

An Analysis of *It*-Cleft Constructions¹

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Yoon, Jungjoo. 2002. An analysis of *It*-Cleft Constructions. *SNU Working Papers in English Language and Linguistics* 1, 142-160. The main purpose of this paper is to investigate *it*-cleft constructions in English and propose a non-derivational, lexicalist analysis of the constructions within the framework of HPSG. Based on Pollard & Sag's (1994) classification of strong and weak UDCs, I argue that there are two types of cleft clauses in *it*-cleft constructions, i.e., *wh*-cleft-clause and *bare*-cleft-clause, which have properties of strong UDCs and weak UDCs, respectively. In this paper, the two types of *it*-cleft constructions are accounted for by positing two different lexical entries of *be*_{cleft}. *It*-cleft constructions containing *wh*-cleft-clause, which have not been dealt with in the previous HPSG analyses, are analyzed by introducing a new feature CLE to distinguish *wh*-cleft clauses from other types of clauses. I propose that in the lexical entry of *be*_{cleft} for *wh*-cleft-clause, the CLE value has the same index as the focused phrase whereas in the lexical entry of *be*_{cleft} for *bare*-cleft-clause, the focused element and the SLASH value have the same index. (Seoul National University)

Keywords: HPSG, *it*-cleft constructions, CLE, strong and weak UDC, copula *be*, focus, cleft clauses.

1. Introduction

There are *it*-clefts in English as shown in examples below:

- (1) It was my little son [who/that heard an explosion last night].
- (2) It is Mary [who(m)/that my little son loves].
- (3) It was an explosion [my little son heard last night].

As shown in (1)-(3), *it*-clefts consist of *It*, the constituent immediately to the right of the verb *be* (referred to as a *focus phrase*) and the clause including *wh*-word or *that*, or *that*-less clause follows it (referred to as

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a *cleft clause*). One of major properties observed in this construction is that an element is extracted out of the cleft clause into the focus position. The extraction leaves a gap behind in the cleft clause. There is a categorical dependency between the gap and the focused element. Pollard and Sag (1994) classify *it*-clefts into two UDCs (unbounded dependency constructions): the examples including *wh*-word like (1) and (2) belongs to the class of the *filler-gap constructions*, or *strong UDCs* whereas *that*-less clause like (3) belongs to the *weak UDCs*. Chai and Lee (2002) propose a lexicalist approach to *it*-cleft constructions that contain *that*- or *that*-less cleft clauses. They insist that the cleft *that*-clause is not an adjunct modifying the preceding phrase but a complement. The verb *be* in *it*-cleft (hereafter *be_{cleft}*) is different from the copula *be* in that *be_{cleft}* selects for the expletive pronoun *it* as the subject, and two complements (that is, focus and cleft clause). They also suggest a new complementizer *that_{cleft}* for the cleft construction, which is not a relative pronoun (relativizer) and which is different from the existing complementizer *that*.

Although Chai and Lee (2002)'s analyses of *it*-cleft constructions are a good trial to be dealt with in terms of HPSG analysis of the UDC, they have some problems. First, they don't deal with the cleft clause beginning with a *wh*-phrase. Second, a new complementizer *that_{cleft}* needs not be supposed in the analysis for the *it*-cleft construction. Third, the category that can occur in the focused position should not be restricted to NP, ADVP or PP. Therefore, the lexical entry of *be_{cleft}* they suggest should be modified.

In this paper, I deal with cleft clauses beginning with a *wh*-phrase as well as *that*- or *that*-less cleft clauses. I propose that the cleft clause is classified into two types, *wh*-cleft-clause and *bare*-cleft-clause, and that they can be analyzed by positing two lexical entries of *be_{cleft}*. Further, it is claimed that *wh*-word like *who(m)* or *whose* in *wh*-cleft-clause has non-empty CLE value. Unlike the REL, QUE, or SLASH value, the CLE value is assumed not to be amalgamated by a lexical head and obeys the CLE Inheritance Constraint.

This paper is organized as follows. In the second section, I provide a brief overview of current HPSG analyses of extraction phenomena and some related constraints, which are necessary for a proper understanding of *it*-cleft constructions. Then I briefly sketch Sag's (1997) classification of phrasal types that are cross-classified with clause types in the type hierarchy. In section 3, I show *it*-clefts analyses by Pollard and Sag (1994)

and Chai and Lee(2002), and then I review them critically. In section 4, I show my analysis in which *wh-cleft-clause* and *bare-cleft-clause* are discussed in the constraint-based theory. Finally, section 5 concludes the paper.

2. Background

2.1 Extractions

UDCs are the constructions where one element is extracted from an original place into other place, and where there is a syntactic dependency between the extracted element and the gap position. The UDCs are classified into two types: strong UDCs and weak UDCs. In strong UDCs, there is an overt constituent in a nonargument position - either a topic or an expression containing a *wh*-phrase that can be thought of as strongly associated with the gap or trace. In weak UDCs, there is no overt filler and relation between the argument and the trace is treated as one of coindexing. HPSG analysis of UDCs does not suppose an empty category such as trace or empty operator. SLASH-based analysis would suffice to explain the UDCs. All the local information of the gap position is encoded in the lexical information of the lexical head.

The UDCs have three parts: the bottom where the dependency is introduced, the middle where the information that there is an unbound trace is propagated up the tree, and the top where the SLASH value is bound off or discharged.

A synsem element of type *gap* is subject to the constraint that identifies its LOCAL value with the single member of its SLASH set:

$$(4) \quad gap\text{-synsem} \Rightarrow \begin{bmatrix} \text{LOCAL} & \boxed{1} \\ \text{SLASH} & \{\boxed{1}\} \end{bmatrix}$$

In the bottom of the extraction construction, the lexical head introduces the information on the missing element, containing an argument of type *gap-ss* in the ARG-ST value, not in the COMPS value. This is achieved in terms of the Argument Realization Principle.

(5) Argument Realization Principle (ARP)

$$word \Rightarrow \left[\begin{array}{l} SS|LOC|CAT \left[\begin{array}{l} SUBJ \quad \boxed{A} \\ SPR \quad \boxed{B} \\ COMPS \quad \boxed{C} \quad \text{elist } (gap-ss) \\ ARG-ST \quad \boxed{A} \oplus \boxed{B} \oplus \boxed{C} \end{array} \right] \end{array} \right]$$

This principle says that the ARG-ST value is basically earned from appending the SUBJ, SPR, and COMPS list. But the *gap-ss* complement cannot be included in the COMPS value, while it can be included in the ARG-ST value.

HPSG analyses of extraction involve feature specifications for the feature SLASH that are projected upward in a syntactic structure. Extraction is thus treated entirely in terms of the inheritance of SLASH specifications, with binding off of the SLASH specification occurring at an appropriate point higher in the structure.

Following Sag (1997), I assume that words are subject to a constraint that defines their SLASH values of the members of their ARGUMENT-STRUCTURE (ARG-ST) list. English words amalgamate the SLASH values of all their arguments, obeying the constraint that is stated as in (6).

(6) Lexical Amalgamation of SLASH:

$$word \Rightarrow \left[\begin{array}{l} ARG-ST \quad <[SLASH \boxed{1} \dots SLASH \boxed{n}] > \\ SLASH \quad (\boxed{1} \cup \dots \cup \boxed{n}) \\ BIND \quad \boxed{0} \end{array} \right]$$

If verb's complement is slashed, the verb itself is slashed. The statement of the inheritance of SLASH specifications can be simplified in terms of the following constraint on *head-nexus phrases*.

(7) SLASH Inheritance Principle

$$hd-nexus-ph \Rightarrow \left[\begin{array}{l} SLASH \quad / \boxed{1} \\ HD-DTR \quad [SLASH \quad / \boxed{1}] \end{array} \right]$$

SLASH Inheritance Principle is a defeasible constraint that is obeyed

by all the types of head-nexus phrase considered thus far. It guarantees that the SLASH value of a phrase is the SLASH value of its head-daughter. Note that in this analysis, a subject daughter, complement daughter, etc. never passes its SLASH value to its mother. Any SLASH inheritance that appears to be an instance of such passing, is in fact mediated by the head daughter, whose SLASH value contains that of the relevant non-head daughter.

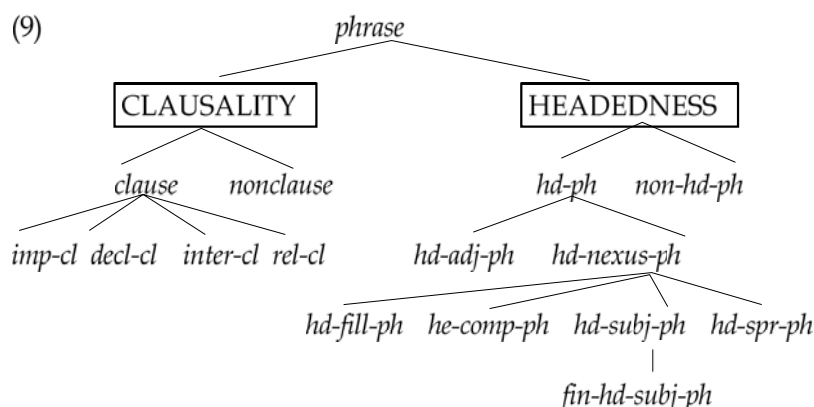
Termination of the SLASH value passed upward from the bottom is indebted to a phrasal type constraint which instances of type *hd-filler-ph* are subject to:

- (8) [SLASH $\boxed{1}$ \rightarrow LOC $\boxed{5}$ H $\left[\begin{array}{l} \text{phrase} \\ \text{HEAD} \quad \text{verb} \\ \text{SLASH} \{ \boxed{5} \cup \boxed{1} \} \end{array} \right]$

2.2 Sag's (1997) analysis

In this subsection, I briefly sketch Sag's (1997) classification of phrasal types that are cross-classified with clause types in the type hierarchy. Individual phrase types inherit both from a CLAUSALITY type and a type of HEADEDNESS. I will apply the multiple inheritance hierarchy to *it*-cleft constructions.

The multidementional organization of phrasal types is illustrated in (9):



3. Previous analyses

3.1 Pollard and Sag (1994)

In Pollard and Sag (1994), the example of (10) belongs to the class of the *filler-gap constructions*, or *strong UDCs* whereas that of (11) belongs to the *weak UDCs*. That is, *it*-clefts are classified into two UDCs.

(10) It's Kim who Sandy loves ____.

(11) It's Kim Sandy loves ____.

Pollard and Sag (1994) provide the examples like (12) for Binding interpretation.

(12) a. It was herself that Mary liked best.

b. It was each other that the twins liked best.

They suggest two possible analyses for anaphor binding of *it*-clefts. On one possible analysis of *it*-clefts, the relationship between the focus and the gap is analogous to that between a filler and a gap in a strong UDC. On this analysis, the SUBCAT list for the examples in (12) is as shown in (13):

(13) [SUBCAT <NP_{it}, NP[LOC \square *ana*], S'[INH | ASH{ \square >]
(Pollard and Sag (1994))

On the alternative analysis, the relationship between the focus and the gap is analogous to a weak UDC in the sense that the SUBCAT list for *be* (in *it*-cleft) would not identify the LOCAL values of the focus and the INHER | ASH value, but instead would merely require them to be coindexed, as shown in (14):

(14) [SUBCAT <NP_{it}, NP_i, S'[INH | ASH{NP_i}]>]
(Pollard and Sag (1994))

Pollard and Sag (1994) suggest that two SUBCAT lists of *be* stem from minor idiolectal differences in the lexical entry for the copula *be* involved in the cleft construction,

3.2 Chai and Lee (2001)

Chai and Lee (2001) show a lexicalist analysis of the *it*-cleft constructions in the framework of HPSG. They provide the evidence that the cleft *that*-clause is not an adjunct modifying the preceding phrase but a complement. The verb be_{cleft} selects for the expletive pronoun *it* as the subject, and two complements. That is, they capture the properties of the *it*-cleft constructions in terms of the verb be_{cleft} of which the lexical entry is represented in (15).

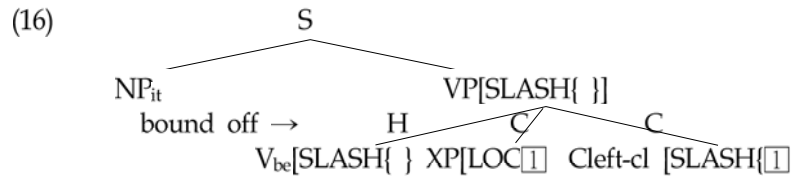
(15) Lexical entry of be_{cleft}

[	SUBJ	<NP _{it} >	COMPS	<	[	HEAD	$n \vee adv \vee p$	],	[	HEAD	verbal	VFORM	fin	SUBJ	< >	SLASH	{[3] \cup [2]}	CONT	propositional]
]	SLASH	[2]																		

(Chai and Lee (2001))

The LOC(AL) value of the first complement is structure-shared with one of the SLASH values of the second complement. Chai and Lee note that the verb *be* does not amalgamate the very SLASH value, {[3]}, from its second complement, in terms of lexical idiosyncrasy. They also note that the HEAD value of the second complement is of type verbal, subtype of comp(lementizer) and verb. This ensures the second complement could be a CP or an S.

Given such information, the *it*-cleft construction is given a syntactic structure below:

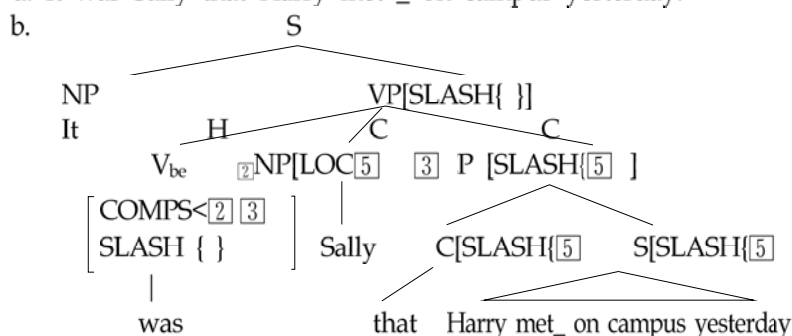


(Chai and Lee (2001))

In this structure, the cleft clause is the second complement of the verb *be*, and a sister to the other complement, XP. The category of XP could be noun, adverb, or preposition, and the second complement is missing at least one element and its SLASH value is structure-shared with the LOC value of the preceding complement. The cleft clause, the second complement, may or may not contain the complementizer *that*, because it could be a CP or an S according to the lexical entry of the verb *be*_{cleft}.

Consider the sentence in (17a), where a non-subject noun phrase is in the focused position. The structure is illustrated as in (17b).

- (17) a. It was Sally that Harry met _ on campus yesterday.



(Chai and Lee (2001))

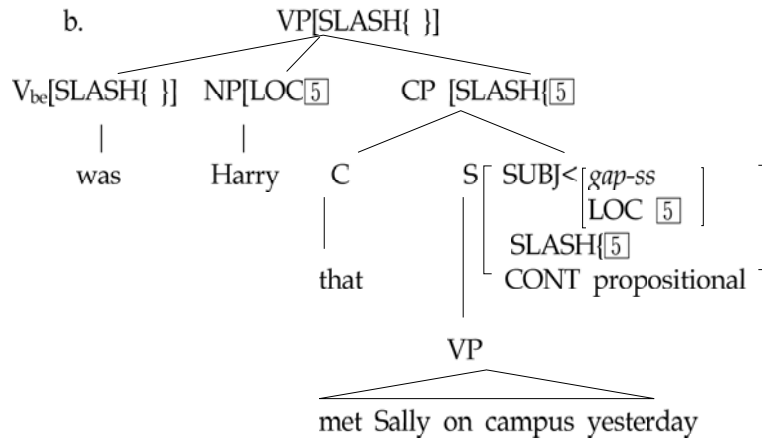
The information on the slashed argument is introduced in the ARG-ST of the lowest head verb *met* in terms of the ARP. The information is passed upward to the S, C, and CP nodes continuously by the interaction of the SLASH Inheritance Principle and SLASH Amalgamation Constraint. Then the SLASH value is bound off at the VP node, since the higher head verb *was* does not amalgamate the SLASH value due to its lexical idiosyncrasy.

They note that the second complement CP is of type *cp-cl*, a subtype of clause and *hd-comp-ph*, which is already exploited to account for complementizer clauses by Ginzburg & Sag (2000:48). Instances of type *cp-cl*, are subject to the constraint in (18).

- (18) *cp-cl*: [] → H[HEAD comp], ...

This constraint says that the head daughter of clauses of type *cp-cl* should be a complementizer, i.e. *that*, *for*, or *to*. Since $\text{that}_{\text{left}}$ is also a complementizer, *it*-clefts are subject to this constraint. The sentences, where the subject NP is extracted to be focused, are also analyzed in the same way. The verb phrase of the sentence in (19) is assigned the structure in (19b).

(19) a. It was Harry that _ met Sally on campus yesterday.



(Chai and Lee (2001))

In this structure, the lowest head verb *met* contains the information that its subject is slashed, and passes it upward to its mother node, S. The information of S is exactly same with that of the VP except that it is a proposition-denoting clause while the VP daughter is a soa-denoting phrase. Note that the S is of type *decl-ns-cl*, a subtype of *decl-cl* and *hd-only-ph*, which is already used in the analyses of subject extraction by Bouma et al (2001) and of the *to*-phrase with the unexpressed subject by Ginzburg & Sag (2000). Instances of type *decl-ns-cl* are subject to the constraint in (20)

(20) *decl-ns-cl* : [SUBJ < [] >] → ..

3.3 Critical Reviews of Chai and Lee (2001)

In this subsection, I review Chai and Lee's analysis critically. First of all, they limit *it*-clefts into the form of *it is/was* ~ ~. They point out that *that* can alternate with *who* or *whom* when the focused element is a human noun, and sometimes may be deleted in the cleft clause. But their analysis cannot be applied to the form of *it is/was* ~ ~ although *that*-less (*it*-cleft) construction can be covered within their analysis.

It is well known that in the form of *it is/was* ~ ~, the focus and the gap are members of the same category. However, the case that the Comp of the cleft clause contains a *wh*-word (only *who*, *whom*, and *whose* are available) is excluded.² In that case the focus and the *wh*-phrase have the same index.

- (21)a. It was Smiley_i who_i spilled beer on this couch.
 b. It must have been Dorothy_i who(m)_i Fred was referring to.
 c. It is Martha_i whose_i work critics will praise.

In the prepositional phrases containing these noun phrases, the focus and the pied-piped *wh*-phrase also have the same index.

- (22)a. It was Smiley_i on whom_i the sheriff placed the blame.
 b. It is Margaret_i on whose_i shoulders the burden will rest.

Chai and Lee (2001)'s analysis where *be* selects two complements, i.e. XP and one clause including a slashed XP, is acceptable in that respect. However, they don't deal with some phenomena, such as coindexing of the focus NP and a *wh*-word, or an extraction out of the cleft clause beginning with *who(m)* or *whose*.

Second, in the lexical entry of *be*_{cleft} in (15), they suggested "HEAD $n \vee adv \vee p$ " in the first complement. This means that the category that

² Other *wh*-words that serve well in restrictive relatives are not as natural in *it*-clefts:

- i. a. ?It is this car [which I want you to sell]
 b. ?It was on Thursday [when the schedule was announced].
 c. ?It was in Boston [where they held the tea party]

can occur in the focused position is restricted to NP, ADVP³, or PP. But it is not true. The following examples prove that quantifier, particle, adjective or clause can occur in the focused position.

Quantifier

- (23)a. It is how much farther we have to travel that I want to know.
 b. How far is it that we have to go?
 c. How long was it that we stayed under water?
 d. It is precious little that we can expect for our tax money these days.

Particle

- (24)a. It wasn't on that he pulled his boats, it was off.
 b. It isn't in that one takes garbage, it is out.

Adjective⁴

- (25)a. It was happy that he looked when I saw him last.
 b. It is happy that we all most want to be.
 c. It was green that he painted his boat.
 d. It was red that we sprayed the sportscar.

Clause (=CP)

- (26)a. It is that Bill will ever be this late again that is unlikely.
 b. It is that Fred took Mary to the movies that bothers me.
 c. It was that he had stumbled onto an anthill that Fred regretted.

(taken from Delahunty (1984))

³ Individual adverbs such as *carefully* and *regretfully* are not acceptable in the focus position, even though prepositional phrases that express the same ideas are acceptable: (C.L. Baker (1989))

a. *It was *carefully* that Donna removed the wrapping ____.
 (Compare: It was *with care* that Donna removed the wrapping ____.)
 b. *It was *regretfully* that Joe fired Pete.
 (Compare: It was *with regret* that Joe fired Pete.)

⁴ Some adjective phrases cannot appear in the focused position as shown in (i).

i. *It is fond of Martha that Harry seems to be ____.

Rather, the category that cannot appear in the focused position is VP as shown in (27).

(27) *It was to see his brother that Harry tired ____.

Third, Chai and Lee (2000) propose to assume a new complementizer *that*_{CLEFT}, which selects for a finite clause which is missing a constituent. Therefore, a finite verb projection, ie. S or VP, has a nonempty SLASH value. But the property that a finite clause has a nonempty SLASH value isn't found only in cleft clauses. This property can be also found in relative clauses. Therefore, this property cannot be a motivation for a new complementizer.

4. My analysis

Based on Pollard & Sag's (1994) classification of strong and weak UDCs, I propose that there are two types of cleft clauses in *it*-cleft constructions, i.e., *wh*-cleft-clause and *bare*-cleft-clause. Each type is exemplified in the bracketed part of the following examples:

(28) It's Kim [who/that⁵/whose mother Sandy likes ____].

(29) It's Kim [Sandy likes ____].

In (28), the *wh*-cleft-clause exhibits the characteristics of strong UDCs, while in (29) the cleft construction has properties of weak UDCs.

In order to account for the two types of *it*-cleft constructions, I will propose two different lexical entries of *be in cleft constructions*.

First, consider the example (28), which contains a *wh*-cleft-cl. The

5 Following Sag (1997), I assume *that* to be a kind of cleft *wh*-phrase. According to Sag, *that* in a relative clause can be treated as a *wh*-relative word since it is similar in most respects to relative *who* (though the latter differs in that it is in general restricted to animate antecedents).

i It is Kim $\left[\begin{array}{l} \text{on whom} \\ * \text{on that} \\ * \text{on who} \end{array} \right]$ Sandy relies.

lexical entry of *be* for the *wh-cleft clause* is as shown in (30).

(30) Lexical entry of be_{cleft} for *wh-cleft-cl*

$$\left[\begin{array}{ll} \text{HEAD} & \textit{verb} \\ \text{SUBJ} & \langle NP_{it} \rangle \\ \text{COMPS} & \langle XP_{[2]} [\text{FOCUS } +], \left[\begin{array}{ll} \text{HEAD} & \textit{verb} \\ \text{VFORM} & \textit{fin} \\ \text{SLASH} & \{ \} \\ \text{CLE} & \{ [2] \} \end{array} \right] \end{array} \right] \\ \text{CLE } \{ \} \\ (X \neq) \end{array}$$

It is assumed that *wh*-word like *who(m)*, *that*, or *whose* in *wh-cleft-cl* has non-empty CLE value, indexed as [2] in (30). In the lexical entry of be_{cleft} for *wh-cleft-clause*, the CLE value have the same index with the focused element. Unlike the REL, QUE, or SLASH values that are amalgamated by HEAD, the CLE value obeys the constraint that is stated as in (31)

(31) CLE Inheritance Constraint⁶

In a headed phrase,

- a) if the value is of sort preposition, the CLE value is inherited from the complement daughter's CLE.
- b) otherwise, the CLE value is inherited only from a leftmost daughter's CLE.

The other constraint that *wh*-cleft clauses inherit is shown in (32). This constraint is the general constraint governing all clauses.

$$(32) \text{ clause} \Rightarrow \left[\begin{array}{l} \text{SUBJ list (PRO)} \\ \text{HEAD [MOD/none]} \\ \text{REL } \{ \} \\ \text{QUE } \{ \} \end{array} \right]$$

⁶ This constraint is similar to the constraint on Interrogative Pied piping suggested by Pollard and Yoo (1998:435) in that the given value is inherited from the leftmost element like specifier daughter..

$$(33) \text{ } wh\text{-}cleft\text{-}cl \Rightarrow \left[\begin{array}{l} SLASH \{ \} \\ HD\text{-}DTR [CLE \{ \}] \\ NON\text{-}HD\text{-}DTRS < CLE[[\]]> \\ CLE \{ [4] \} \end{array} \right]$$

The constraint in (33) says that the CLE value of non-head-daughter must be non-empty. The CLE value of *wh-cleft-cl* is inherited from the CLE value of the leftmost non-head-daughter.

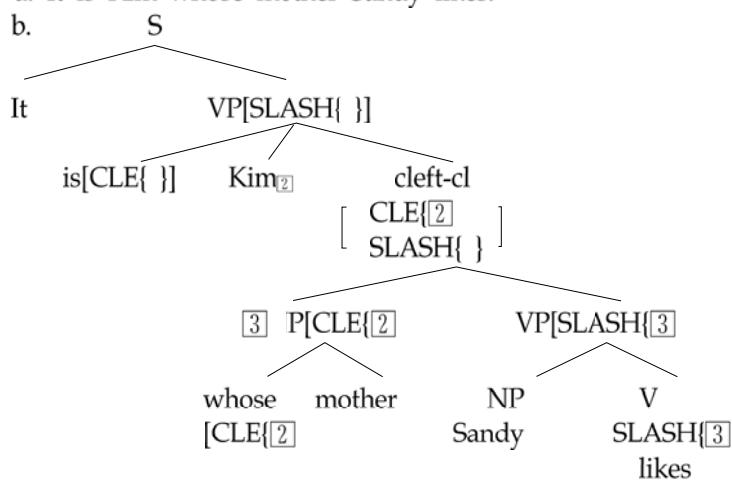
Since non-finite cleft clauses are not allowed, cleft clauses have the following constraint:

$$(34) \text{ } cleft\text{-}cl \Rightarrow [VFORM \text{ } fin]$$

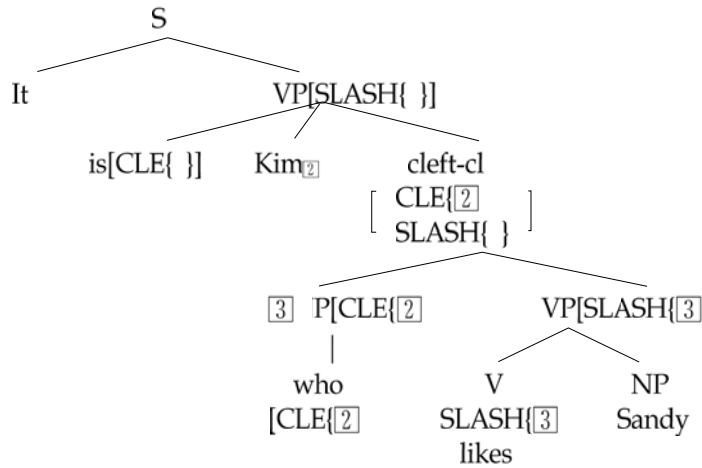
The constraint in (34) says that cleft clause must be a finite clause.

The examples of *wh-cleft-cl*, interacting with the above constraints, are illustrated in (35) and (36).

(35) a. It is Kim whose mother Sandy likes.



(36) It is Kim who likes Sandy.



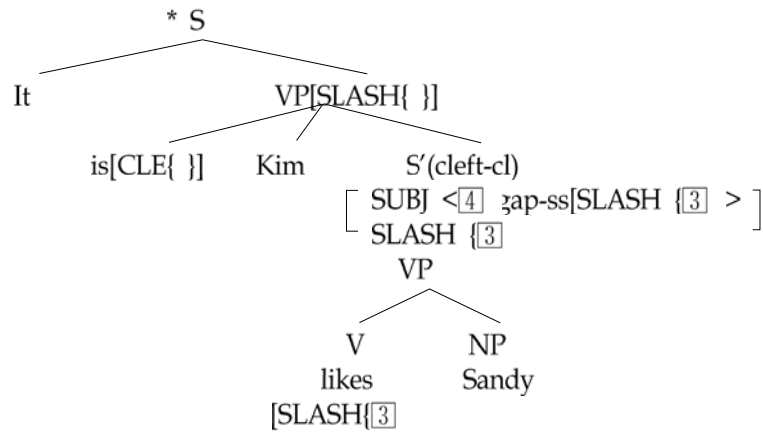
Now consider the second type of lexical entries of be_{cleft} . The lexical entry of be_{cleft} for the cleft construction with *bare-cleft-clause* is shown in (37).

(37) Lexical entry of be_{cleft} for *bare-cleft-cl*

[HEAD	<i>verb</i>	,	[HEAD	<i>verbal</i>]		
	SUBJ	<NP _{it} >			VFORM	<i>fin</i>			
	COMPS	< XP _[2] [FOCUS +]			SUBJ	< >			
	CLE { }				REL	{ }			
					QUE	{ }			
					SLASH	{XP _[2] }			
CLE					{ }				

This constraint says that the focused element and the SLASH value have the same index. Note that (37) requires that the subject in the second complement must not be extracted (via the [SUBJ < >] specification). Therefore, ungrammatical examples like **It is Kim likes Sandy* will not be allowed.

(38) * It is Kim likes Sandy.

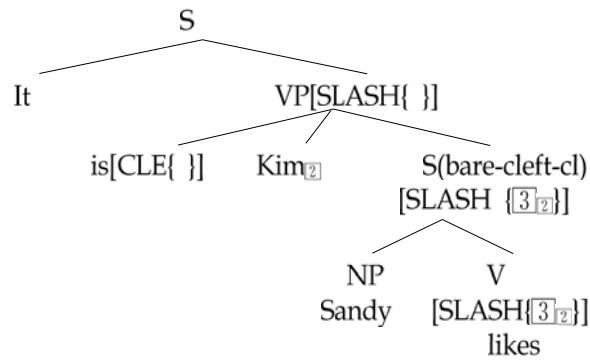


The second type of cleft clauses like (29) is treated in terms of both *bare-cleft-cl* and *fin-hd-subj-ph* and hence inherits constraints from both of these supertypes. The constraint is shown in (39):

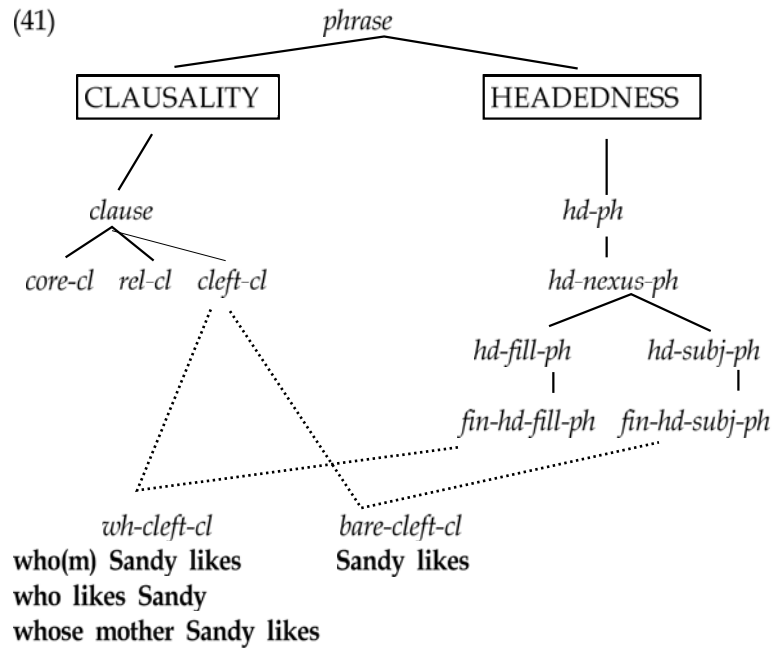
$$(39) \text{ bare-cleft-cl} \Rightarrow \begin{bmatrix} \text{SUBJ} < > \\ \text{SLASH} \{ [] \} \\ \text{CLE} \{ \} \end{bmatrix}$$

The constraint in (39) says that the subject must exist in the *bare-cleft-clause* as shown in SUBJ < >. The cleft clause has a non-empty SLASH value. Without *wh*-word, CLE value of cleft clause is empty. The bracketed part in (29), interacting with the above constraints, is sketched in (40).

- (40) a. It is Kim Sandy likes.
b.



To sum up, the types of cleft clauses discussed in this section are illustrated in (41).



5. Conclusion

In this paper, I propose a non-derivational, lexicalist analysis of *it*-cleft constructions within the framework of HPSG. Based on Pollard & Sag's (1994) classification of strong and weak UDCs, I argue that there are two types of cleft clauses in *it*-cleft constructions, i.e., *wh*-cleft-clause and *bare*-cleft-clause, which have properties of strong UDCs and weak UDCs, respectively. In this paper, the two types of *it*-cleft constructions are accounted for by positing two different lexical entries of be_{cleft} . *It*-cleft constructions containing *wh*-cleft-clause, which have not been dealt with in the previous HPSG analyses, are analyzed by introducing a new feature CLE to distinguish *wh*-cleft clauses from other types of clauses. In the lexical entry of be_{cleft} for *wh*-cleft-clause, the CLE value has the same index as the focused phrase whereas in the lexical entry of be_{cleft} for *bare*-cleft-clause, the focused element and the SLASH value have the same index. I propose the CLE value obeys the CLE Inheritance constraint, unlike the REL, QUE, or SLASH values that are amalgamated by HEAD.

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