

CHAPTER II

THEORETICAL FRAMEWORK

In this chapter, the framework of Lexical-Functional Grammar (LFG) is introduced. In Section 2.1, the basic module of LFG proposed by Joan Bresnan and Ronald Kaplan (Bresnan 1980, 1982a, Kaplan and Bresnan 1982) will be introduced. In addition, three distinct, parallel structures of grammatical description will be discussed. Next, I will then present the theory of a-structure and the mapping from a-structure to syntactic functions as generally conceived in the literature, e.g., in Bresnan (2001), Falk (2001), and Her (2003, 2006).

2.1 LFG

The syntactic module in LFG emphasizes the centrality of the lexical module and grammatical functions. LFG factors the syntactic information into three distinct, parallel planes of grammatical description. The c-structure represents category hierarchies in terms of tree configurations. The f-structure is composed of attributes (features and functions) and their values. The crucial concept of the f-structure is grammatical functions (e.g., SUBJ and OBJ). The a-structure² represents the argument structure of a predicate and the interface between the lexical semantic structure and the syntactic structure (Falk, 2001; Bresnan, 2001; Her, 2004, 2007a).

² The term “a-structure” is sometimes used in a sense closer to what we are calling θ -structure. The term seems to be used ambiguously in Bresnan (2001) and Falk (2001).

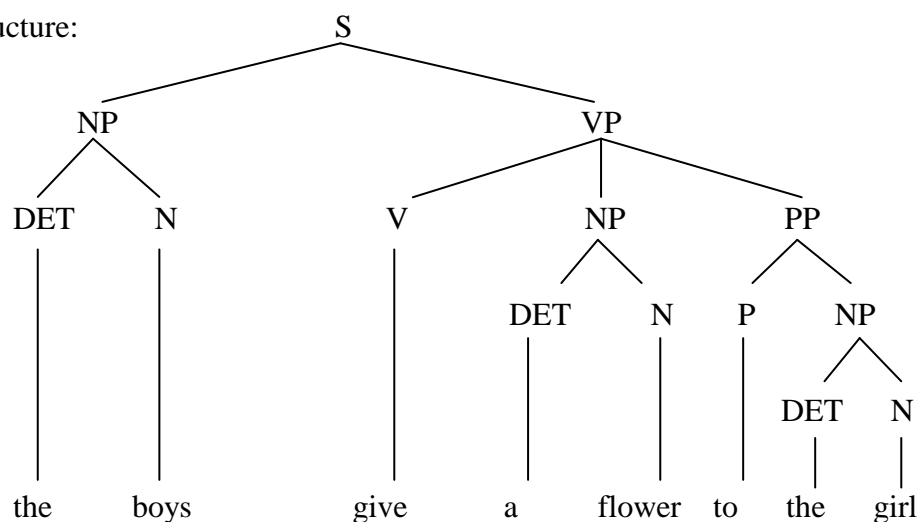
These three parallel structures are related to each other by mapping principles. Thus, a well-formed sentence must satisfy not only the principles that apply internally to each structure, but also the mapping principles that relate one structure to the other.

2.1.1 C-Structure

C-structure in LFG is “a representation of dominance and precedence relation among syntactic constituent, such as NP, V, S, etc., formalized as a phrase structure tree” (Alsina, 1996: 17). But it does not contain all the syntactic properties of a constituent. The c-structure of sentence in (22a), for example, is represented in (22b).

(22) a. The boys give a flower to the girl.

b. c-structure:



2.1.2 F-Structure

F-structure is represented as an attribute-value matrix (or AVM) that expresses

information such as the grammatical functions (subject, object, oblique, etc.) of a sentence. The f-structure of sentence in (23a), for example, is represented in (23b).

(23) a. The boys give a flower to the girl.

$$\text{b. f-structure : } \left(\begin{array}{l} \text{SUBJ } \left(\begin{array}{ll} \text{DEF} & + \\ \text{NUM} & \text{PL} \\ \text{PRED} & \text{'boy'} \end{array} \right) \\ \text{PRED } \text{'give < SUBJ OBL}_{\text{goal}} \text{'}} \\ \text{TENSE } \text{PRESENT} \\ \text{OBJ } \left(\begin{array}{ll} \text{DEF} & - \\ \text{NUM} & \text{SG} \\ \text{PRED} & \text{'flower'} \end{array} \right) \\ \text{OBL}_{\text{goal}} \left(\begin{array}{l} \text{PRED } \text{'in <OBJ>'} \\ \text{OBJ } \left(\begin{array}{ll} \text{DEF} & + \\ \text{NUM} & \text{SG} \\ \text{PRED} & \text{'girl'} \end{array} \right) \end{array} \right) \end{array} \right)$$

In LFG, an attribute is a feature or function name that precedes the value. Thus, (23b) contains five attribute names: SUBJ, PRED, TENSE, OBJ, and OBL_{goal}. Two of the attributes, TENSE and PRED are features with simple values. The other three attributes, SUBJ, OBJ, and OBL_{goal} are functions. Their values are f-structures (Falk, 2001). The value in single quotation marks of the PRED feature is the semantic content. In (23), the verb *give* subcategorizes for three arguments: the agent that

bears the function SUBJ, the theme that bears the function OBJ, and the goal that bears the function OBL_{goal} . SUBJ, and OBJ, and OBL_{goal} in the larger f-structure fill the argument positions of PRED, respectively.

2.2 Lexical Mapping Theory (LMT)

Lexical Mapping Theory (LMT), a framework initiated by Levin (1987) replaces the earlier stipulated function-changing rules in LFG (Her, 2003, 2007). Since Bresnan and Kanerva (1989) proposed the first comprehensive formulation of LMT, there are now several versions in the LFG literature, e.g., Brennan (1989), Bresnan and Moshi (1990), Bresnan and Zaenan (1990), Alsina (1992), Alsina and Mchombo (1993), Huang (1993), Butt, Dalrymple, and Frank (1997), Her (1998), Akerman and Moore (2001), and Bresnan (2001). The lexical mapping theory is the part of LFG that constrains the linking between a-structure roles and f-structure functions (Bresnan, 2001; Falk, 2001; Her, 2004, 2007a, 2007b).

2.2.1 The Theory of A-Structure

The argument structure, or a-structure, of a predicator consists of its argument roles and their syntactic features. The a-structure is also the interface between the lexical semantic representation of predicates and their syntactic subcategorization in terms of grammatical functions. The sequence of the argument roles in a-structure descends in prominence based on a Universal Hierarchy of Thematic Roles, first

proposed by Jackendoff (1972), and subsequently developed in Ostler (1979), Foley and Van Valin (1984), Givon (1984), Kiparsky (1987), Bresnan and Kanerva (1989), Jackendoff (1990), etc. The version of the hierarchy adopted here, given in (24), follows Bresnan and Kanerva (1989, 1992).

(24) Thematic Hierarchy:

agent > beneficiary > experience/goal > instrument > patient/theme > locative

(Bresnan and Kanerva, 1989, 1992)

The thematically most prominent argument in the a-structure of a predicate is designated $\hat{\Theta}$ (theta-hat). In (25), for instance, the two-place predicate *kick* requires two argument roles in an a-structure, agent (also $\hat{\Theta}$) and patient.

(25) *kick* < *x* *y* >

agent/ $\hat{\Theta}$ patient

In LFG, argument functions (shown in bold) are grammatical functions that can be linked to argument roles and can be subcategorized by predicates while non-argument functions (in italics) are grammatical functions that cannot be linked to argument roles and cannot be subcategorized by predicates, as in (26):

(26) *TOP* *FOC* **SUBJ** **OBJ** **OBJ _{θ}** **XCOMP** **COMP** *ADJUNCTS*

(Her, 2003: 3)

LFG further decomposes grammatical functions in terms of two binary features: $[\pm r]$ and $[\pm o]$ (Bresnan, 2001; Falk, 2001; Her, 2003, 2006, 2007b) as in (27). ($[+r]$ represents that the function is restricted to having an argument role; $[+o]$ represents that the function is objective.)

(27) Feature Decomposition of Argument Functions:

	$[-o]$	$[+o]$
$[-r]$	SUBJ	OBJ
$[+r]$	OBL_{θ}	OBJ_{θ}

(Falk 2001:107)

The two features $[-r -o]$ show that the SUBJ function is not restricted to have an argument role and is not objective. Thus it should be the most prominent and the least marked function while OBJ_{θ} is the least prominent and the most marked one.

The markedness hierarchy of argument functions is shown in (28).

(28) Markedness Hierarchy of Argument Functions:

$$\text{SUBJ } (-r -o) > \text{OBJ } (-r +o)/\text{OBL}_{\theta} (+r -o) > \text{OBJ}_{\theta} (+r +o)$$

(Her 2007:228)

Bresnan (2001) further proposes the universal feature assignment in (29). This assignment is based on the assumption that the underlying lexical semantics of the argument roles determine their syntactic features.

(29) Semantic Classification of A-Structure Roles for Function:

- a. Patientlike roles map to $[-r]$
- b. Secondary patientlike roles map to $[+o]$
- c. Other semantic roles map to $[-o]$

The agent role, being a non-patientlike role, is assigned $[-o]$ by (29c) and thus is canonically not realized as OBJ, while patientlike roles are assigned $[-r]$ by (29a) and are canonically associated with either SUBJ or OBJ (Bresnan and Kanerva 1989). Secondary patientlike roles can be mapped to object functions only, i.e., OBJ or OBJ_{θ} , for being restricted by the feature $[+o]$. All other roles, like agent, are classified as $[-o]$ by (29c). Notice that, as Falk (2001) notes, each argument role maps to a single feature in a-structure intrinsically and assigns exactly one other feature to map to one grammatical function.

2.2.2 Mapping A-Structure to Syntactic Functions

Restricted by certain universal constraints, each argument role is freely mapped onto any and all syntactic functions with compatible features. Bresnan (2001:311) proposes the mapping principles in (30).

(30) Mapping Principles:

- a. Subject roles:
 - (i) $\hat{\Theta} / [-o]$ is mapped onto SUBJ when initial in the a-structure;

otherwise:

(ii) $\theta / [-r]$ is mapped onto SUBJ.

- b. Non-subject roles: Add positive values of features where is not violate monotonic.

Notice that although it is assumed that each role is assigned one feature intrinsically and obtains another feature through the syntactic assignment, a role can be mapped to a natural class of two compatible functions without the two mapping principles to narrow down the choices of functions (Her, 2003). The Principle (i) in (30a) maps an initial $\hat{\theta}/[-o]$ role to SUBJ and any role with $[-r]$ can be mapped to SUBJ only if there is no initial $\hat{\theta}/[-o]$ role in the a-structure. So the Principle (ii) in (30a) can apply only when (i) does not (Her, 2003). In addition to mapping principles, there are two more conditions constraining the mapping of a-structure roles to functions as in (31) and (32).

(31) Function-Argument Biuniqueness:

Each a-structure role must be associated with a unique function, and conversely.

(32) The Subject Condition:

Every predicator must have a subject.

(Her, 2003:7)

The function-argument bi-uniqueness condition, similar to the θ -criterion in GB, assumes that the mapping between roles and functions is strictly one-to-one. The subject condition, similar to the EPP in GB theory, ensures that one role in the a-structure must be mapped to SUBJ. We can now exemplify that point with the predicate *place* so as to see how the mapping principles and constraints apply.

- (33) a. *place* < agent, theme, locative >
 b. *place* < [$-o$], [$-r$], [$-o$] >
 c. *place* < SUBJ OBJ OBL_{Loc} >

In (33a), the predicate *place* requires three argument roles: agent, theme and locative. According to the universal feature assignment in (29), the intrinsic features of these three roles are [$-o$], [$-r$], and [$-o$], respectively, as in (33b). The patientlike role, patient/theme, maps to [$-r$]; the secondary patientlike role, location, maps to [$-o$]; and other semantic role, agent, also maps to [$-o$]. The principle (30a) stipulates a deterministic mapping for the initial $\hat{\Theta}/[-o]$ agent role to SUBJ. Based on the principle (30b), the patient/theme argument, represented as [$-r$], maps to OBJ by the addition of the feature [$+o$] while the location argument, [$-o$], maps to OBL_{Loc} by the addition of the feature [$+r$].

2.3 Summary

This chapter has surveyed the theoretical concepts relating to the present study.

The basic idea is based on Bresnan's theory of LFG. Her research in the field of LFG concerns the phenomenon of movement paradox, which challenges the transformational theory. Since the aim of this research is to examine the category types of the phrases which can be realized as TOP identified with OBJ to fulfill the f-structure of a predicate, we have reviewed some conceptions such c-structure, f-structure, a-structure, and lexical mapping theory. These ideas will all be used in our research.