LECTURE 2

Syntax-2

['sɪntæks]

is the arrangement of words and phrases to create well-formed sentences in a language

e.g. the syntax of English.

SYNTAX INTRODUCTORY

- GENERATIVE GRAMMAR
- TRANSFORMATIONAL GRAMMAR

  - ✓ SENTENCE
  - ✓ PROPOSION
  - ✓ PRESUPPOSITION
  - ✓ PREDICATION
  - ✓ UTTERANCE

Generative Grammar??

In linguistics, generative grammar
is grammar (*the set of language rules*)
that indicates the structure and
interpretation of sentences
that native speakers of a language
accept as belonging to their language.

Generative Grammar??

Adopting the term generative from **mathematics**, linguist Noam Chomsky introduced the concept of generative grammar in the 1950s. This theory is also known as transformational grammar, a term still used today.

Generative Grammar??

Generative grammar is a theory of grammar, first developed by Noam Chomsky in the 1950s, that is based on the idea that all humans have an innate language capacity.

Generative Grammar??

- Linguists who study generative grammar are not interested in *prescriptive rules*;
rather, they are interested in uncovering the foundational principals that guide all language production.

Generative Grammar??

- Generative grammar accepts as a basic premise that native speakers of a language will find certain sentences grammatical or ungrammatical and that these (instinctive?) judgments give insight into the rules governing the use of that language.

Generative Grammar??

Grammar generally
refers to the set of rules
that structure a language,
including **syntax** (the arrangement of words to form phrases and sentences) and **morphology** (the study of words and how they are formed).

Generative Grammar??

Generative grammar is a theory of grammar that holds that human language is shaped by a set of basic principles that are part of the human brain (and even present in the brains of small children). This "universal grammar," according to linguists like Chomsky, comes from our innate language faculty.

Generative Grammar??

Frank Parker and Kathryn Riley argue that generative grammar is a kind of unconscious knowledge that allows a person, no matter what language they speak, to form "correct" sentences.

Generative Grammar??

"Simply put, a generative grammar is a theory of competence: a model of the psychological system of unconscious knowledge that underlies a speaker's ability to produce and interpret utterances in a language ...

Generative Grammar??

"... A good way of trying to understand [Noam] Chomsky's point is to think of a generative grammar as essentially a definition of competence: a set of criteria that linguistic structures must meet to be judged acceptable," (Parker and Riley 2009).

Generative Grammar??

Generative grammar is distinct from other grammars such as prescriptive grammar, which attempts to establish standardized language rules that deem certain usages "right" or "wrong," and descriptive grammar, which attempts to describe language as it is actually used (including the study of pidgins and dialects).

Generative Grammar??

Instead, generative grammar attempts to get at something deeper—the foundational principles that make language possible across all of humanity.

Generative Grammar??

For example, a prescriptive grammarian may study how parts of speech are ordered in English sentences, with the goal of laying out rules (nouns precede verbs in simple sentences, for example).

Generative Grammar??

A linguist studying generative grammar, however, is more likely to be interested in issues such as how nouns are distinguished from verbs across multiple languages.

Generative Grammar??

Principles of Generative Grammar

The main principle of generative grammar is that all humans are born with an innate capacity for language and that this capacity shapes the rules for what is considered "correct" grammar in a language.

Generative Grammar??

Principles of Generative Grammar

The idea of an innate language capacity—or a "universal grammar"—is not accepted by all linguists.

Some believe, to the contrary, that all languages are learned and, therefore, based on certain constraints.

Generative Grammar??

Proponents of the universal grammar argument believe that children, when they are very young, are not exposed to enough linguistic information to learn the rules of grammar.

Generative Grammar??

That children do in fact learn the rules of grammar is proof, according to some linguists, that there is an innate language capacity that allows them to overcome the "poverty of the stimulus."

Generative Grammar??

Examples of Generative Grammar

As generative grammar is a "theory of competence," one way to test its validity is with what is called a **grammaticality judgment task.** This involves presenting a native speaker with a series of sentences and having them decide whether the sentences are grammatical (acceptable) or ungrammatical (unacceptable).

Generative Grammar??

Examples of Generative Grammar

For example:

- The man is happy.
- Happy man is the.

Generative Grammar??

Examples of Generative Grammar

A native speaker would judge the first sentence to be acceptable and the second to be unacceptable. From this, we can make certain assumptions about the rules governing how parts of speech should be ordered in English sentences. For instance, a "to be" verb linking a noun and an adjective must follow the noun and precede the adjective.

Generative Grammar??

Sources

- Parker, Frank, and Kathryn Riley. Linguistics for Non-Linguists: A Primer With Exercises. 5th ed., Pearson, 2009.
- Strunk, William, and E.B. White. The Elements of Style. 4th ed., Pearson, 1999.

Grammar can be based on grammatical sequences in a language

These categories can be discussed in isolation, but their role in describing language structure becomes clearer when we consider them in terms of agreement. For example, we say that the verb loves “agrees with” the noun Cathy in the sentence Cathy loves her dog.

A Task

Given these other Gaelic words,
translate the following sentences into English.
mor (“big”) beag (“small”) bhuail (“hit”) duine (“man”)

(i) Bhuail an gille beag an cu dubh.

(ii) Chunnaic an cu an duine mor.

A Task

Даны формы азербайджанского глагола с переводом на русский язык:

1) Бахмаг - смотреть
2) Бахабилмамаг - не мочь смотреть
3) Бахыраммы - смотрю ли я ?
4) Бахышабилырлар - они могут смотреть друг на друга
5) Бахмадылар - они не смотрели
6) Бахдырабилдымы - мог ли он заставлять смотреть?
7) Бахмалыдысанты - должен был смотреть
8) бахдырырам - я заставляю смотреть
9) бахмасады - если он не смотрел

A Task

Задание 1. Опишите, в каком порядке располагаются значащие элементы в составе азербайджанского глагола.

Задание 2. Переведите на азербайджанский язык:

a) Смотришь ли ты?
b) Они не смотрели друг на друга.
c) Заставлять смотреть.
d) Если он мог смотреть.

The list of abbreviations

The list of common symbols and abbreviations is summarized here.

S sentence

NP noun phrase: PN proper noun; N noun; Art article

Pro pronoun

VP verb phrase Adv adverb V verb

Adj adjective Prep preposition; PP prepositional phrase

The list of abbreviations

NP → Art N
NP → Pro
NP → PN

NP → { Art N, Pro, PN }

NP → {Art N, Pro, PN}

It is important to remember that, although there are three constituents inside these curly brackets, only one of them can be selected on any occasion.

The list of symbols

* ungrammatical sentence

→ consists of / rewrites as

() optional constituent

{} one and only one of these constituents must be selected

The list of symbols

By using a tree diagram format we can simply treat it as a static representation of the structure of the sentence shown at the bottom of the diagram. We could then propose that, for every single sentence in English, a tree diagram of this type could be drawn.

The list of symbols

We can treat the tree diagram as a dynamic format, in the sense that it represents a way of generating not only that one sentence, but a very large number of other sentences with similar structures. This second approach would enable us to generate a very large number of sentences with what look like a very small number of rules. These rules are called phrase structure rules.

The list of symbols

The structure of a phrase of a specific type will consist of one or more constituents in a particular order.

That is, the information shown in the tree diagram on the left can be expressed in the phrase structure rule on the right.

The list of symbols

The first rule in the following set of simple (and necessarily incomplete) phrase structure rules states that “a sentence rewrites as a noun phrase and a verb phrase.”

The second rule states that “a noun phrase rewrites as either an article plus an optional adjective plus a noun, or a pronoun, or a proper noun.”

The list of symbols

The other rules follow a similar pattern.

S → NP + VP

NP → {Art (Adj) N, Pro, PN}

VP → V NP (PP) (Adv)

PP → Prep NP

The list of symbols

Phrase structure rules generate structures. In order to turn those structures into recognizable English, we also need lexical rules that specify which words can be used when we rewrite constituents.

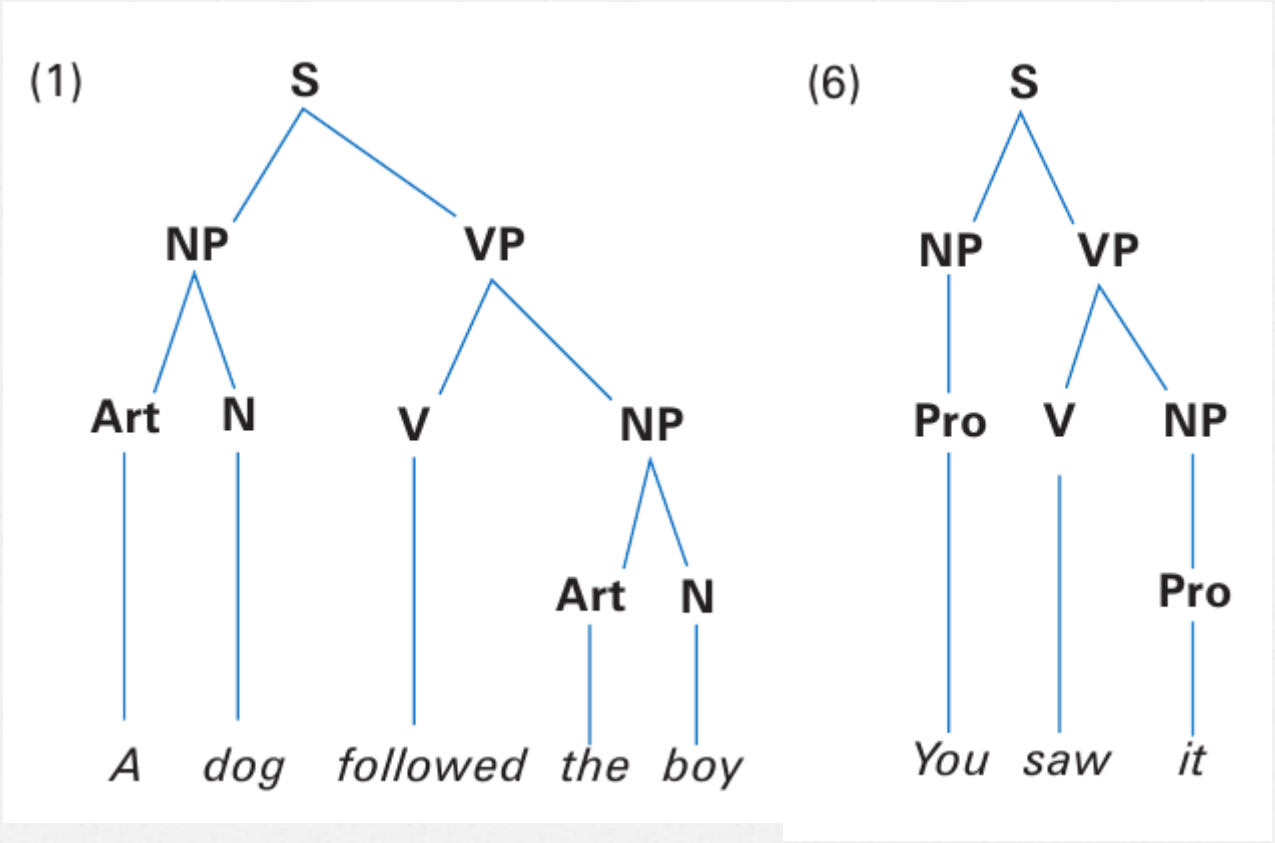
The first rule in the following set states that “a proper noun rewrites as Mary or George.” (It’s a very small world.)

The list of symbols

PN → {Mary, George}
N → {girl, dog, boy}
Art → {a, the}
Pro → {it, you}
V → {followed, helped, saw}

structure rules observed	structure rules unobserved
(1) A dog followed the boy.	(7) *Dog followed boy.
(2) Mary helped George.	(8) *The helped you boy.
(3) George saw the dog.	(9) *George Mary dog.
(4) The boy helped you.	(10) *Helped George the dog.
(5) It followed Mary.	(11) *You it saw.
(6) You saw it.	(12) *Mary George helped.

Structure Rules



Structure Rules and Movement Rule

One feature of these underlying structures is that they will *generate sentences with a fixed word order.* That is convenient for creating declarative forms (You will help Mary), but not for making interrogative forms, as used in questions (Will you help Mary?). In making the question, we move one part of the structure to a different position. This process is based on a movement rule

Structure Rules and Movement Rule

We need to expand our phrase structure rules to include an auxiliary verb (Aux) as part of the sentence. This is illustrated in the first rewrite rule below. Auxiliary verbs (sometimes described as “helping” verbs) take different forms in English, but one well-known set can be included in the rudimentary lexical rule for Aux below. We also need a lexical rule that specifies the basic forms of the verbs, shown as the third rewrite rule below.

Structure Rules and Movement Rule

S → NP Aux VP

Aux → {can, could, should, will, would}

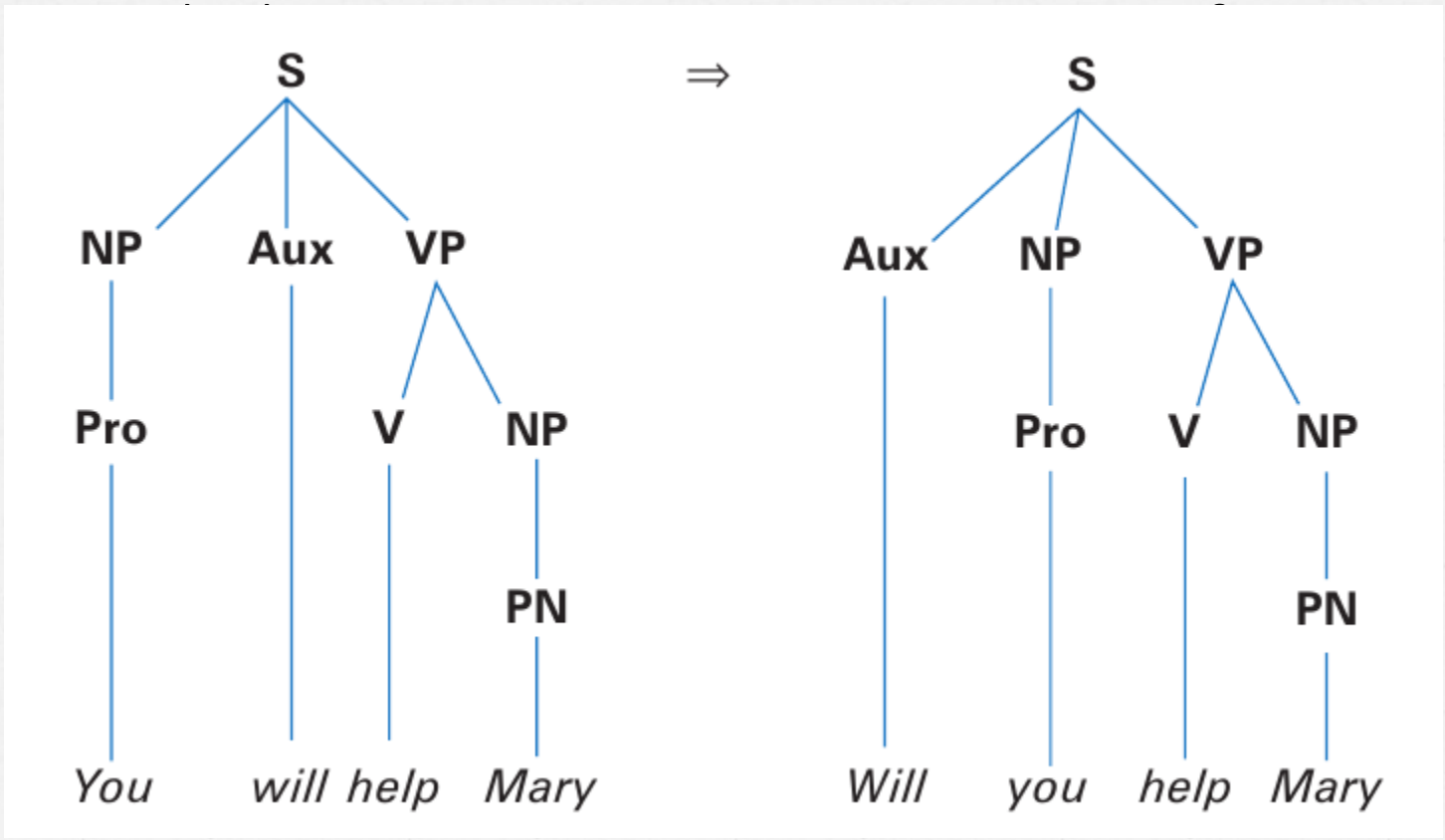
V → {follow, help, see}

Structure Rules and Movement Rule

With these components, we can specify a simple movement rule that is involved in the creation of one basic type of question in English.

NP Aux VP ⇒ Aux NP VP

Structure Rules and Movement Rule



Structure Rules and Movement Rule

The simple phrase structure rules listed earlier have no recursive elements. Each time we start to create an S, we only create a single S (sentence structure). We actually need to be able to include sentence structures within other sentence structures. In traditional grammar, these “sentence structures” were described as “clauses.”

Structure Rules and Movement Rule

We know, for example, that *Mary helped George* is a sentence. We can put this sentence inside another sentence beginning Cathy knew that [Mary helped George]. And, being tediously recursive, we can put this sentence inside another sentence beginning Johnbelieved that [Cathy knew that [Mary helped George]]

Structure Rules and Movement Rule

And, being tediously recursive, we can put this sentence inside another sentence beginning Johnbelieved that [Cathy knew that [Mary helped George]]

Mary helped George.

Cathy knew that Mary helped George.

John believed that Cathy knew that Mary helped George.

Complement Phrase (CP)

The word that, as used in these examples, is called a complementizer (C).

The role of
that as a complementizer is to introduce a complement phrase (CP).

So, there must be another rule
that says: "a verb phrase rewrites as a verb and complement phrase," or VP → V CP.

Complement Phrase (CP)

If we now look at these two new rules in conjunction with an earlier rule, we can see how recursion is built into the grammar.

S → NP VP

VP→VCP

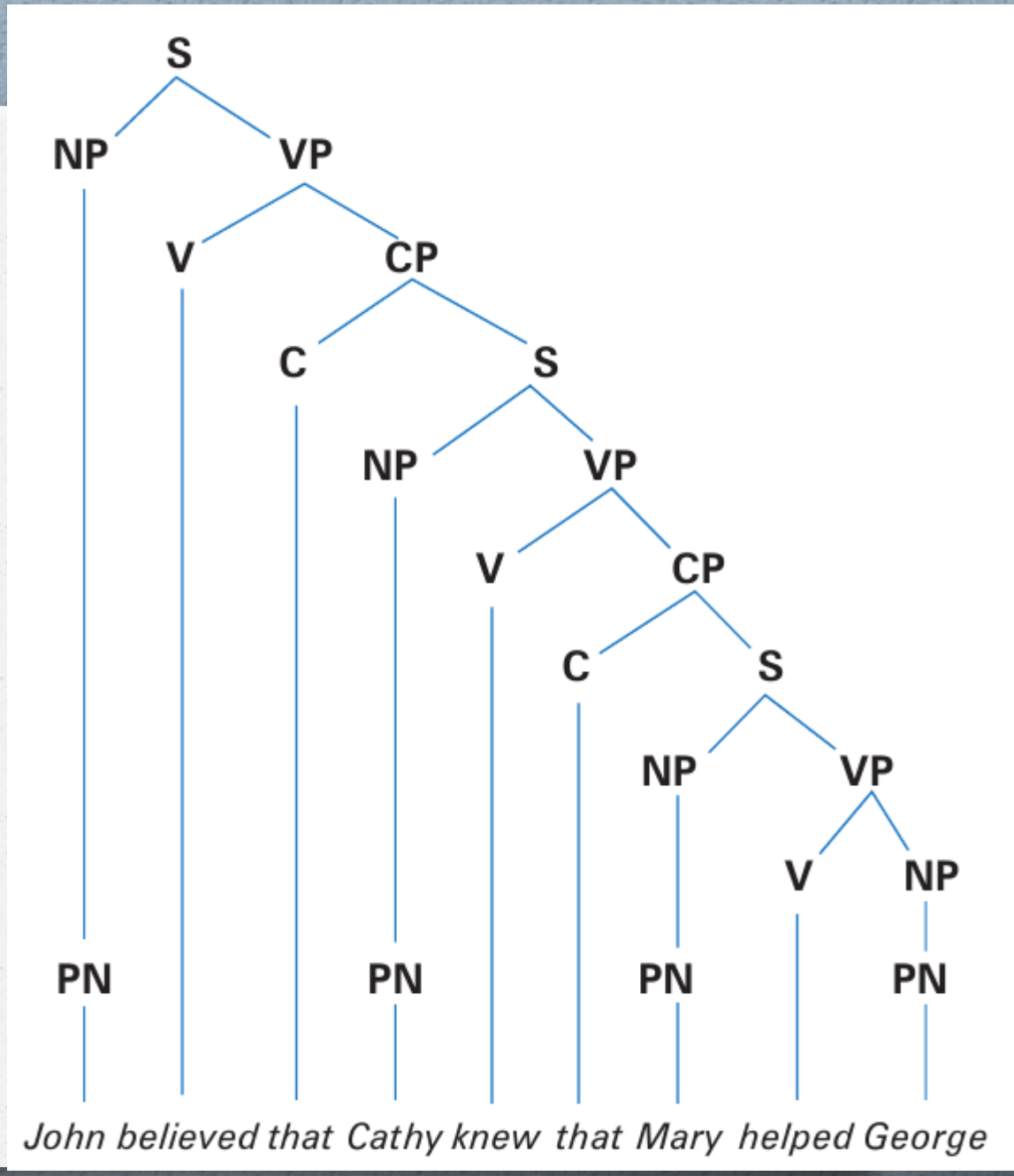
CP → CS

Complement Phrase (CP)

We begin with S on the left and, as we rewrite symbols, we eventually have S on the right, allowing us to go back to the beginning and go through the set of rules again (and again). This means that we can, in principle, use these rules to create an endless sentence containing other sentence structures.

ComPhrase CP:

John believed that
Cathy knew that
Mary helped George.



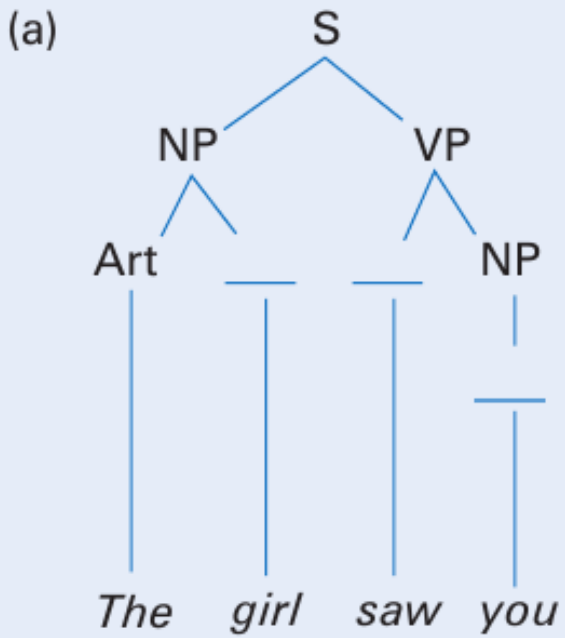
Further analysis of syntax

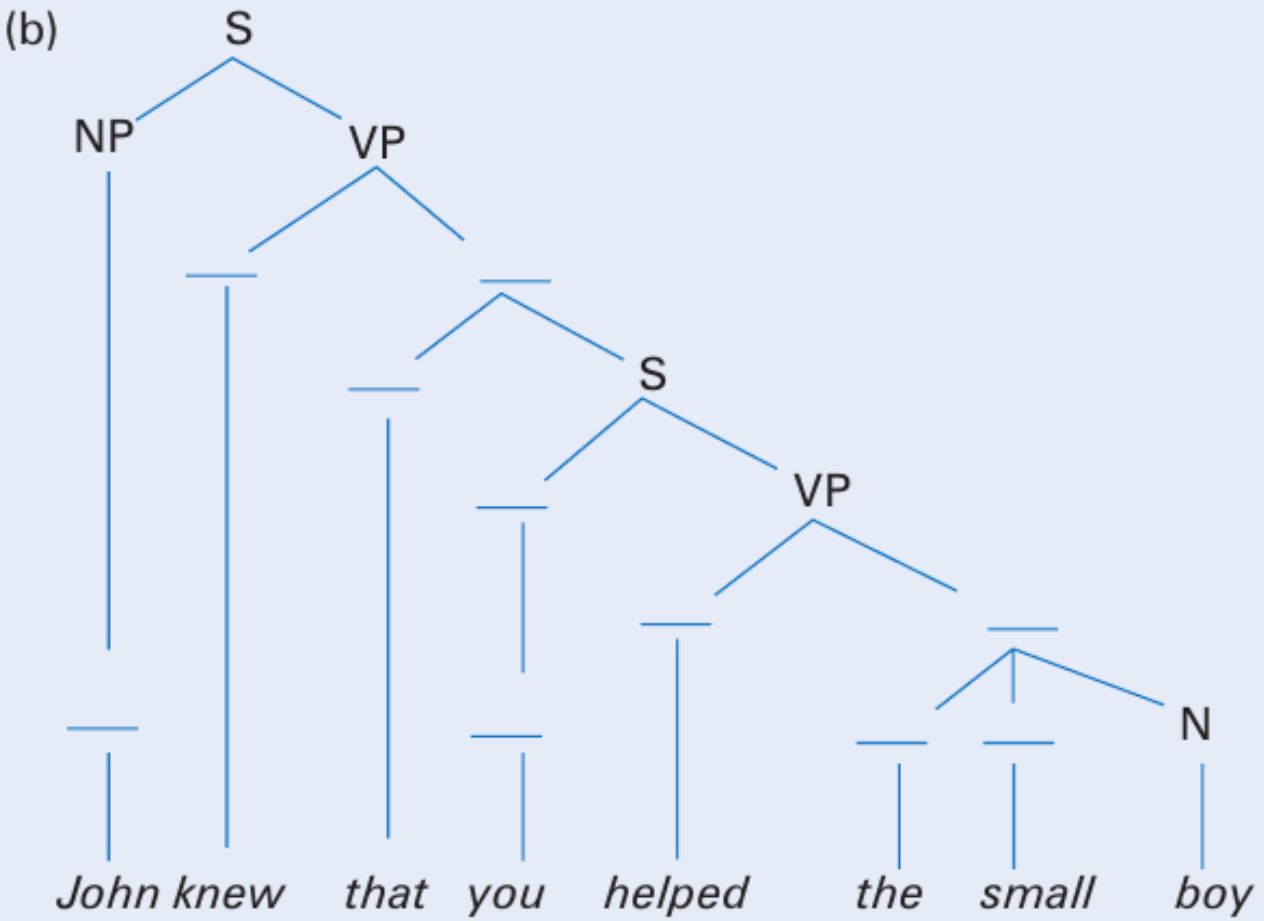
As we try to capture more aspects of the structure of complex English sentences, we inevitably need to identify more rules and concepts involved in the analysis of syntax. (We've barely scratched the surface structures.)

***

A Task

complete the following tree diagrams.





A Task

3 In what ways are these expressions structurally ambiguous?

(a) *The parents of the bride and groom were waiting outside.*
(b) *We met an English history teacher.*
(c) *Flying planes can be dangerous.*
(d) *The students complained to everyone that they couldn't understand.*

4 Which of the following expressions would be generated by this phrase structure rule: NP → {Art (Adj) N, Pro, PN}?

(a) *a lady*
(b) *the little girl*
(c) *her*
(d) *Annie*
(e) *the widow*
(f) *she's an old woman*

5 Which of these sentences would result from applying the rule: NP Aux VP ⇒ Aux NP VP?

(a) *John will follow Mary.*
(b) *You knew that Cathy helped the boy.*
(c) *Can George see the dog?*
(d) *Should you believe that Mary saw it?*

Reference and Sense

Words stand in a relationship to the world, or our mental classification of it: they allow us to identify parts of the world, and make statements about them. Thus if a speaker says He saw Paul or She bought a dog, the underlined nominals allow her to identify, pick out, or refer to specific entities in the world. However, words also derive their value from their position within the language system.

Reference and Sense

The relationship by which language hooks onto the world is usually called reference. The semantic links between elements within the vocabulary system is an aspect of their sense,8 or meaning. Saussure (1974: 115) used the diagram in Igure 1.2 to show this patterning.

Reference and Sense

His well-known examples include a comparison of English sheep and French mouton. In some cases they can be used to refer in a similar way but their meaning differs because they are in different systems and therefore have different ranges:

in English there is an extra term mutton, used for meat, while the French word can be used for both the animal and the meat.

Utterances, sentences, and propositions

These three terms are used to describe different levels of language.

The most concrete is utterance: an utterance is created by speaking (or writing) a piece of language. If I say Ontogeny recapitulates phylogeny, this is one utterance. If another person in the same room also says Ontogeny recapitulates phylogeny, then we would be dealing with two utterances.

Utterances, sentences, and propositions

Sentences, on the other hand, are abstract grammatical elements obtained from utterances. Sentences are abstract because if a third and fourth person in the room also say Ontogeny recapitulates phylogeny with the same intonation, we will want to say that we have met four utterances of the same sentence. In other words, **sentences are abstracted, or generalized, from actual language use.**

Utterances, sentences, and propositions

One example of this abstraction is direct quotation. If someone reports He said “Ontogeny recapitulates phylogeny,” she is unlikely to mimic the original speaker exactly. Usually the reporter will use her normal voice and thus filter out certain types of information: the difference in pitch levels between men, women, and children; perhaps some accent differences due to regional or social variation; and certainly those phonetic details which identify individual speakers.

Utterances, sentences, and propositions

Speakers seem to recognize that at the level of the sentence these kinds of information are not important, and so discard them.

So we can look at sentences from the point of view of the speaker, where they are abstract elements to be made real by uttering them; or from the hearer's point of view, where they are abstract elements reached by filtering out certain kinds of information from utterances.

Utterances, sentences, and propositions

One further step of abstraction is possible for special purposes: to identify **propositions**.

In trying to establish rules of valid deduction, logicians discovered that certain elements of grammatical information in sentences were irrelevant; for example, the difference between active and passive sentences:

1.17 Caesar invaded Gaul.

1.18 Gaul was invaded by Caesar.

Utterances, sentences, and propositions

From a logician's perspective, these sentences are equivalent, for whenever 1.17 is true, so is 1.18. Thus the grammatical differences between them will never be significant in a chain of reasoning and can be ignored.

.

Utterances, sentences, and propositions

Other irrelevant information (for these purposes) includes what we will call ***information structure***, that is the difference between the following sentences:

1.19 It was Gaul that Caesar invaded.

1.20 It was Caesar that invaded Gaul.

1.21 What Caesar invaded was Gaul.

1.22 The one who invaded Gaul was Caesar.

Utterances, sentences, and propositions

These sentences seem to share a description of the same state of affairs. Once again, if one is true all are true, and if one is false then all are false. To capture this fact, logicians identify a **common proposition**.

Utterances, sentences, and propositions

Such a proposition can be represented in various special ways to avoid confusion with the various sentences that represent it, for example by using capitals:

1.23 CAESAR INVADED GAUL.

Thus the proposition underlying the sentence The war ended might be written:

1.24 THE WAR ENDED.

Utterances, sentences, and propositions

Logicians commonly use formulae for propositions in which the verb is viewed as a function, and its subject and any objects as arguments of the function. Such formulae often delete verb endings, articles, and other grammatical elements, so that corresponding to 1.23 and 1.24 we would get 1.25 and 1.26 below: 1.25 invade (caesar, gaul); 1.26 end (war)

Utterances, sentences, and propositions

Propositions then can be a way of capturing part of the meaning of sentences. They are more abstract than sentences because, as we saw in examples 1.17–22 above, the same proposition can be represented by several different statements. Moreover, in non-statements like *questions, orders*, they cannot be the complete meaning since such sentences include an indication of the **speaker's attitude to the proposition**.

Utterances, sentences, and propositions

To sum up: utterances are real pieces of speech. By filtering out certain types of (especially phonetic) information we can get to abstract grammatical elements, sentences.

By going on to filter out certain types of grammatical information, we can get to propositions, which are descriptions of states of affairs and which some writers see as a basic element of sentence meaning.

Transformational generative grammar

In 1957 Noam Chomsky,
an American, published **Syntactic Structures**,
a statement of the principles of transformational generative grammar (TG).

Transformational generative grammar

This grammar has had a profound effect on the study of all languages, including English.
TG was a reaction against structuralism and the first model to acknowledge formally the significance of **deep structure**.

Transformational generative grammar

Transformational generative grammarians set themselves the task of creating an explicit model of what an ideal speaker of the language intuitively knows.
Their model must assign a structure, therefore.
To all the sentences of the language concerned and only to these sentences.

Transformational generative grammar

As a first step towards this, Chomsky distinguished between 'competence', which he defines as 'the ideal speaker-hearer's knowledge of his language', and 'performance', which is 'the actual use of language in concrete situations'. Competence is, as it were, the perfect storehouse of linguistic knowledge. Performance draws on this knowledge but it can be faulty.

Transformational generative grammar

The TG model attempts to formulate hypotheses about competence by idealising performance, that is, by dredging away performance accidents such as hesitations, unnecessary repetition, lack of attention, fatigue, slips of the tongue, false starts. TG is interested in competence and this interest marks the clearest difference between structuralism and TG.

Transformational generative grammar

Structuralism was text-based and only interested in language that had actually occurred.
TG does not use text since it is more interested in what produced the text than in the text itself.

Transformational generative grammar

A TG model has **four main characteristics:**

A TG model has four main characteristics:

1. It must attempt to make explicit how a finite entity like the brain can operate on a finite set of items (words and structures) and yet generate an infinite set of sentences. The model must parallel the ideal speaker's competence and so it must be capable of generating an infinite set of sentences by the operation of a finite set of rules on a finite set of items.

A TG model has four main characteristics:

We can give an impression here of how that can be done. Let us suppose, for example, that we have the rules:

S — NP + VP (sentence can be rewritten as noun phrase + verb phrase)

NP — (det) + N (noun phrase can be rewritten as (determiner) + noun)

VP ~ V + NP (verb phrase can be rewritten as verb + noun phrase)

A TG model has four main characteristics:

and suppose we have two nouns 'boys' and 'girls', three determiners 'the', 'some' and 'five', and three verbs 'love', 'hate' and 'trust', then we can produce hundreds of sentences such as:

Transformational generative grammar

1. Boys love/hate/trust girls.
2. Girls love/hate/trust boys.
3. Some boys love/hate/trust girls.
4. Boys love/hate/trust some girls.
5. Five boys love/hate/trust the girls.
6. The boys love/hate/trust some/five/the girls.

Transformational generative grammar

These sentences give a limited idea of the productive quality of even the simplest model. A TG model has four main characteristics:

A TG model has four main characteristics:

2. Since the model attempts to describe the idea (speaker-hearer's linguistic knowledge and intuitions), it must be explicit. It must not fall back on intuition to ask whether a structure is or is not correct. If it used intuition to define intuition, the model would be circular and useless. A TG model must therefore be explicit and self-sufficient. Its rules alone must allow us to decide whether a structure is acceptable.

A TG model has four main characteristics:

3. The model must **have three components**:
   a phonological component,
   a syntactic component,
   a semantic component,

so that it parallels the speaker's ability to associate noise and meaning.

Transformational generative grammar

The phonological component deals with phonemes and with the *permissible combination of phonemes*. As far as English is concerned, it offers rules for stress and intonation patterns as well. The work on phonology is an extension of the work done by structuralists, a refinement rather than a reappraisal, and this is the part of the TG model which has received least criticism.

Transformational generative grammar

The semantic component deals with meaning and the interpretation of meaning. Much work has been done in this area and many have criticized Chomsky's techniques. It would be true to say, however, that less satisfactory work has been done with regard to semantics than with regard to phonology and syntax.

A TG model has four main characteristics:

4. Although the model must not rely on the intuition of a native speaker it must be in harmony with such intuition. In other words, it must be able to assign a structure to all sentences which would be accepted by a native speaker and reject all sentences which would be rejected by a native speaker.

It is with regard to his treatment of syntax that N. Chomsky's approach differs most fundamentally from other models.

A TG model has four main characteristics:

TG is explicit about the fact that native speakers recognize two levels of structure.

A speaker realizes that:

John is easy to please.

John is eager to please.

may look alike but are different at some level in that the first implies:

.

A TG model has four main characteristics:

TG is explicit about the fact that native speakers recognize two levels of structure.

A speaker realizes that:

John is easy to please.

John is eager to please.

may look alike but are different at some level …

A TG model has four main characteristics:

TG is explicit about the fact that native speakers recognize two levels of structure.

A speaker realizes that:

John is easy to please.

John is eager to please.

may look alike but are different at some level in that the first implies:

Someone pleases John .

and the second:

John pleases someone .

A TG model has four main characteristics:

Similarly, a native speaker recognizes that although:

John loves Mary

looks very different from:

Mary is loved by John

they are fundamentally very similar.

A TG model has four main characteristics:

To account for the two levels that a speaker intuitively recognizes, a TG model splits the syntactic component into two plans:

- a base subcomponent
- and a transformational subcomponent.

A TG model has four main characteristics:

The base subcomponent generates (that is, assigns a structure to) the deep underlying pattern so that we can represent it by means of a tree diagram (also called a 'labelled bracketing' and a 'phrase marker'), thus:

A TG model has four main characteristics:

S NP + VP
NP det + N
VP V+NP
The transformational subcomponent works on a phrase marker and so generates a surface structure.

A TG model has four main characteristics:

Again, a brief example may help.

The structure:

det + N + V + det + N

underlies thousands of transitive sentences

A TG model has four main characteristics:

Again, a brief example may help.

The structure:

det + N + V + det + N

underlies thousands of transitive sentences such as:

The cat swallowed the mouse.

A TG model has four main characteristics:

The transformational subcomponent accounts for the transformation of such a sentence into such variants as:

The mouse was swallowed by the cat.

The mouse was swallowed.

The swallowing of the mouse (by the cat)

and:

A TG model has four main characteristics:

Transformation rules allow the grammarian to explain:

(1) deletion, for example A+B+C >A+B:

John ran away and Mary ran away ---- John and Mary ran away

(2) addition/insertion, for example, A+B >A+B+C:

Go away --- You go away

He has come ---- He has just come

(3) permutation, for example, A+B+C > A+C+B:

Call John up --- Call up John

(4) substitution, for example, A+B+C >A+D+C:

John arrived and Peter went in ---- On John's arrival Peter went in

A TG model has four main characteristics:

In brief,

- TG grammar aims to pair a given string of noises with a given meaning by means of a syntactic component.
- TG model is neutral with regard to production and reception.
- The ultimate aim of TG is the understanding of language, of the universals common to all languages, and through this an understanding of the human mind.

A TG model has four main characteristics:

***

Syntax

There are two basic components of language:

Words/Morphemes: A set of basic units with different meanings or grammatical functions

Rules/Principles: The rules that allow the morphemes to be combined into larger objects

Syntax is the study of these sort of rules assembling words into sentencesю

Syntax is infinite and generative.

Syntax has structures:

constituents, phrases, clauses …

Generative Grammar approach

In theoretical linguistics, generative grammar refers to a particular approach to the study of syntax.

A generative grammar of a language attempts to give a **set of rules** that will correctly predict which combinations of words will form grammatical sentences.

In most approaches to generative grammar, the rules will also predict the morphology of a sentence.

Infinity of Syntax

"New rules will allow the collection of DNA from most people arrested or detained by federal authorities." (Hits in Google)

"New rules will allow the collection of DNA" 0

"New rules will alllow the collection of"

"New rules will allow the collection" 0

"New rules will allow the"

"New rules will allow" ,600

"New rules will" ,000

"New rules" ,650,000

"New" ,190,000,000

Every sentence you hear is new!

Infinity of Syntax

Generative grammar

A valid sentence is generated from Noam Chomsky [1928- ??] Syntactic Structures (1957)

Generative Grammar:

A valid sentence is generated from a root according to some fixed rules (grammar).

Infinity of Syntax

Generative grammar

A valid sentence is generated from Noam Chomsky [1928- ??] Syntactic Structures (1957)

Generative Grammar:

An example in Syntactic Structures sentence:

Infinity of Syntax

Generative grammar

A valid sentence is generated from Noam Chomsky [1928- ??] Syntactic Structures (1957)

Generative Grammar:

A generative grammar in Syntactic Structures

sentence NP +VP

NP = T+ N

VP Verb + NP

T the

N man ball ….

Verb hit …

The purpose of grammar

Generative grammar

English Grammar

The man hit the ball.

subject - verb - object

The man saw the girl with a telescope.

subject - verb - object

The purpose of grammar

Is to tell whether a sentence is valid.

Chomsky: to have an device to generate all Valid sentences in the target language.

The purpose of grammar

Some Properties of the Grammar

The grammar will generate all the well- formed *syntactic structures* (e.g. sentences) of the language and *fail to generate any ill- formed structures*.

The grammar will have a **finite number of rules**, but will be capable of generating an **infinite number of well-formed structures**

(the productivity of language)

The purpose of grammar

Deep and surface structure

Every Sentence exists on two levels :

Surface Structure : the actual spoken sentence.

Deep Structure : underlying meaning of the sentence.

A **single deep structure i**dea can be expressed in **many different surface structures :**

Deep Structure : Boy kisses girl.

Surface structure : The boy kissed the girl.

The boy was kissing the girl. The girl was kissed by the boy.

The purpose of grammar

Surface and Deep Structure

The deep structure gives the semantic component of a sentence, while **the surface structure** gives the proper phonological information to express that thought.

The purpose of grammar

Structural ambiguity

Morphology talks about sequences of morphemes.

To talk about syntactic regularities requires reference to **constituent structure.**

Semantic interpretation of sentences also requires information about constituent structure:

Pick up a big red block.

in particular, if sentences are structurally ambiguous:

John saw the man with the telescope.

Tests for constituency

Substitution test:

Word sequences that can be systematically substituted for a single word (e.g., proper name or personal pronoun) form a constituent:

The student gave Mary a book.

The friendly student gave Mary a book.

The friendly student which I told you about yesterday gave Mary a book.

Tests for constituency

Substitution test:

Word sequences that can be systematically substituted for a single word (e.g., proper name or personal pronoun) form a constituent:

Mary gave John a book.

Mary gave the student a book.

Mary gave the friendly student which I told you about yesterday a book.

Tests for constituency

Substitution test:

Word sequences that can be systematically substituted for a single word (e.g., proper name or personal pronoun) form a constituent:

Compare with:

- Yesterday John gave Mary a book.
- Mary gave yesterday John a book.

Syntactic Categories

Constituents that are substitutable for each other can be subdivided into larger classes that share distribution and structural properties,

i.e. the Syntactic Categories, e.g.:

Noun phrases, consisting of a pronoun, a proper name, or a complex structure with a common noun as syntactic head element – NP

Prepositional phrases (with the telescope, into the garden) – PP

Adjective phrases (friendly, very friendly, interested in linguistics) – AP (!?)

Categories and Functions

Syntactic categories denote classes of constituents with similar internal structure, in particular, the category /part-of-speech of their lexical head.

Grammatical functions characterise the external role of a constituent in its syntactic context, e.g.

Complements:

Subject;

(Direct, indirect, prepositional) Object;

Modifier / Adjunct.

Categories and Functions

Chomsky has proposed two sets of Rules :

1.Phrase Structure Grammar :

these rules dictate the form of **the deep structure** . If you have ever diagrammed sentences in English (or foreign language classes), than you have explicitly used phrase structure rules before.

Phrase Structure Grammar

Phrase structure rules principle specifies both the necessary *phrases for proper sentence construction*, and the *specific word ordering* that should be followed within these sentence phrases.

Phrase Structure Grammar forces a hierarchical arrangement among different parts of sentences.

Phrase Structure Grammar

Why can't we just use phrase structure rules to explain language ?

Phrase Structure Rules can not help distinguish among ambiguous sentences :

- Visiting relatives can be a nuisance.
- The shooting of the hunters was horrible.

Phrase Structure Grammar

2. Transformational rules

To account for these shortcomings in Phrase Structure Grammar, Chomsky proposed an **additional level of rules** which assists in translating deep structures to surface structure sentences.

Phrase Structure Grammar

2. Transformational rules

Transformational Rules : these rules help transform the deep structure into the surface structure.

The *manipulation of verb tenses* is one aspect of transformational rules.

Present tense, past tense, subjunctive, past perfect, future tense *are all derived through transformational rules*.

Phrase Structure Grammar

2. Transformational rules

Transformational Rules : these rules help transform the deep structure into the surface structure.

The *manipulation of verb tenses* is one aspect of transformational rules.

Present tense, past tense, subjunctive, past perfect, future tense *are all derived through transformational rules*.

Generative Grammar approach

In theoretical linguistics, generative grammar refers to a particular approach to the study of syntax.

A generative grammar of a language attempts to give a **set of rules** that will correctly predict which combinations of words will form grammatical sentences.

In most approaches to generative grammar, the rules will also predict the morphology of a sentence.

Transformational-Generative Grammar

In linguistics, transformational grammar (TG) or transformational-generative grammar (TGG) is part of the theory of generative grammar, especially of natural languages. It considers grammar to be a system of rules that generate exactly those combinations of words that form grammatical sentences in a given language and involves the use of defined operations (called transformations) to produce new sentences from existing ones.

"I-language" and "E-language"

In 1986, Chomsky proposed a distinction between I-language and E-language that is similar but not identical to the **competence/performance distinction**.

"I-language" refers to internal language and is contrasted with "E-language", which refers to external language.

I-language is taken to be the object of study in linguistic theory; it is the mentally represented linguistic knowledge that a native speaker of a language has and so is a mental object.

"I-language" and "E-language"

From that perspective, most of theoretical linguistics is a branch of psychology.

E-language encompasses all other notions of what a language is, such as a body of knowledge or behavioural habits shared by a community.

"I-language" and "E-language"

Thus, E-language by itself is not a coherent concept, and Chomsky argues that such notions of language are not useful in the study of innate linguistic knowledge or competence even though they may seem sensible and intuitive and useful in other areas of study.

Competence, he argues, can be studied only if languages are treated as mental objects.

Transformations

The usual usage of the term 'transformation' in linguistics refers to a rule that takes an input, typically called the Deep Structure (in the Standard Theory) or D-structure (in the extended standard theory or government and binding theory), and changes it in some restricted way to result in a Surface Structure (or S-structure). In TGG, Deep structures are generated by a set of phrase structure rules.

Transformations

For example, a typical transformation in TG is the operation of subject-auxiliary inversion (SAI). That rule takes as its input a declarative sentence with an auxiliary: "John has eaten all the heirloom tomatoes." and transforms it into "Has John eaten all the heirloom tomatoes?" In the original formulation (Chomsky 1957), those rules were stated as rules that held over strings off terminals, constituent symbols or both.

X NP AUX Y X AUX NP Y(NP = Noun Phrase and AUX = Auxiliary)

Transformations

The earliest conceptions of transformations were that they were **construction-specific devices**.
For example, there was a transformation that turned active sentences into passive ones.
A different transformation raised **embedded subjects** into main clause subject position in sentences such as "John seems to have gone", and still a third reordered arguments in the dative alternation.

Transformations

With the shift from rules to principles and constraints that was found in the 1970s, those construction-specific transformations morphed into general rules (all the examples just mentioned are instances of NP movement), which eventually changed into the single general rule of move alpha or Move.

Transformations

Transformations actually come in two types: (i) the post-Deep structure kind mentioned above, which are string or structure changing, and (ii) Generalized Transformations (GTs). Generalized transformations were originally proposed in the earliest forms of generative grammar (such as in Chomsky 1957).

Transformations

They take small structures, either atomic or those generated by other rules, and combine them. For example, the generalized transformation of embedding would take the kernel "Dave said X" and the kernel "Dan likes smoking" and combine them into "Dave said Dan likes smoking." GTs are thus structure building, rather than structure changing.

Transformations

In the **Extended Standard Theory** and government and binding theory, GTs were abandoned in favor of recursive phrase structure rules. However, they are still present in tree-adjoining grammar as the Substitution and Adjunction operations, and they have recently re-emerged in mainstream generative grammar in Minimalism, as the operations Merge and Move.

Transformations

In **generative phonology**, another form of transformation is the **phonological rule**, which describes a mapping between an underlying representation (the phoneme) and the surface form that is articulated during natural speech