The Fundamental Relations of Syntax and Conceptual Structure

Some ideas for discussion

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1 Introduction.

Our intention here is to create a set of terms for basic syntax and their conceptual counter-parts. We will start with a prime, which cannot be defined, and build up the definitions from these primes. The following box contains the corresponding units of conceptual structure and their correspondent units of syntactic structure:

Table 1: Conceptual and Grammatical Terms

Conceptual	Grammatical
Suggested Primes	
STATE	
IMPLICATOR	
CHANGE	
CAUSE	
COLOUR?	
SOLID?	
LIQUID?	
Form	Form
predicate	head (part of speech (N, V, A, P))
implicator	pointer
predicator	basic head
(semantic) argument	(syntactic) argument
basic eventuality	basic phrase (unmodified), X1
complete eventuality	clause, CP (or NegP?)

Table 1: Conceptual and Grammatical Terms

Conceptual	Grammatical
(semantic) modifier	(syntactic) operator
	lexical modifier

2 The Primes

The term *predicate* is nearly impossible to define without containing circular definitions. The basic idea is that a predicate is conceptually the heart of an eventuality--an event or a state. The best way to treat this problem is to consider a predicate a prime form--a form which cannot be defined in terms of smaller units. However, a predicate consists of a bunch of semantic-conceptual features. Thus, a predicate is not a prime. At this time no one knows what the set of conceptual primary features are.

We can think of a predicate as a bundle of features, but then this term needs to be defined. A appropriate bundle of features determines the meaning of a form. This is hard to illustrate, as the features are less than clear and easy to access. We can give a partial example. Consider the following:

(1) a. The ice melted.

b. The sun melted the ice.

Melt in (1b) has a causative meaning associated with *melt* in (1a) (in most meanings of the verb). Suppose we extract the feature CAUSE from *melt* in (1b). Now we have a feature plus *melt*, which contains a bundle of features. CAUSE is probably a prime, although there is no direct evidence to support this hypothesis. We will tentatively assume that CAUSE is a prime. If evidence shows up that suggests that CAUSE can be broken into smaller plausible features, then we define CAUSE in those terms.

The core idea in *melt* is change; i.e. a substance undergoes a change from a solid state to a liquid state. Although there is more in the meaning of change, we can extract a feature CHANGE, which also a probably a prime. Of course, the initial state and the resultant are also implied in MELT and similar verb stems. Another prime would be STATE. CHANGE here implies an object going from one STATE to another: CHANGE ($STATE_1$, $STATE_2$):

$STATE_1$ is a source, and $STATE_2$ is a goal. The object is an argument of both features--this is discussed immediately below.

The next term is *argument*. This term is nearly as difficult to define. This term has often been equated with participant (of an event); other terms are syntactic (theta role, thematic role). Let us tentatively suppose that *argument* is a prime, and let us assume that there is some kind of relationship between the two.

3 Logical Representation

Predicates and arguments are usually easy to illustrate. Consider the following sentences:

(2) a. The wall is blue.

b. The ice melted.

Conceptually, blue is considered to be a predicate. The sentence is based on the predicate blue. Something is blue; in this case is the wall. The wall is an argument of the predicate; it is the only argument. BLUE contains the feature STATE, which could well be a prime. We won't attempt to cover the features that make up the colour BLUE. Similarly, ICE is an argument of MELT.

We can represent these relations in the following way:

(3) a. BLUE <WALL>

b. MELT <ICE>

Predicates are written in CAPS, and arguments are written in CAPS enclosed in angled brackets. The modifiers of the predicates and operators (tense and definiteness will be discussed below).Note that MELT implies a change of state--from a solid state to a liquid state. MELT is semantically restricted to certain solid objects such as ice and ice-cream, but not to other solids such as steel. which at high temperatures can be a liquid.

4

Suppose we assume that there is a relation between BLUE and WALL in (3a). How do we know which is which? The answer to this is not easy. Let us first assume that all predicates assign at least one argument (perhaps they assign only one argument, but this is topic for more advanced discussion). In our discussion of BLUE and WALL, if one is a predicate and one is an argument, then only one of these terms assigns an argument. Which one? We may say that the predicate implies an argument. That is in the above case, BLUE implies that something must be blue--the wall in this case, but the term WALL does not imply its colour. We can talk about a wall without ever discussing the colour of the wall assuming that all walls have colour. A wall is not defined as something that has a colour--it may be true, but not by definition. Similarly MELT implies that something undergoes the process of melting; in this case it is the ice (ICE), the source STATE.

In essence we are talking in circles--now we have the notion of *imply* to define. It appears that we need at least one more prime. Suppose we have the prime IMPLY. Although a prime, it is a feature, a prime that must be part of a predicate, it must be satisfied by pointing to an argument. Let us write features with a single initial CAP enclosed in square brackets, and X, which denotes the argument implied: [IMPLY (X)]:

(4)

BLUE	MELT
[IMPLY (X)]	[IMPLY (X)]

We may write (4) as:

(5) [BLUE, [IMPLY (X)]] and [MELT, [IMPLY (X)]].

The outer square brackets indicates that the feature is part of the predicate. In binary terms, we could mark the feature with '+': [+IMPLY {X}], and the lack of the feature as [-IMPLY (X)]. We consider these to be notational variants; we will continue using [IMPLY (X)], and where it is not used, it implies [-IMPLY (X)]. (I prefer using binary features when writing a rule.) When X is WALL or when X is ICE, we can rewrite (4) as:[1]

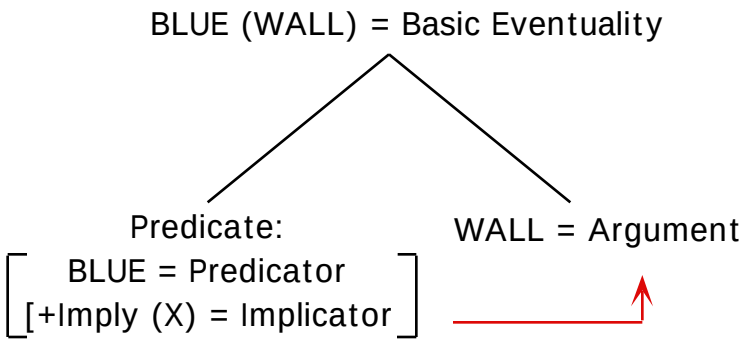
(6) [BLUE, [IMPLY (WALL)]] and [MELT, [IMPLY (ICE)]].

Given the prime feature [IMPLY (X)], 'X' is an argument. It is important to note that we have no term for the relationship of IMPLY to X. An argument is a prime in that it can't be defined with any given definitions.

(7) Given the predicator and its implicator "[Y, [IMPLY X]]"
Y is a predicator,
[IMPLY (X)] is an implicator,
[Y, [IMPLY X]] is a predicate,
X is a predicate, and
X is an argument of Y.

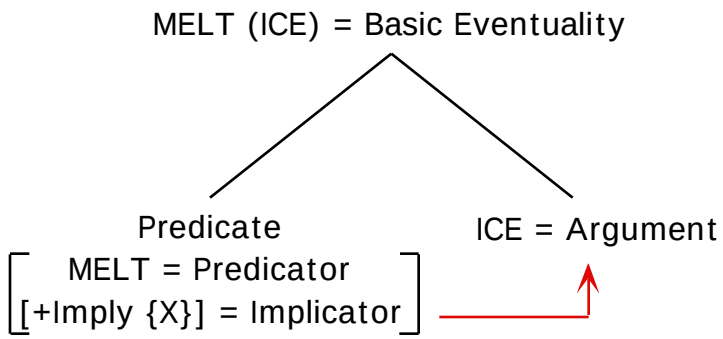
If a predicate is implied in the relation [IMPLY (X)], then we can define the predicate as an argument. A predicate such as BLUE is a colour. Let us assume that COLOUR is a prime It seems reasonable to tentatively assume that BLUE can be defined in terms of the light spectrum, though semantic features not tied to a term in grammar lie beyond the scope of this discussion. We will simply write BLUE and set aside the problem of its definition. The set 'BLUE [IMPLY (X)]' we will call a predicate. We propose the syntactic term "basic head" to correspond with predicator. Let us call the feature [IMPLY (X)] an implicator. In the syntax we will call the corresponding form a **pointe**r in order to keep these terms distinct. A predicator plus an implicator is a predicate (semantically), a basic head plus a pointer is a head (syntactically). Conceptually the forms in (6) have the following configurational representation:

(8) a.



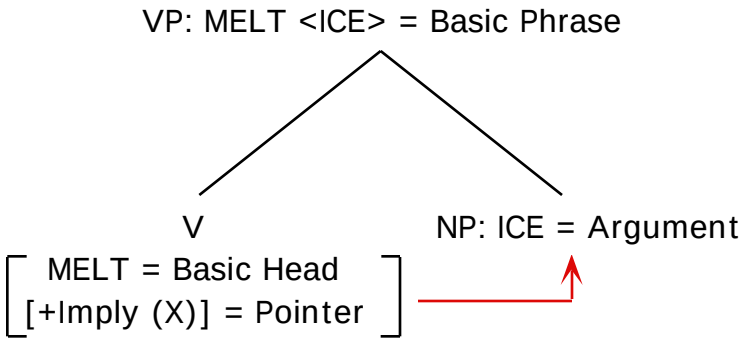
[1] We enclose arguments in parentheses only in conceptual structure; parentheses in the syntax are reserved for optionality, as is the standard custom. Syntactic arguments are enclosed in angled brackets.

b

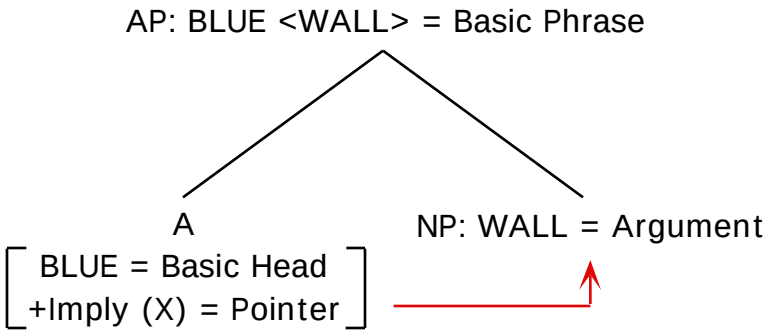


In the syntax the forms in (6) have the following configurational representation:

(9) .a



.b



Since a basic eventuality is defined here as a predicator and its implicator plus the argument of the implicator, it is logically true that a basic eventuality must c-command its argument in the syntax.

In the syntax we will call an implicator a **pointer**, to maintain the difference in terminology between semantics and syntax. The lexical items BLUE and MELT each contain a

pointer which points (establishing a link) to its argument. In the above case, WALL and ICE, respectively, are each the argument their respective head.

In the syntax, the term argument is used in the same way as in conceptual structure. Hence, we may say that a conceptual argument maps directly to a syntactic argument. However, there is no term in syntax that directly corresponds to predicate in conceptual structure. The parts of speech, verb, adjective, and preposition correspond to predicator, as the term verb does not imply no internal arguments. The predicator maps directly to a part of speech. The feature [+IMPLY (X)] has not been used in syntax. But we may introduce the term pointer defined here as a syntactic implicator.

The basic eventuality is an unmodified or basic phrase in the syntax. We will use the term *phrase* as is done now as a basic phrase plus one or more modifiers.

Some predicates have no arguments: jam, house, dirt, sun, finger, and so forth. We will call this a **thing**. In the syntax we will call it an **object**. As far as it is known all things are mapped into the syntax as nouns.[2] Some nouns are objects, other are nouns that do take arguments: cup, glass, colour, box, size, and so forth:

(10) a. a cup of coffee
b. a glass of milk
c. the colour of the wall
d. two boxes of chocolates
e. the size of the house

We will call nouns of this class???.[3] Note that most of the nouns of this class may also be objects:

[2] Certain prepositions take no arguments if they occur in phrasal verbs. We will set this topic aside of further research.

[3] Anyone have a good suggestion for a name for this class--both conceptually and syntactically?

(11) a. John broke the cup.

b. Mary bought a new glass to drink milk out of.

c. Don't you just hate the colour red?

d. Peter burned the empty box in the fire place.

e. *Does he like the size.

Size does not appear to take an argument, except perhaps in metalanguage.

Table 2: Definition of Some Conceptual Terms

definition	term defined
STATE or CHANGE (SOURCE, GOAL)	predicator
STATE + IMPLICATOR	predicate
predicate + ARGUMENT	basic eventuality
basic eventuality + 'modifiers'	complete eventuality
a predicate that takes no arguments	thing

Table 3: Definition of Some Basic Syntactic Terms

term defined conceptually	term defined grammatically	term
predicator in the grammar		basic head
implicator in the grammar		pointer
predicate in the grammar	basic head + pointer	head
argument in the grammar	the argument of a pointer	syntactic argument
basic eventuality in the grammar	head + argument	basic phrase
complete eventuality in the grammar	basic phrase + all the modifiers of basic phrase	clause
	grammatical modifier	operator
thing	a head with no argument	object

Note that modifier has not been formally covered in this discussion.

5 Modifiers

The next relationship that we find in conceptual structure is the modifier: modifiers