Clausal Subjects

We have a clausal subject in (1a): the subject of the (matrix) sentence is an (embedded) sentence.

(1)  a.  [That the world is round] is obvious.
     b.  It is obvious [that the world is round].

Although (1a and b) appear to be very different in structure, they have exactly the same meaning. Since this complete synonymy is regular, it calls for an explanation. An adequate grammar of English must predict that pairs of sentences like (1a and b) are always identical in meaning.

Sentence meaning is compositional: the meaning of a sentence is computed from (a) the meaning of the morphemes it contains and (b) its structure. The compositionality of sentence meaning predicts that if two sentences contain the same words and have the same structure, they will be identical in meaning. The prediction works just as well in the other direction: sets of sentences that are composed of the same words and regularly have the same meaning must have the same structure. In plain English, such pairs or sets of sentences are somehow the same sentence. How do we represent this in grammar?
Let us adopt the simple, conservative, standard assumption that underlying the superficial structural appearance of each sentence is a deep structure (DS), the form in which every sentence “originates”. Let us also assume that syntactic operations called transformational rules may reshuffle representations of underlying structure and convert them into surface structure representations (SS). This is called syntactic derivation. SS is derived from DS by transformational rules. The simplest transformational rule is Ø, which means that no operation applies to DS. In this case, SS=DS, the simplest case. All other transformational rules will be explicitly specified in the grammar in terms of what DS they apply to, under what conditions, and what kind of changes each rule performs.

Under the assumptions just sketched, (1a and b) will both be derived from the same DS. The common DS is the grammatical representation of the intuitive idea that (1a and b) are somehow the same sentence. But note that this is in fact a great deal more than just an intuitive notion: as we saw above, this is dictated by the compositionality of sentence meaning.

Diagrammatically, we may informally represent the application of these ideas to (1a and b) like this:

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That the world is round is obvious
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That the world is round is obvious

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It is obvious that the world is round
```

It is obvious that the world is round

The surface structure of (1a) is identical to its deep structure. We assume that a transformation called Extraposition will derive the surface structure of (1b) from the same DS by moving (extraposing) the sentential subject in DS to the sentence final position it occupies in SSb. We observe that sentential subjects are normally extraposed, as in (1b).
Extraposition

Extraposition is a transformation that moves a constituent to sentence-final position. The moved (extraposed) constituent may be a DP or a CP (but it cannot be a VP). Although infinitives do not normally extrapose, infinitival clauses, as well as finite clauses, with filled C(omplementizer) can be extraposed.

Extraposition from DP

Below, the a. examples are non-extraposed, the b. examples are extraposed. In the b. examples in both (2) and (3) a modifier of a noun phrase has been extraposed from the noun phrase.

(2) a. A book WHICH WE DIDN’T LIKE appeared.
   b. A book appeared WHICH WE DIDN’T LIKE.
(3) a. A book ON WHICH TO WORK appeared.
   b. A book appeared ON WHICH TO WORK.

Extraposition of subject clauses

(4) a. subject + predicate $\rightarrow$ $it + predicate + subject$
   b. CP + VP $\rightarrow$ $it + VP + CP$
   c. IP
      $\leftrightarrow$
      IP
      CP
      I'
      CP
      I'
Extraposition of finite subject clauses

(1a—b) above have the same underlying structure. The underlying structure for (1) above (and surface structure for (1a)) is (5a).

(5) a.

Extraposition moves CP to final position, right-adojins it to IP, and simultaneously inserts it in its place to yield (5b).

Extraposed infinitival subject clauses

The postponed subject is the ‘notional’ subject. 

Infinitival subject clauses with no overt subject

Infinitival subject clauses with no overt subject have PRO subject in underlying structure. If PRO is coreferential with a controlling category, it will be coindexed with it. Otherwise, PRO has generic interpretation.

(6) a. \[ [\text{PRO}_i \text{ to hear him say that}] [\text{surprised me}_i] \]. \implies
\implies
b. \[ [\text{It}] [\text{surprised me}_i] [\text{PRO}_i \text{ to hear him say that}] \].

(7) a. EXTRAPOSITION \implies b.
In the case of infinitival subject clauses, the extraposed alternative is more common.

(8)  
   a.  To be part of a team pays.  
   b.  It pays to be part of a team.

(9)  
   a.  To teach Elizabeth is a pleasure.  
   b.  It is a pleasure to teach Elizabeth.  
   c.  Elizabeth is a pleasure to teach.  (Raising)

(10)  
   a.  To deal with him is impossible.  
   b.  It is impossible to deal with him.  
   c.  He is impossible to deal with.  (Raising)

(9c) and (10c) will be discussed later.

Notice that a wide variety of predicates may stand with a clausal subject:

- Transitive VP: $CP \text{ surprised me}$
- Copula + DP or AP: $CP \text{ is a pleasure / is impossible / was kind of you / was stupid of her}$
- Intransitive verb: $CP \text{ pays/ suffices}$

Embedded subject clauses with overt subject (and filled C)  
(Cf. BEG (2), p. 226)

Infinitival subject clauses with overt subjects follow the same pattern and thus are automatically accounted for.

(11)  
   a.  $[CP \text{ for } us \text{ to miss the show}] \text{ would be a pity.}$  
   b.  It would be a pity $[CP \text{ for } us \text{ to miss the show}].$

(12)  

Underlying structure for (11a-b) &
also surface structure for (11a)

Surface structure of (11b) derived by Extraposition
Extraposed -ING subject clauses

The analysis of infinitival subject clauses extends readily to -ING subject clauses. Extraposition of -ING clauses is stylistically conditioned. Non-extraposed -ING subject clauses are quite common. In fact, they are more common than extraposed -ING subject clauses, especially in formal use of English. Extraposition of -ING subject clauses is characteristic of informal style.

(13) Teaching her to drive turned out to be quite enjoyable.
(14) Getting the equipment loaded was easy.

Common informal examples with extraposed -ING subject clause:

(15) It’s no use telling him that.
(16) It wouldn’t be any good trying to catch the bus.

Seem, appear, turn out, prove, happen, chance

The structure of seem-sentences in traditional grammar

In traditional grammar (cf. BEG 12.2.1:2, p. 233, ‘Nominative with the infinitive’ and SGEL 16.12, pp. 343–44), these verbs are analyzed as copulas that may take infinitival ‘subject complements’. On this analysis, the following examples all have the same structure: a copular verb takes an infinitival ‘subject complement’.

(17) My intention was [to help him].
(18) The most important thing is [for us to reach the place of destination].
(19) They appeared [to be satisfied with the results].
The complement of a copula may be AP (21, 22), NP (23, 24), or even a clause (25), but never a VP (26, 27).

Now compare (19) They [VP [COPULA appeared] [SC to be satisfied with the results]].

and  (21) They [VP [COPULA were] [SC satisfied with the results]].

Notice that:

a. (19) is claimed to have copular structure.
b. (21) has copular structure.

(19) cannot have a copular structure. (19) and (21) do not have the same structure.

Lexical Verbs, including copulas, never take a VP as complement.
The main conclusions:

- The infinitive in sentences like (19) *They appeared to be satisfied with the results* is **not a “subject complement.”**

- *Appear, seem, happen, chance, prove, turn out are not copulas.*

- The **traditional analysis** (‘nominative with the infinitive’) on which all the above examples in (17)–(25) have the same structure is **not adequate.** (17), (18) and (21)–(25) are copular structures, but (19) is not. (The traditional ‘nominative with the infinitive’ is not one structural pattern but an assortment of different structures.)

  (17) My intention was to help him.
  (18) The most important thing is for us to reach…
  (19) They appeared to be satisfied with the results. — not a copular structure

- *Seem*-sentences like (19) are hard to accommodate in traditional grammar. (The best traditional assumption, on which (19) has a copular structure, does not seem good enough.)

- → Traditional syntax has to be **radically revised.**

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**The structure of seem-sentences**

Let us assume that the infinitive in (19) is subject.

The underlying structure of (19) is (28)
SUBJECT-TO-SUBJECT RAISING applies to (28) moving the subject of the embedded IP to matrix subject position and the rest of CP to sentence final position, attaching it directly to IP, to yield

(29)

\[
\text{IP} \\
\text{DP} \quad \text{I}' \\
\text{VP} \quad \text{CP} \\
\text{I}' \\
\text{I}' \\
\text{I} \\
\text{VP}
\]

they appeared to be satisfied with the results

(29) is the surface structure representation of (19).

Seem, appear, turn out, prove, happen, chance

A prediction (28) makes

Note that, in the grammatical framework developed so far, (28) predicts the existence of seem-sentences with extraposed subjects.

Our account of (1a-b), (6a-b), and (11a-b) above was based on the assumption that clausal subjects may be extraposed. (28) represents the assumption that seem-type predicates take clausal subjects. Therefore, our grammar now predicts that there are seem-sentences in English with extraposed subject clauses.

This empirical prediction of our hypothesis offers a wonderful opportunity to test its empirical adequacy. If indeed there are seem-sentences in English with extraposed subject clauses, the hypothesis will prove observationally adequate. If not, we are in trouble.

Since the sentence

(30) It appeared that they were satisfied with the results

is precisely the kind of structure the hypothesis predicts, the hypothesis is empirically adequate.
EXTRAPOSITION may apply to (28) to yield (31)

(31) is the surface structure representation of (30).

(30) It appeared that they were satisfied with the results.

How both (19) and (30) derive from the same underlying structure (28)
**Semantic predictions**

Every hypothesis of sentence structure makes semantic predictions. Why?

**How does a syntactic hypothesis make semantic predictions?**

**On the propositional-thematic meaning of sentences**

- Every sentence expresses a **proposition** (propositional meaning) and describes an **eventuality** (thematic meaning).

**Terminology:**

A proposition consists of a **predicate** and one or more **arguments**: \( P(x); Q(x, y) \).

P is a one-place predicate: it takes a single argument. Q is a two-place predicate: it takes two arguments.

**Examples:**

(32) John is hungry. — \( H(j) \)

(33) Bill is a policeman. — \( P(b) \)

*Hungry* and *a policeman* are **one-place predicates**: each takes a single argument.

(34) John killed Henry. — \( K(j, h) \)

*Kill* is a **two-place predicate**: it takes two arguments, \( j \) and \( h \) in the example.

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**Eventualities** (a.k.a. situations or happenings) fall into three large classes:

**states** (32, 33), **events**, and **actions** (34). States are static, events and actions are dynamic. Actions involve volitional agents, states and events do not.

<table>
<thead>
<tr>
<th>Static</th>
<th>Dynamic</th>
</tr>
</thead>
<tbody>
<tr>
<td>States</td>
<td>Events</td>
</tr>
<tr>
<td></td>
<td>Actions</td>
</tr>
<tr>
<td></td>
<td>No volitional agent</td>
</tr>
</tbody>
</table>

**Types of eventualities:** be (hungry), be (a policeman), kill, etc.

**Participants** of eventualities: (34) — John, Henry.

**Roles** of participants: (34) — Killer, killed.

Types of roles (**thematic roles**, a.k.a. theta-roles, \( \theta \)-roles, or semantic roles):

(34) — Agent (John), Patient (Henry).
Sentence meaning is compositional
Word meanings + sentence structure $\rightarrow$ sentence meaning
The meaning of a sentence is computed, not retrieved from memory. (Word meanings are retrieved from memory; they are not computed.)
Therefore, any syntactic structure a theory assigns to a string of words will make predictions about what that string of words means.

What is the significance or use of the semantic predictions a hypothesis of sentence structure makes?

The semantic predictions about sentence meaning (PSM) a syntactic hypothesis (H) makes may be compared with speakers’ understanding of sentence meaning (USM), and this comparison allows us to evaluate H. Such a comparison is interesting, because USM is completely independent of linguists’ hypotheses of syntactic structure or sentence meaning (SM). Speakers of a language L understand SM by virtue of their knowledge of L. Understanding SM in L is part of the competence of speakers of L. So, the meaning (SM) of a sentence S in L is whatever speakers of L know to be the meaning of S. Simply, SM is (equivalent to) USM (SM=USM).

By virtue of their linguistic competence (LC), speakers of a language L can do two things with the meanings of sentences in L:

a. They understand the meaning (SM) of any S in L. For example, they understand the meaning of (19), (30), etc.

b. They understand such semantic relations as synonymy, entailment, contradiction, etc. between sentences. For example, speakers of English know that (19) and (30) are each other’s synonyms.
This allows us to evaluate a syntactic theory. How?
If PSM = (U)SM, the syntactic theory makes the right predictions; it is **adequate**. Otherwise, the syntactic theory is **inadequate**.

For example:

1. Take (19). Speakers of English know what (19) means. (See a. above.) Call their knowledge of the meaning of (19) SM₁₉. A syntactic theory H of English will make its prediction about the meaning of (19), call it PSM₁₉. If PSM₁₉ = SM₁₉, then H is adequate, because it makes the right predictions. Otherwise, H is inadequate.

2. Now take (19) and (30). Speakers of English know that (19) and (30) have the same propositional-thematic meaning: SM₁₉ = SM₃₀ (see b. above). This is regular: any pair of sentences like (19) and (30) will **always** be each other’s paraphrases. If H predicts that PSM₁₉ = PSM₃₀, then H is adequate. Otherwise, it is inadequate.

The predictions of the two different hypotheses
The two hypotheses make different predictions about the semantics of (19) and about the semantic relation (synonymy) between (19) and (30).

1. **What is the propositional meaning of (19)? What is predicated of what?**

   - **The VP hypothesis:** what is predicated in (19) is ‘appeared X’, where X = ‘to be satisfied with the results’ It is predicated of the subject DP ‘they’. (19) expresses **one proposition**, an **assertion about ‘they’**.

   - **The clausal hypothesis:** (19) expresses **two propositions**:

     **P₁:** Satisfied with the results PREDICATE (they)ARGUMENT = S(t); not asserted.

     **P₂:** Appear PRED (they be satisfied with the results)ARG = A(p₁); asserted.

     The argument of the predicate appear in P₂ is the proposition P₁, not ‘they’. P₂ is an **assertion about a proposition** (P₁), not about ‘they’. (19) asserts P₂ about P₁, but P₁ itself is **not asserted**. It is not asserted that ‘it was the case that they were satisfied with the results’. What is asserted is that ‘it appeared to be the case that they were satisfied with the results’, which is very different. The former (P₁) is untrue if they weren’t, the latter (P₂) isn’t.
2. The semantics of (19) and (30)

(19) and (30) express the same propositional-thematic meaning: SM_{19}=SM_{30}. This clausal synonymy is regular: any pair of sentences like (19) and (30) will always be synonymous. A hypothesis H of the grammar of a language L must account for this regularity. H must predict the synonymy of (19) and (30).

- The VP hypothesis informally admits that (19) and (30) are synonymous, but it cannot predict that (30) must have the same meaning as (19), because it does not have the rules or principles that relate (19) to (30). Therefore, it characterizes (19) and (30) as unrelated. Consequently, the regular synonymy between sentences like (19) and (30) is characterized as sheer coincidence: the VP hypothesis predicts that things could just as well be otherwise. This prediction is false, since sentence pairs like (19) and (30) are never different in meaning.

(When traditional grammar states or admits that sentences like (19) and (30) are exact paraphrases of each other, it does not count as representing a regularity or offering an explanation for it. It merely amounts to stating or admitting a problem: their complete and regular synonymy must be accounted for.)

- Under the clausal hypothesis (19) and (30) are derived from the same underlying structure (28). Such derivations always preserve SM. This predicts that sentences like (19) and (30) will be complete synonyms.

A problem: the ungrammaticality of (35)

(35) *That they were satisfied with the results appeared.

(28) cannot be the surface structure of sentences with predicates like appear, seem, etc., simply because (35) is unacceptable.

Since there is no general principle by which to explain the ungrammaticality of (35), or from which the unacceptability of (35) could be derived, we conclude that it is and idiosyncratic property of these predicates (cf. seem, appear, turn out, happen, chance, and prove) that either EXTRAPOSITION or SUBJECT-TO-SUBJECT RAISING must apply to their sentential subjects. (Hence the terms ‘raising verbs’ and SUBJECT-TO-SUBJECT RAISING triggers: they trigger SUBJECT-TO-SUBJECT RAISING.)
Note on extraposition

Extraposition involves an adjunction operation, “under which material extraposed out of a given containing Phrase is attached to the first Maximal Projection dominating the host Phrase out of which the extraposed constituent is being moved” (Radford 1988: 543). Cf. also Haegeman & Guéron (1999:120), who assume that an “extraposed clause is right-adjoined to IP.”

Extraposition of clausal subject

References


