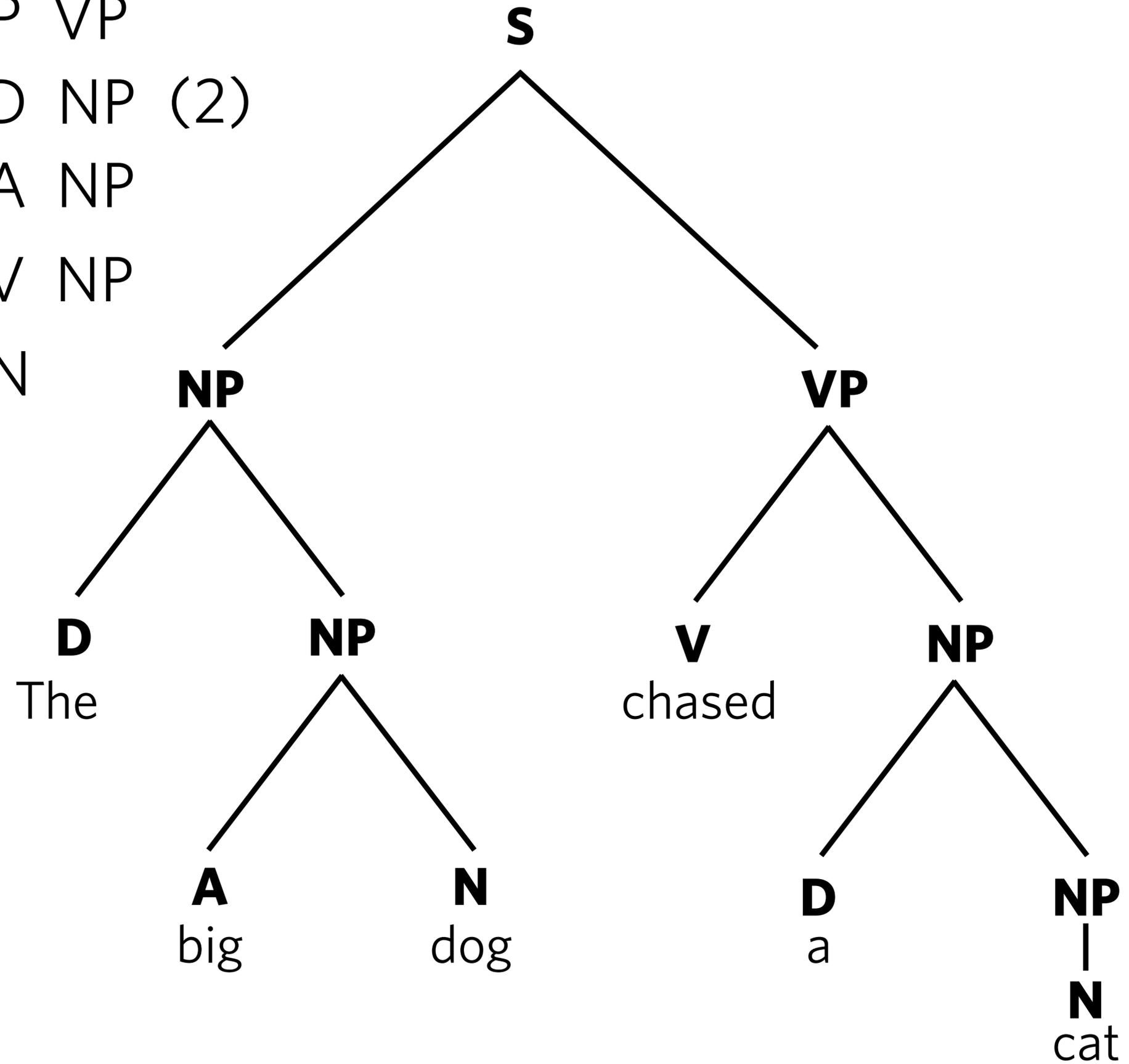
$S \rightarrow NP VP$

$NP \rightarrow D NP$ (2)

$NP \rightarrow A NP$

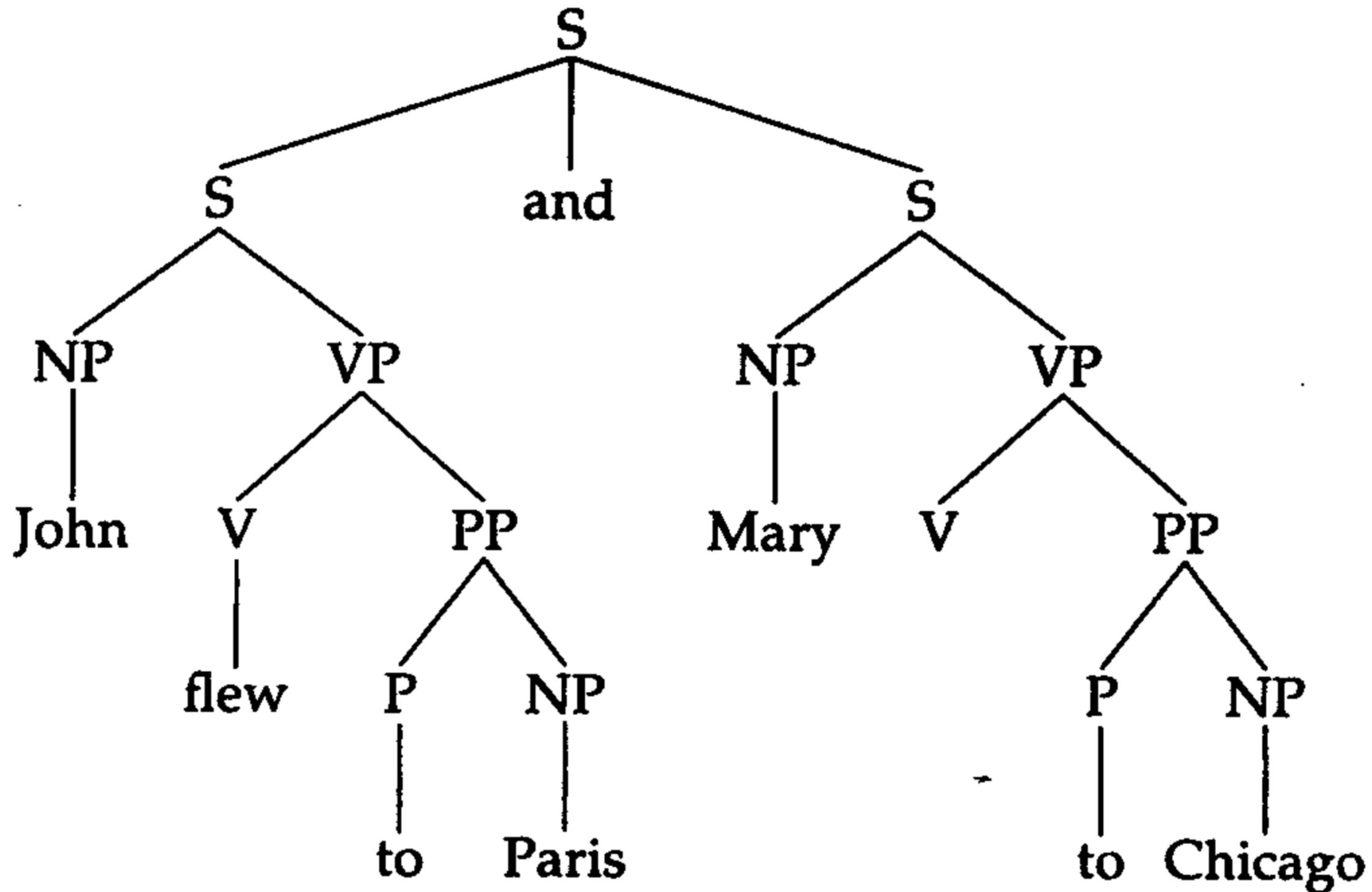
$VP \rightarrow V NP$

$NP \rightarrow N$

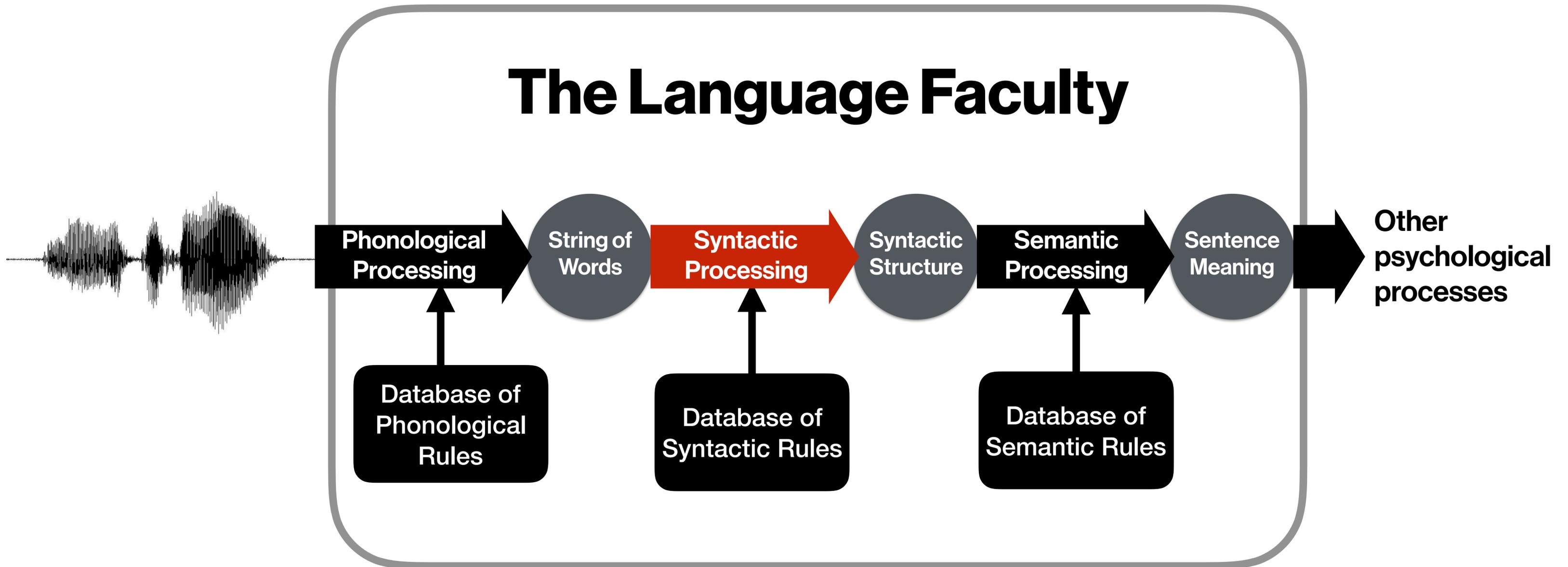


John flew to paris and Mary ~~X_{EC}~~ to Chicago

(8)



Sentence Perception



This is the book that Walter was reading **t** to his friends and fellow students on Friday.

This is the book that Walter was reading to his friends and fellow students about **t** on Friday.

It's raining **x**.

Everyone **x** was at the party **x** last night.

As the parents left their child played the guitar nicely.

As the parents left their child **played** the guitar nicely.
??

[As the parents left their child] played the guitar nicely.

[As the parents left] their child played the guitar nicely.

Garden-Path Sentences

The teacher told the children the ghost story had frightened that it wasn't true.

The old man the boat.

The complex houses married and single soldiers and their families.

The man who whistles tunes pianos.

The rat the cat the dog worried chased the malt.

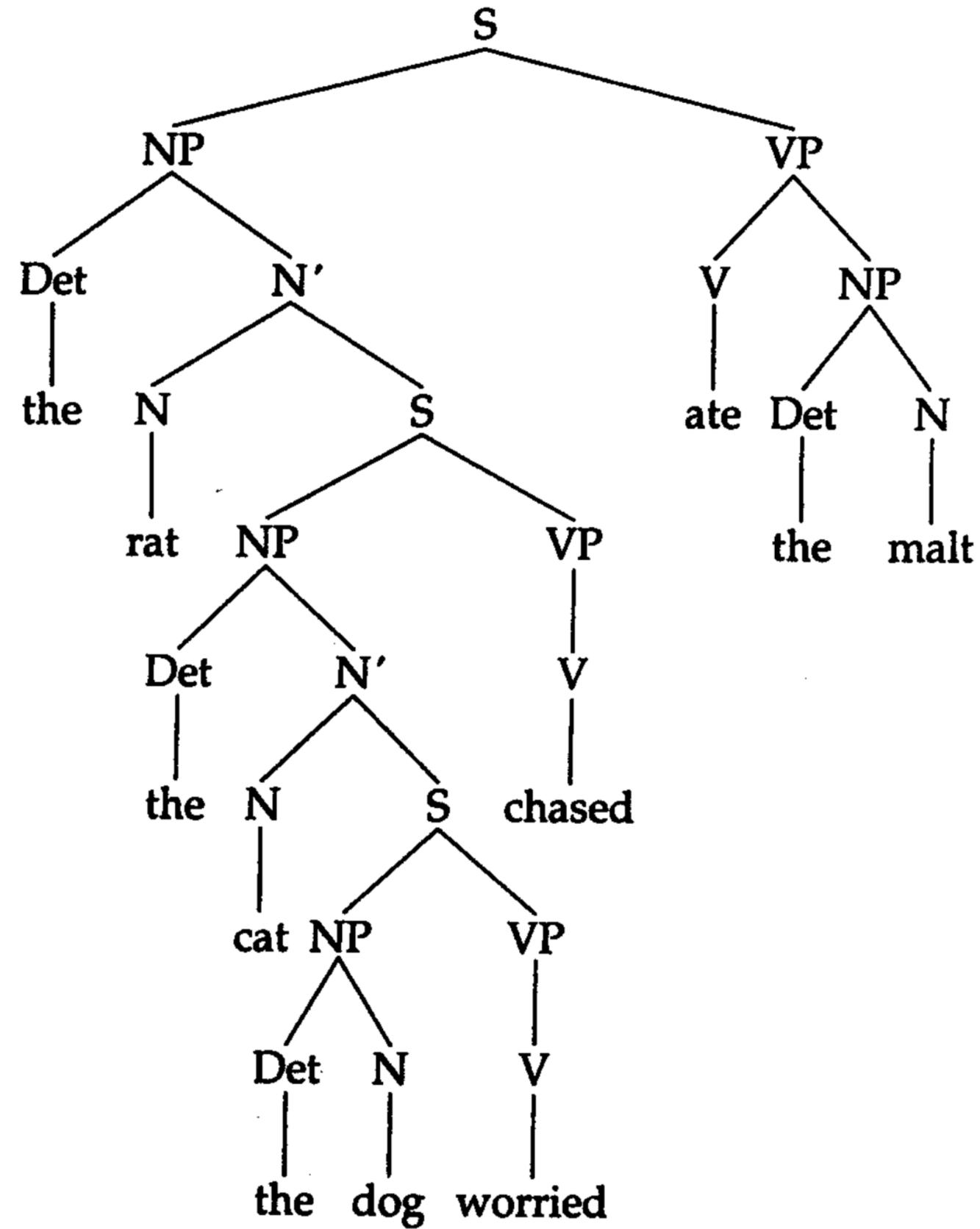
The rat the cat the dog worried chased the malt.

The rat [the cat the dog worried] chased ate the malt.

The rat Socks chased ate the malt.

The rat the cat the dog worried chased the malt.

(5)





**THE INVENTION OF
LANGUAGE BY CHILDREN:
ENVIRONMENTAL AND
BIOLOGICAL INFLUENCES ON
THE ACQUISITION OF
LANGUAGE**

LILA GLEITMAN &
ELISSA NEWPORT

GLEITMAN & NEWPORT'S CENTRAL CLAIM

Any given person's ability to use and understand their native language is not entirely innate.

BUT:

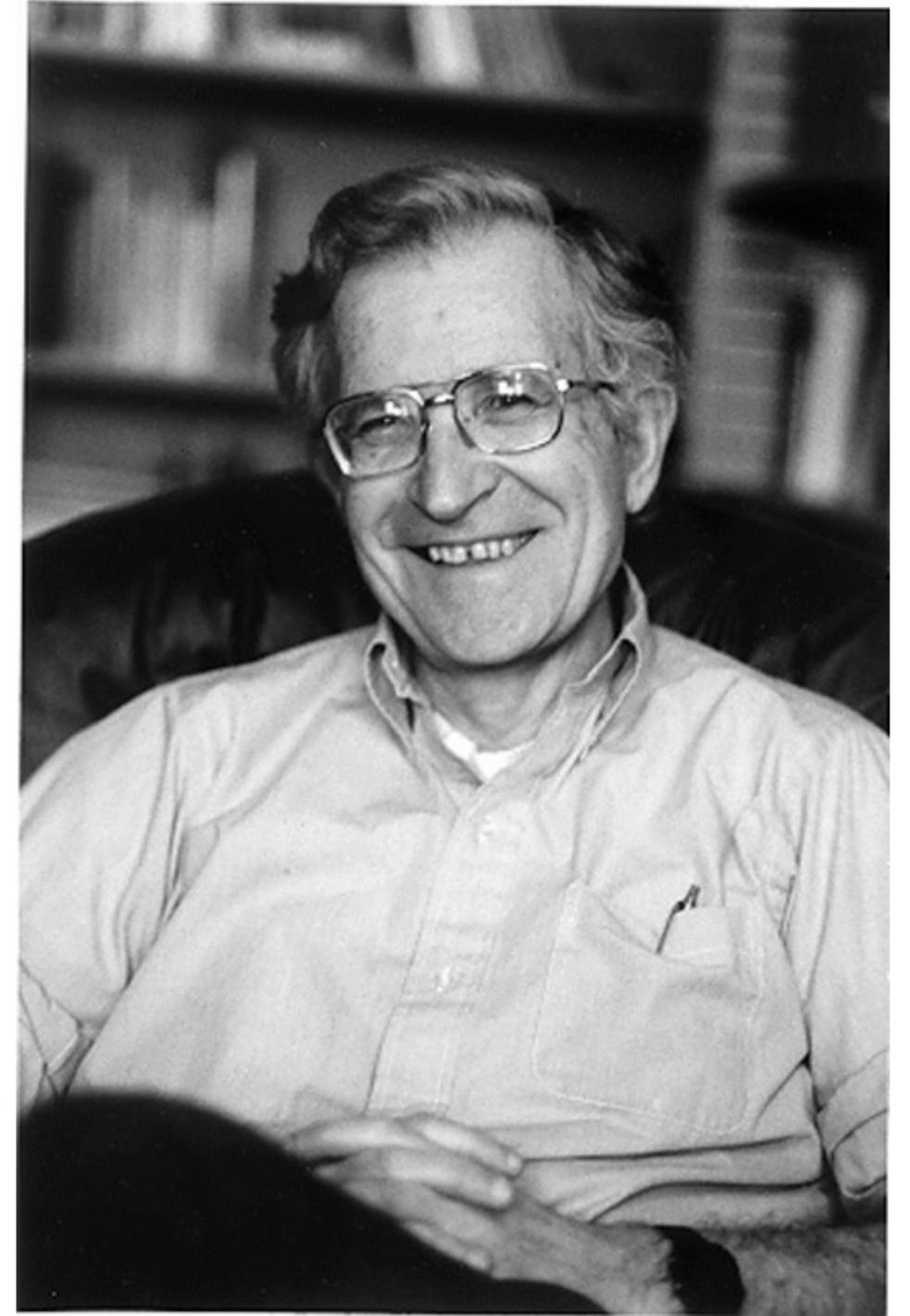
"...language acquisition in humans seems to involve a type of learning that is heavily constrained, or predisposed to follow certain limited courses, by our biology." (p.2)

UNIVERSAL GRAMMAR

Humans have evolved to have a genetically-coded capacity to learn languages, called 'universal grammar'.

This capacity can be thought of as an algorithm that is programmed into our brains at birth. It is sometimes called a Language Acquisition Device (LAD).

Universal grammar constrains the properties of possible human languages. So they share some characteristics that are universal to all possible human languages.



Noam Chomsky

SOME TOUGH QUESTIONS

- What is it for a trait to be innate?
- How does the answer to this question differ depending on whether we're talking about physical characteristics, abilities, beliefs, desires, or concepts?
- What counts as evidence of whether a trait is innate?

RATIONALISM

- Central claim: at least some of our concepts and knowledge are independent of sense experience to a significant extent.
- Often this involves claims about the innateness of those concepts and knowledge.
 - Plato says we recollect knowledge of mathematics and of the forms from a previous life, or from the underworld.
 - Descartes says that God created us with certain 'clear and distinct ideas' built in, and that we can deduce many important truths from those ideas.

EMPIRICISM

- Central claim: sense experience is the ultimate source of all (or nearly all) of our concepts and knowledge.
- This often comes packaged with the claim that very little is innate:
 - Locke compares the human mind at birth to a blank slate (tabula rasa) or an empty cupboard—one with no concepts or knowledge in it yet.

NATIVISM–EMPIRICISM DEBATE

- Take some psychological trait or process X (e.g., the concept RED, or the ability to use language, etc.)
- A nativist about X says that X depends on special-purpose psychological structures whose existence and development is best explained by facts about our biology.
- An empiricist about X says that X can be explained by general-purpose learning mechanisms.
- Nativism and empiricism represent end-points on a spectrum.

ARGUMENT 1: MILESTONES

Human children learn language at a fixed rate that does not depend on:

- how much their parents engage in "motherese"
- how much their parents talk to them, or whether their parents talk to them at all
- whether they are learning a spoken or signed language
- whether they are visually impaired in ways that would seem to make it difficult to understand certain vocabulary

ARGUMENT 2: ACQUISITION WITHOUT DATA

Children acquire language in ways that aren't closely related to the kinds of linguistic stimuli to which they're exposed.

- E.g., children learn at the same rate despite variations in how parents talk.
- Deaf children “invent” the early stages of a language at about the same rate as normal children, even if nobody's teaching them.
- In at least one extreme case, a community of deaf children made up a whole new language from scratch.
(Nicaraguan sign language.)

ARGUMENT 3: THE CRITICAL PERIOD

If children don't acquire language by a certain age (within a "critical period"), their ability to acquire language is severely degraded.

The same is true, to a lesser extent, for second-language learning.

This is often taken to show that language-learning depends on special-purpose mechanisms, and not general-purpose learning strategies.



ARGUMENT 4: PIDGINS AND CREOLES

Pidgens are “rough-and-ready contact language[s]” —less than full languages used by people to deal with each other in inter linguistic contexts.

Creoles are full languages that develop out of pidgens when they acquire native speakers.

The way this happens is that children are raised by pidgin speakers, and “fill in the gaps” on their own.

ARGUMENT 5: POVERTY OF THE STIMULUS

Arguments 1–4 deal with unusual situations.

But L&N argue that all language learning is like these cases in relevant respects.

We all acquire essentially the same linguistic abilities, despite highly variable environments and highly impoverished data about how those languages work.

HOW TO TURN THESE INTO QUESTIONS?

(1) The man who is a fool is amusing.

(2) The man is a fool who is amusing.

MOVE FIRST 'IS'?

(1) Is the man who a fool is amusing?

(2) Is the man a fool who is amusing?

MOVE SECOND 'IS'?

(3) Is the man who is a fool amusing.

(4) Is the man is a fool who amusing.