Phrase Structure Rules
What do all these trees do?

- help construct structure...
- guide interpretation...
The dwarf saw the gnome in the garden

Two structures: two meanings

The dwarf saw the gnome in the garden

'PP Attachment'
The dwarf saw the gnome in the garden.

- It was the gnome who was seen in the garden.
- The gnome was seen in the garden.
- In the garden the dwarf saw the gnome.

Two structures: two meanings.
it was the gnome in the garden who was seen
the gnome in the garden was seen??

Two structures:
Two meanings

?? the gnome in the garden the dwarf saw
The gnome in the garden is sad
The gnome in the garden is sad.
The gnome in the garden is sad
The gnome in the garden is sad
What do all these trees do?

• help construct structure...
• guide interpretation...
• guide functional interpretation...
The small gnome wiped his hands on the hill.
The small gnome wiped his hands on the hill.
Grammatical Functions

interpersonal

S

Subject

verb

Finite
The small gnome on the hill wiped his hands
Bottom line:

functional interpretation depends on tree geometry
I saw the gnome in the garden.
I saw the gnome in the garden.
I saw the gnome in the garden.
Compositional Semantics

How to put meanings together from the parts...
\[(3 + 4) \times (5 - 2 \times 4) = ?\]
\[(3 + 4) \times (5 - 2 \times 4) = ?\]
(3 + 4) \times (5 - 2 \times 4) = ?
(3 + 4) \times (5 - 2 \times 4) = ?
\[(3 + 4) \times (5 - 2 \times 4) = ?\]
\((3 + 4) \times (5 - 2 \times 4) = ?\)

\[-21\]
Compositional Semantics

Syntax trees work in exactly the same way!!
The dog chased the boy.
The dog chased the boy.
we are talking about some class of objects that are describable as dogs
we are talking about an object that I expect you to be able to identify

NP

det

The
	noun
dog
we are talking about some particular dog that I expect you to be able to identify

we are talking about an object that I expect you to be able to identify

det  noun

The dog
The dog chased the boy.
The dog chased the boy.
we are talking about
s.o. chasing X
The dog chased the boy.
The dog chased the boy.
The dog noun det NPVP S
chased verb
the boy det NP noun
s.o. = the-dog

s.o. chased the-boy
s.o. chased the-boy

‘the-dog’

The dog noun
chased
the
boy
The dog
noun
det
NP
VP
S
s.o. chased the-boy
s.o. = the-dog
's.o. chased s.t.
s.t. = the-boy
's.o. chased the-boy
's.o. = the-dog

NP
NP
det	noun
verb
det
noun
The
dog
chased
the
boy
Structural ambiguity entails semantic ambiguity...
The dog chased the boy in the garden.
The dog chased the boy in the garden.
The dog chased the boy in the garden.

The chasing was somewhere = in-the-garden
The dog chased the boy in the garden.
The dog chased the boy in the garden.
The dog chased the boy in the garden.
The dog chased the boy in the garden.
The dog chased the boy in the garden.

s.o. chased s.t.

the boy was somewhere

somewhere = in-the-garden
The dog chased the boy in the garden.