

WPFG

working papers in functional grammar

wpfg no. 59, April 1995
prijs: f 5.00

The E-structure in Functional Grammar:
towards a consistent treatment of Tense, Mood, Aspect and Illocutionary Force
Martine Cuvalay
University of Amsterdam

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0. List of abbreviations and symbols

Abbreviations

Ad	Addressee
CP	Composed Past
CUST	Customary
DECL	Declarative
DS	component of an aspect-dependent derivational prefix string
EXCL	Exclamative
G	affix indicating Gender
HAB	Habitual
ILL	abstract illocutionary frame
IMP	Imperative
INT	Interrogative
IP	Imperfect Past
M	mood prefix
MOM	Momentaneous
O	Direct Object
PASS	Passive
PL	Plural
PQ	Partitive Quantifier
R	reference point or interval
S	moment of speech
SG	Singular
SoA	State of Affairs
Sp	Speaker

Symbols

3	third person
α	open argument position
δ	quantificational operator
δ_{ILL}	illocutionary operator
μ	expression operator
π	predicate, predication, proposition or clause operator
σ	satellite

Variables

c_1	core predication
C_1	clause
e_1	extended predication
E_1	expression
f_1	basic or derived predicate
x_1	term
X_1	proposition

The E-structure in Functional Grammar: Towards a consistent treatment of Tense, Mood, Aspect and Illocutionary Force.¹

1. Introduction

This paper discusses recent developments within FG theory concerning the representation of Tense, Mood, Aspect, and Illocutionary Force. The adaptation of the by now familiar layered clause structure in 1989 marks an important point in FG history. Some of the elements of the clause structure are described first. This is done in an explicit way in order to determine and clarify the exact status of these elements. Section 2 discusses applications and criticism of the 1989 model. Proposals to change aspects of the underlying clause structure are described and evaluated. Chapter 3 presents a new version of the model, aimed at a more adequate and consistent treatment of TMA-phenomena in FG. With the introduction of this adapted version I hope to contribute to the further development of FG theory.

1.1. Illocutionary Force and Basic Illocution

Dik (1989: 256) distinguishes between the illocutionary intention of the Speaker, the illocution as coded in the linguistic expression, and the illocutionary interpretation of the Addressee. Only the Illocutionary Force as coded in the expression is analyzed further as an element of grammar. Illocutionary intentions and interpretations without any reflection in the linguistic properties of an expression are described as *pragmatic illocutionary conversions*, and are not represented in the FG model.

The Illocutionary Force is determined primarily by the Basic Illocution of a sentence. The Basic Illocution tells the Addressee what to do with the information provided, and is often referred to as 'sentence type'. Dik recognizes DECL(declarative), INT(interrogative), IMP(imperative), and EXCL(exclamative) as basic illocutionary values. These Basic Illocutions may be converted by lexical or grammatical means. As an example of illocutionary conversion accomplished by adding a tag, Dik (1989: 257) gives:

- (1) a. *She is a nice girl.* (DECL)
b. *She is a nice girl, isn't she?* (DECL>INT)

The Illocutionary Force of an expression is thus determined by the Basic Illocution, possibly modified by linguistically coded illocutionary conversions.

It is not clear how the Illocutionary Force and the Basic Illocution of an expression relate to the Speech Act which is

¹ For the development of the ideas put forward in this paper I owe much to the comments of the editors, Peter van Baarle and Lachlan Mackenzie, and also to the discussion of earlier versions with Casper de Groot, Kees Hengeveld, and Co Vet.

performed in producing it. Both Dik (1989) and Hengeveld (1989) use the term *Speech Act* to refer to the complete expression. For reasons that will be discussed later, I regard the *Speech Act* as a metalinguistic concept which can only relate to the *Illocutionary Force* of an expression on the pragmatic level of intention and/or interpretation.

1.2. Expression and Clause

Within FG some discussion has been going on regarding the definition of the term *Clause*, especially in relation to the status of *extra-clausal constituents*. Extra-clausal constituents are usually marked by pause-like inflections in the intonational pattern. They fall outside the scope of the *Basic Illocution*, and have pragmatic functions such as initiating or ending a turn in conversation, establishing a theme, or modifying the *Basic Illocution*. It is now customary to represent *Illocutionary Modifiers* (such as *isn't it* in (1b)) within the model of underlying *clause* structure, but the status of the other extra-clausal constituents remains unclear.

As it is just a matter of terminology, I intend to give definitions which are not too far removed from current usage within FG. I will use the term *Expression* (E_1) to refer to a group of words or phrases which together form a linguistic unit with one *Illocutionary Force*. Instead of the 'underlying clause structure', I will henceforth speak of the 'E-structure' as the representation of one single *Expression*.

- (2) a. *Well, what about some dinner?*
b. *Finally, I want to stress the importance of*
c. *She's a nice girl, your daughter.*

Given the definition, the extra-clausal constituents given in (2) are represented within the E-structure. Their functions of initiating a conversation (2a), relating the *Expression* to the preceding context (2b), and clarifying a part of the *Expression* (2c), do not interfere with the *Illocutionary Force*. Extra-clausal constituents do not have an *Illocutionary Force* of their own, but serve to facilitate the comprehension of the remainder of the *Expression*, which will be called *Clause* (C_1).

The term *Clause* is thus reserved for everything which falls within the scope of the *Illocutionary Force*, together with the elements which determine the *Illocutionary Force*. This is in fact the whole *Expression* without the extra-clausal constituents that do not modify the *Basic Illocution*. Thus, most subordinate and coordinate constructions will be represented in the E-structure as parts of a larger *Clause*. Again, this is just a matter of definition. In view of the current development of the model and the modifications that will be proposed later, these definitions for the *Expression* and *Clause* are convenient.

1.3. Variables, operators, and restrictors

Variables are important elements of the E-structure. They are used to represent mental concepts of different types. The particular concept for which a variable v_i stands is designated by one or more operators and restrictors. Each type of concept is associated with its own variable, type of operators, and possible restrictors.² Operators represent the grammatical means that a language uses to describe a concept, restrictors represent the lexical means.

For term variables x_i , the first restrictor is usually a nominal predicate. Optional further restrictors can be adjectives, relative constructions, possessors, etc. The other variables, including their operators and restrictors, are discussed extensively in the next section. Most of them have another variable as their first restrictor, and one or more satellites as optional further restrictors.

1.4. State of Affairs

In the FG framework the term *State of Affairs* (SoA) is defined as 'the conception of something that can be the case in some world' (Dik 1989: 46). It is used to refer to concepts which can be denoted by

- i. a predicate with inserted arguments (the nuclear predication)
- ii. a predicate with inserted arguments, π_1 -operators and σ_1 -satellites (the core predication)
- iii. a predicate with arguments, π_1 - and π_2 -operators, and σ_1 - and σ_2 -satellites (the extended predication)

To be able to discriminate between these concepts with an increasing structural complexity, I will use the term *State of Affairs* for the conceptualization which is described by the nuclear predication only.³ The conceptualizations denoted by the core and extended predication will simply be labeled *core concept* and *extended concept*.

² The word *restrictor* is in fact too narrow, as restrictors of a term and some types of satellite may have a non-restrictive function.

³ This is also the original meaning of the term 'State of Affairs' in the FG model.

2. The development of the E-structure after 1989

2.1. Differences between Hengeveld (1989) and Dik (1989)

Most of Hengeveld's ideas concerning a layered E-structure (Hengeveld 1987, 1988, 1989) have been fully integrated into FG theory (Dik 1989). Dik deviates from the proposal in Hengeveld (1989) in several respects:

- i. Dik does not mention σ_5 -satellites.
- ii. Hengeveld represents the Basic Illocution of an expression by an abstract illocutionary predicate, with a frame in which the Speaker(s), Addressee(s), and propositional content are inserted as arguments. This representation is not taken over in Dik: his π_4 -operators are represented before the variable E_1 and include operators that specify the Basic Illocution of the utterance.
- iii. Dik introduces the predicate variable f_1 .
- iv. Dik distinguishes between Internal and External Phasal Aspects:
 - the Internal Phasal Aspect values Ingressive, Progressive, and Egressive affect the nature of the described SoA directly and are thus captured by π_1 -operators.
 - the External Phasal Aspect values (Immediate) Prospective and (Recent) Perfect leave the internal constitution of the SoA intact, and are treated as the expression of π_2 -operators.

Apart from the differentiation between Internal and External Phasal Aspect, these deviations from Hengeveld (1989) are not motivated in Dik (1989).

In later publications, Hengeveld accepts the modifications mentioned here under iii and iv (Hengeveld 1990, 1992a), but he continues to use an abstract illocutionary predicate and σ_5 -satellites (Hengeveld 1992b). In this paper, Dik (1989) is taken to represent 'the FG standard'. Hengeveld's treatment of Illocutionary Force and his use of σ_5 -satellites will be evaluated in the appropriate sections.

2.2. Alternative conceptions of the E-structure

Within FG several suggestions have come up to add layers to the E-structure. Attempts to refine the representation include the introduction of a zero-layer inside of the existing layers (Keizer 1992a), the addition of a quantificational layer in between the original first and second layers (Rijkhoff 1990), the introduction of quantificational operators on more than one layer (Vet 1992), and the expansion of the model with a fifth layer for clausal operators (Moutaouakil 1993) and σ_5 -satellites (Hengeveld 1989, 1992b).

In this chapter I discuss these proposals in an 'inside-out' order, starting with the direct modification of the lexical predicate, and ending with the representation of Illocutionary Force.

2.2.1. The predicate variable f_1

Mention of a predicate variable f_1 is first made in Dik (1989). The necessity and implications of the introduction of this variable are discussed by Keizer (1992a, 1992b: 125), who proposes to expand the E-structure by adding a zero-layer with its own operators and satellites. In her view, the variable f_1 symbolizes a zero-order type of entity yet different from the 1st-4th order entities associated with the other layers. For verbal predicates Keizer suggests the π_0 -operators Perfective/Imperfective, Progressive Aspect and Negation. Manner satellites are also taken to function on the new layer. It is not clear what specific functions are then left for π_1 -operators and σ_1 -satellites.

Hengeveld (1992) also uses the predicate variable f_1 , but for him this does not involve a separate zero-layer. The predicate variable f_1 is restricted by the main predicate and optionally modified by π_1 -operators and σ_1 -satellites. Both Keizer and Hengeveld use the predicate variable f_1 to represent what Dik (1989) identifies as the *core predication*, but then *without* the inserted arguments. They do not conceive of the *nuclear predication* (the predicate with inserted arguments) as a structural unit inside of the core predication.

Contrary to both Keizer and Hengeveld, I adhere to Dik (1989: 67) in that the Internal Phasal Aspect operators and Manner satellites relate to the nuclear predication, translating it into a core predication. In my view, the core predication should thus have a variable of its own, an issue that will be discussed further in section 3.3.2. The predicate variable f_1 is then reserved for reference to the inherent properties of the predicate only. Even with this much more restrictive use of the predicate variable f_1 it is possible to think of operators and satellites which directly modify this inherent meaning, as will be argued in section 3.1.

Fortescue (1992: 114) proposes to use σ_0 -satellites as sub-nuclear restrictors of the f_1 -variable to account for some of the optional prefix strings occurring in Koyukon verb forms. He mentions an example with the prefix *tlee* 'out the door'. According to Axelrod (1993: 22), there are some 300 derivational prefixes of this type in Koyukon, each of which adds a particular meaning to the verb. The prefix *tlee* usually combines with a momentaneous verb stem and the imperfective or perfective prefix *ne-*, but it may also occur in a verb form with a customary stem. Some examples with the root *-tlaakk/tlukk*, referring to the handling or holding of a mushy-wet-sticky-messy-disorderly object, are given in (3):

Koyukon (Axelrod 1993: 22, 23)

- (3) a. *yedeneetlaakk*
ye- de- ne- tlaakk
3SG.O G M mushy.MOM
'S/he arrived carrying it (wet pelt).'
- b. *tleevedaaneetlaakk*
tlee- ye- de- ne- tlaakk
DS 3SG.O G M mushy.MOM
'S/he took it (wet pelt) out the door.'
- c. *tleevedetluh*
tlee- ye- de- tluh
DS 3SG.O G mushy.CUST
'S/he customarily takes them (wet pelts) out the door.'

Pop { tlee- and similar prefixes may be used with a variety of basic verb stems, to create derived verbs in which the particular adverbial meaning of a prefix is incorporated. A representation of this kind of derivation as the direct modification of the f_1 -variable by optional σ_0 -satellites reflects the morphologically integrated expression of derivational and inflectional affixes in Koyukon.

Fortescue draws attention to the interesting viewpoint that the use of this formalism allows us to perceive certain predicate formation processes as similar to the modification of predications by satellites of a higher level. Fortescue rejects the possible introduction of operators at the sub-nuclear level, on the basis of the (supposed) absence of grammatical choices in the fund.

Kristoffersen (1992) does not mention π_0 -operators directly, but his account of derivation and inflection in West Greenlandic intends to show that some quantificational suffixes which normally occur as the expression of a π_2 -operator can also be involved in predicate formation rules. The suffix *-sar-* (in the examples realized as *-tar-*), for instance, is analyzed as a marker of Habitual Aspect in (4):

West Greenlandic (Kristoffersen 1992: 162)

- (4) *ullut tamaasa misilin- niqar- luar- tar- put*
day every test- PASS- well- HAB- DECL.3PL
'Every day they are thoroughly tested.'

The same suffix occurs directly after the verb stem in (5):

West Greenlandic (Kristoffersen 1992:162)

- (5) *misilit- tar- niqar- luar- put*
test- REP- passive- well- DECL.3PL
'They were thoroughly tested.'

In (5), the suffix *-sar-* indicates that the testing consisted of a number of repeated procedures. Kristoffersen treats this occurrence of *-sar-* as a case of predicate formation, by which the input predicate becomes inherently repetitive. If this analysis is accepted, the type of predicate formation involved could be represented by a π_0 -operator with the value Repetitive. More about the possibility of describing certain

types of predicate formation by π_0 -operators will be mentioned in section 3.1.

2.2.2. Quantificational Aspect

Rijkhoff (1990) proposes to distinguish three layers within the representational level of Hengeveld and Dik's E-structure. In analogy with his own classification of term operators, the layer closest to the predicate accounts for all qualitative information concerning the described SoA. The second (and newly introduced) layer handles Quantificational Aspect, while a third layer is reserved for deictic operators and satellites that localize the SoA in time and space. The main point of Rijkhoff's contribution is the explicit recognition of two types of operator that in the original E-structure are both treated as π_2 -operators. By making a distinction between the quantificational and localizing functions it is possible to account for the preferred ordering of quantificational and temporal operators with respect to the predicate.

Vet (1992) accepts the E-structure with four layers, but argues for the introduction of 'quantifier-like' specifiers functioning as an extra set of operators on the second, third, and fourth layers. The positions for these quantifiers are indicated with δ_2 , δ_3 , and δ_4 (Vet 1992: 58), to distinguish them from the positions for π -operators. In Vet's model, the π_4 -operator specifies the Basic Illocution, while the δ_4 -position is meant to capture grammatical mitigation or strengthening of the force of the Basic Illocution. The π_3 -operator specifies the 'evaluation time' for the truth value represented in the proposition variable X_1 . δ_3 -quantifiers capture the modal qualifications concerning the truth value of the proposition, as far as they are expressed grammatically.

For his discussion of Tense and Aspect in French, Vet (1992: 59) concentrates on the function of the δ_2 -quantifier, which, together with the π_2 -operator indicating Tense, serves to specify information concerning the time-space region e_1 . Vet suggests analyzing the French 'imparfait' (Imperfect Past) as the combined expression of a π_2 -operator with the value Past and a δ_2 -quantifier with the value Partitive. In Vet's view, this analysis is favourable because it accounts for the two possible readings of a sentence like (6):

- French (Vet 1992: 61)
- (6) Pierre encageait le rat
 Pierre cage + IP the rat
 a. 'Pierre was caging the rat'
 b. 'Pierre used to cage the rat'

In the first reading the sentence describes some part of a non-completed caging event, while the second reading refers to a subset of completed caging events. Vet (1992: 61) represents the difference between the two readings as follows (PQ stands for the Partitive Quantifier):

- (7) a. PAST PQ e_1 : {encager_v (Pierre)(le rat)} (e_1)
 b. PAST PQ { e_1 }: [{encager_v (Pierre)(le rat)}(e_1)] ({ e_1 })

By putting the e_i -variable in braces, Vet indicates that we are dealing with a whole set of caging events, instead of one instantiation of this set. An alternative structure for the reading in (6a), in which the aspectual component of the Imperfect Past is rendered by a π_1 -operator with the value Imperfective, can, according to Vet, not account for the reading in (6b), since each e_i of the set $\{e_i\}$ is characterized as a complete action.

In my view, Vet's Partitive Quantifier is equivalent to a regular Imperfective, in the sense that it tells us to focus upon an interval as part of a larger stretch of time. The difference between (6a) and (6b) is that the conceptualized interval in (6a) is described as a part of an ongoing SoA, whereas the interval in (6b) is characterized by several SoAs, themselves presented as single wholes. This difference is not expressed in French. The choice to present a particular situation as viewed from within (Imperfective) or as a single whole (Perfective) is captured by π_1 -operators in the original E-structure. If the habitual interpretation of (6b) is indeed only *implied* by the combination of Imperfectivity and knowledge of the context, there is no need to reanalyze Imperfective Aspect as a category expressed by π_2 -operators.

2.2.3. The distinction between Iterativity and Habituality

Goossens (1991: 17-18) argues that both Iterative and Habitual Aspect should be treated independently of the distinction between Imperfective and non-Imperfective for an adequate representation of these categories in English. The quantificational operator Repetitive is taken to specify Iterativity in combination with a SoA which is repeated on the same occasion, and Habituality in combination with a SoA repeated on different occasions. Goossens (1991: 20) describes the Repetitive operator as having variable scope over the operator specifying Imperfective/non-Imperfective. If Imperfective has scope over Repetitive, the repeated event is viewed as ongoing, as in sentence (8):

(8) *As he was firing at me, I saw him close his eyes.*

If Repetitive has scope over Imperfective, an event in progress is viewed as repeated, as in (9):

(9) *They used to be watching TV in the dining-room.*

The observed variable scope involving operators which are supposed to belong to different layers in the E-structure leads Goossens (1991: 25) to the conclusion that operators are not necessarily tied to one single layer. In my view, the recognition of one type of Quantificational Aspect on the π_1 -layer (Iterativity), and another on the π_2 -layer (Habituality) would be preferable, and also compatible with the suggested

influence of quantification on more than one layer (Vet 1992).⁴

2.3. The treatment of Illocutionary Force

2.3.1. The illocutionary predicate

As mentioned in section 1.1, Dik (1989) and Hengeveld (1989) recognize Declarative, Interrogative, Imperative, and Exclamative as Basic Illocutions. Hengeveld represents the Basic Illocution of an expression as an abstract illocutionary frame ILL with three arguments: the Speaker(s), the Addressee(s), and the proposition X_1 . The Basic Illocution may be modified by illocutionary π_4 -operators and σ_4 -satellites. The abstract frame (including its operators and satellites) functions as the first restrictor of the E_1 -variable. As optional secondary restrictors, Hengeveld mentions σ_5 -satellites. These satellites serve to represent extra-clausal constituents which relate the Expression E_1 to the larger stretch of discourse.

Dik represents the Basic Illocution as the expression of a π_4 -operator, which has the whole utterance E_1 in its scope. Other π_4 -operators and σ_4 -satellites may further specify the Illocutionary Force. Dik's E-structure may be represented as (Dik 1989: 248):

(10) $\pi_4 E_1$: [[proposition] (σ_4)] (E_1)

Hengeveld's E-structure is rendered as:

(11) E_1 : [π_4 ILL: σ_4 (Sp) (Ad) [proposition]] (E_1): σ_5 (E_1)

By representing the Basic Illocution as an abstract predicate with a frame in which the proposition is inserted, Hengeveld (1987: 54) suggests a certain similarity with the lexical predicate of the representational level. This similarity, however, is not very apparent: the number of lexical predicates is theoretically infinite, while there are only few Basic Illocutions. Lexical predicates have a frame with open positions for terms. Illocutionary predicates have two positions which represent the main discourse participants, and one position for a proposition X_1 . It is not clear how the discourse participants are represented. Unlike the terms inserted into a lexical predicate, the discourse participants usually do not get a direct linguistic expression.

As certain qualities of the discourse participants are relevant for the representational level too, they are traditionally represented in the Domain of Discourse, together with other information on the circumstances in which the

⁴ Note that Vet (1992) does not include a δ_1 -operator in his proposal.

expression is uttered. I feel that it is not necessary to restate this information as part of the abstract illocutionary frame. In fact, given the very limited choice of different abstract illocutionary predicates, Dik's representation of Basic Illocution by a π_4 -operator should be preferred.

Another reason to reject Hengeveld's abstract illocutionary frame is the frame-like construction of a variable with one or more operators and restrictors now functioning on each layer in the structure. The way in which a proposition is embedded into a clause does not differ essentially from the embedding of an extended predication into a proposition, or from the embedding of a core predication into an extended predication. Each variable associated with a concept has in fact an open 'argument' position for its first obligatory restrictor, while secondary restrictors are added as optional satellites.

The representation of the E-structure adopted here is a conflation of the E-structures in (10) and (11), in order to preserve Hengeveld's distinction between σ_4 - and σ_5 -satellites. The possible introduction of π_5 -operators will be discussed later, but is already indicated in (12):

$$(12) \quad \pi_5 E_1 : [\pi_4 C_1 : [\text{proposition}](C_1) : \sigma_4(C_1)](E_1) : \sigma_5(E_1)$$

The newly introduced variable C_1 stands for the illocutionary unit represented by the Clause (see also section 1.2).

2.3.2. The subcategorization of illocution types

So far, four types of Basic Illocution have been recognized within FG. This section discusses two proposals to differentiate them further. Hannay (1991) suggests distinguishing between five subcategories of the illocutionary operator DECL (Declarative) to account for different modes of presenting information in English. Each mode corresponds to a specific pattern of pragmatic function assignment, thus leading to more precise descriptions of word order variation and prosodic features.

In Hannay's Allnew Mode (DECL-A) none of the presented information is treated as topical, resulting in a sentence with basic word order. In the Topic Mode (DECL-T), a topical element is selected for special treatment and placed in the first position (P1) of the sentence. In the Reaction Mode (DECL-R), the focal information is put in the P1-position. Topical information may follow, but can also be left out altogether. Reaction Mode Declaratives frequently appear in response to questions. The two other modes are the Neutral Mode (DECL-N), in which neither topical nor focal information is given special prominence, and the Presentative Mode (DECL-P), used to introduce a new discourse topic. Of special interest is the recognition of the Reaction Mode as a subtype of declarative sentence, providing for a strong link between so-called 'marked', or 'emotive' word order and the immediately preceding context.

Vet (1990a) deviates from Hengeveld (1989) and Dik (1989) by representing Illocutionary Force as an operator (δ_{ILL}) that also assumes the functions of Hengeveld's π_3 and π_4 operators.⁵ An example of Vet's clause structure is given in (10).

- (13) a. $\delta_{DECL} X_1: [Past e_1: \{walk_v(dlx_1: Peter(x_1))_{Ag}\} (e_1)](X_1)$
 "Peter walked."
 b. $\delta_{INT} X_1: [Past e_1: \{walk_v(dlx_1: Peter(x_1))_{Ag}\} (e_1)](X_1)$
 "Did Peter walk?"

In the above sentences, the value of δ remains unspecified. The δ -position is used by Vet to account for grammatical and lexical mitigation of the Basic Illocution, or modification of the degree of factuality of the proposition. The δ -position may thus be occupied by a predicate, an adverb, or a specification of Mood. Vet (1990a: 128) gives an example of a French sentence, in which the modal adverb *peut-être* is represented as a declarative operator (*peut-être*_{DECL}) that assigns the value 'possible' to a proposition X_1 . The special meaning of an expression like *I hear* as an evidential marker, and the use of the Future Tense (in French) to express a polite request are also captured by specific combinations of values in the δ_{ILL} -operator.

The advantage of Vet's operator with two variable positions over Dik and Hengeveld's classification with operators on two interpersonal layers is not made clear. The occupation of the δ -position by adverbials (like *peut-être*) goes against the division of labour for operators and satellites which is generally accepted within FG. As Vet seems to have abandoned this particular representation in later articles (Vet 1992), the δ_{ILL} -operator will not be considered further.

2.3.3. Sentence Types

Moutaouakil (1993) advocates a formal distinction between the sentence type of expressions and the (basic or derived) illocution conveyed. He relates the illocution of an utterance to the type of Speech Act performed in producing it. An assertive Speech Act, for instance, is typically performed by uttering a sentence of the declarative type. An interrogative sentence, however, may also be used to express an assertion.

Moutaouakil's proposal can be evaluated as an attempt to integrate conventionalized (and in some cases even grammaticalized) illocutionary conversions into the E-structure. Such an adaptation would allow for the representation of (14a) and (14b) as a request and a rhetorical question respectively, while at the same time acknowledging their sentence type as interrogative.

⁵ The δ -operator mentioned here is different from the δ -operators used in Vet (1992) to represent quantificational specifiers on different levels of the E-structure (see section 2.2.2.).

- (14) a. *Will you give me your pencil?*
 b. *Haven't I given you all my books?*

Moutaouakil (1993: 6f) comes up with two possible adaptations of the original model. According to the first, the π_4 -operator consists of two suboperators, one indicating sentence type and another specifying the illocutionary force.

As an alternative, Moutaouakil considers the placement of the sentence type operator on a higher π_5 -layer. In both solutions it is the sentence type operator which has the higher scope. Moutaouakil furthermore argues that both types of operator, together with an extra-clausal textual operator, determine certain properties of the E-structure, such as the absence of a propositional layer in non-declarative sentences.

2.3.4. Communicative Patterns

The proposals by Hannay (1991), Vet (1990a), and Moutaouakil (1993) concerning the treatment of Illocutionary Force have in common that they suggest endowing one or more illocutionary operators with the 'power' to put constraints on elements of the E-structure. Particular patterns in the E-structure are treated as subtypes of one of the Basic Illocutions. I find it more useful, however, to have a model in which both the Basic Illocution and other characteristics of the E-structure are determined at a higher layer. From a process-oriented point of departure it seems more natural to assume that, after the establishment of a communicative intention, the selection of the intended Speech Act (as part of the overall communicative strategy) comes first.

When the Speaker decides, for instance, on the expression of a Request, he can then choose between an Imperative sentence with an illocutionary converter as in (15a), an Interrogative sentence with a modal auxiliary, as in (15b), or a Declarative sentence expressing his wish concerning the Addressee's behaviour, as in (15c).⁶

- (15) a. *Pass me the salt, please!*
 b. *Can I have the salt for a moment?*
 c. *I would like you to pass me the salt.*

Pragmatic factors help the Speaker to determine which alternative is most appropriate for the achievement of his goal. Some of these pragmatic factors follow directly from elements present in the Domain of Discourse, and may be

⁶ After the establishment of the communicative intention <I want to induce A to pass me the salt>, S may also decide not to make a REQUEST, but, for instance, a REMARK ('the soup is flat'), or an ORDER ('pass me the salt!'). Descriptions of what exactly are conventionalized ways of performing a certain speech act, and even of what types of speech act should be treated in the model, have to be made for each speech community and type of discourse separately.

represented formally in this part of the model. The type of discourse and the relationship between Speaker and Addressee presumably influence decisions on this layer in a systematic way.

Other circumstances such as immediate urgency of the request or the personal style of the Speaker are more difficult to account for systematically. I introduce the concept of *Communicative Pattern* as a provisional interface between the communicative strategy and the Expression E_1 . The role of different Communicative Patterns is explained in section 3.6.

2.4. The application of the FG model

2.4.1. Definitions of TMA categories

In the previous sections alternative representations of the E-structure have been discussed. Some attention should also be paid to differences in the application of the model. The numerous approaches to the definition of aspectual, temporal and modal categories give room for different operationalizations. The 'standard' FG distribution of grammaticalized TMA distinctions in relation to the E-structure is as follows:

- i. The Perfective/Imperfective distinction and the Internal Phasal Aspects (Ingressive, Progressive and Egressive) are represented at the layer of the predicate/nuclear predication (π_1).
- ii. The External Phasal Aspects (Prospective and Perfect), the Quantificational Aspects (Iterative, Habitual etc.), temporal distinctions and grammatical expressions of Objective Modality are assigned to the layer of the extended predication (π_2).
- iii. Grammatical expressions of Subjective Modality and Evidentiality adhere to the layer of the proposition (π_3).
- iv. Grammatical distinctions regarding the type and strength of the Illocutionary Force are represented on the illocutionary layer (π_4).

Deviations from the classification sketched above concern the position of the Outer Phasal Aspects and the representation of Secondary Tense. I summarize some of the work of Vet (1992) on French, because of the (indirect) influence of Vet's approach to Tense and Aspect on my own conception of the E-structure.

Vet (1992: 62) presents Perfect Aspect as the expression of a π_1 -operator, "because it changes the lexical meaning of the predicate". Predicates that 'normally' describe a transition refer to the result of a transition when they are

combined with a Perfect operator.⁷ Perfect Aspect is in French expressed by the Composed Past, as in (16):

- (16) *Pierre a encagé le rat (maintenant) (comme vous voyez).*
'Pierre has caged the rat (now) (as you see).'

The Composed Past can also be used to express Past Tense, as in (17):

- (17) *Pierre a encagé le rat le 18 avril.*
'Pierre caged the rat on the 18th of April.'

The two distinct uses of the Composed Past are combined in the 'Passé Surcomposé' (Overcomposed Past):

- (18) *(Quand) Marie a eu terminé (CP+CP) son travail (elle est rentrée).*
(When) Marie had finished her work (she went home).

In example (18), the first occurrence of the Composed Past is analyzed as the expression of a π_2 -operator with the value Past, and the second one as the expression of a π_1 -operator with the value Perfect.

According to Vet (1992: 64), the French Pluperfect (Past Perfect) shows the same ambiguity as the Composed Past. It may refer either to the resulting state of a transition, as in (19), or to the transitional event itself, as in (20).

- (19) *(Nous avons vu que) Pierre avait encagé le rat.*
'(We saw that) Pierre had caged the rat.'

- (20) *Pierre avait encagé le rat la veille.*
'Pierre had caged the rat the day before.'

In example (19), the Pluperfect refers to a resultant state in the past, and is the expression of a π_1 -operator Perfect and a π_2 -operator Past. In the second case, the Pluperfect refers to the transitional event itself.

Vet proposes to distinguish two operators with the value Past, represented at different layers in the E-structure. One of them localizes the event with respect to a reference point, and is positioned on the π_2 -layer. The other Past operator describes the position of the reference point in relation to the moment of speech. According to Vet (1992: 65), the reference point indicates the moment at which the truth value of the proposition (X_1) is evaluated. As the choice for this particular moment reflects a personal decision of the Speaker, it is represented as the expression of a π_3 -operator.

In Vet's application of the FG model to the French data we notice two important deviations from the 'traditional' classification. Vet classifies Perfect Aspect as the expression of a π_1 -operator on the basis of the observed interaction between the Perfect meaning and the Aktionsart of

⁷ The reference to the result of a transition, rather than the transition itself, is interpreted by Vet (1992) as a change in the meaning of the predicate.

the SoA.⁸ Past Tenses that involve a shift of the evaluation time are represented on the propositional layer. Both of these deviations are taken over in my model of the E-structure, as will become evident in section 3.

2.4.2. The role of variables

In addition to differences in the distribution of TMA categories over the layers, there also appear to be inconsistencies in the use of the variables e_1 , X_1 and E_1 . The variable e_1 is commonly used to represent the set of SoAs not yet modified by π_2 -operators and σ_2 -satellites (the core predication). The same e_1 represents the extended predication (with π_2 -operators and σ_2 -satellites). If it is possible to use a variable with and without its associated operators and satellites, the question arises whether e_1 plus operators and satellites, and X_1 without operators and satellites, do in fact represent different entities (see Nuyts 1992: 96).

Some of the confusion is related to the lack of a distinct variable for the core predication. As soon as the core predication is provided with its own variable, we can postulate that all variables are theoretically inseparable from their operators, restrictors, and satellites, just as any term variable represents a unit determined by its operators and restrictors. With the term variable x_1 , we mean the representation of the term as specified by the term operators and restrictors. Thus by mentioning e_1 , we should indicate the time-space region e_1 as determined by π_2 -operators and σ_2 -satellites, and restricted (characterized) by the core predication. In the same way, the variable X_1 should only be used to refer to a proposition plus π_3 -operators and σ_3 -satellites.

A similar confusion concerns the variable E_1 . E_1 represents the whole utterance including possible π_5 -operators⁹ and σ_5 -satellites, but is sometimes claimed to refer to the Speech Act. The representation of E_1 as an 'utterance' variable is in agreement with Bolkestein (1992) and Nuyts (1992), who object to the conceptualization of E_1 as

⁸ In another article, Vet (1990b) goes into the relation between Aspect and Aktionsart. He discusses the distinction between transitional and non-transitional verbs. Transitional verbs ordinarily combine with duration adverbials of the *in*-type (*Mary filled the bottle in ten minutes*), whereas non-transitional verbs as a rule go together with duration adverbials of the *for*-type (*Mary looked for the bottle for ten minutes*). For sentences in which a transitional verb nevertheless coincides with a *for*-type adverbial, or a non-transitional verb with an *in*-type adverbial, special interpretation strategies are needed.

⁹ The possibility to represent certain types of clause chaining by π_5 -operators is not yet fully explored (see also section 3.6).

the representation of a Speech Act, instead of the product of a Speech Act. For the core predication I propose to use the variable c_1 , which stands for a *Conceptualized Situation*. The term Conceptualized Situation is explained in section 3.2.

3. A modified version of the E-structure

3.1. The predicate variable f_1

Following Keizer (1992a), I accept the possibility of modifying predicates directly by π_ϕ -operators and σ_ϕ -satellites. Unlike her, however, I intend to reserve this type of operators and satellites for the description of derivational processes that up till now have been treated as instances of predicate formation.

Typical examples relate to the Aktionsart of predicates and include derivational affixes that turn inherently durative predicates into momentaneous ones, and affixes that affect the telicity of the predicate. An example of this type of derivation is given by Comrie (1985: 342), who describes the Chukchee suffix *-tva* which is applied to inherently ingressive verbs to turn them into stative ones. A π_ϕ -operator with the value Stative could account for the occurrence of pairs such as *vak?o-k* 'adopt a sitting position' and *vak?o-tva-k* 'be in a sitting position' in Chukchee.¹⁰

A formalism with π_ϕ -operators is particularly suitable for languages with obligatory derivational affixes which indicate, for instance, momentaneousness on the verb stem. σ_ϕ -satellites can be used to describe the special derivational morphology which many languages have to indicate the direction in which an action takes place. Comrie (1985: 345) gives the following examples from Georgian:

- (21) *mi-dis* 'he goes (away from the Speaker or Hearer)'
 a-dis 'he goes up'
 ča-dis 'he goes down'
 še-dis 'he goes in'
 ga-dis 'he goes out'

The role of these Georgian prefixes is similar to that of the prefix *tlee-* in Koyukon (see section 2.2.1). The idea of formalizing some derivational processes by operators and satellites which have only the predicate in their scope is most appealing for languages with an elaborate and highly productive derivational system. For other languages, the 'normal' predicate formation rules may be more suitable.

¹⁰ A possible objection to the representation of predicate formation by operators could be that operators ordinarily do not impose selection restrictions on their operandum. As some of the traditionally accepted π_1 -operators can only combine with certain specified SoA-types, I assume that the selective applicability of π_ϕ -operators is not of crucial importance for their acceptance in FG.

The predicate variable f_1 represents the property or relation assigned by the predicate to its arguments. f_1 is obligatorily determined by a predicate (possibly derived through predicate formation), and optionally modified by one or more π_o -operators and σ_o -satellites:

$$(22) \quad \pi_o f_1: \text{pred}[(\alpha_1) \dots (\alpha_n)](f_1): \sigma_o(f_1)$$

The predicate and π_o -operators together specify the form of the predicate frame associated with the variable f_1 . This frame contains all relevant information concerning the number and type of arguments, selection restrictions, etc. After the insertion of appropriate terms in the open argument positions (here indicated as α), we refer to the representation as the *nuclear predication*, denoting a State of Affairs (SoA).

3.2. The core predication c_1

The variable c_1 is introduced for reference to the layer of the core predication. This variable represents a situational or core concept (see Vet 1990b: 280), defined by the projection of a SoA (with its own internal temporal structure as designated by the nuclear predication) on a point or interval in time, which will henceforth be referred to as the *event frame*.¹¹ At the level of the core predication it is not the SoA itself which is at the focus of our attention, but the relevance of the SoA for the selected event frame.

The variable c_1 is restricted by the predicate f_1 plus its argument(s), and optionally extended with σ_1 -satellites and modified by π_1 -operators. Two types of Aspect are represented by π_1 -operators. The first type of aspectual operator (Aspect 1) indicates whether the event frame is conceptualized as a point (Perfective) or an interval (Imperfective). The second aspectual operator (Aspect 2) specifies the temporal relationship between the SoA and the event frame. This relationship may involve the continuing influence of a dynamic SoA occurring before the event frame (Perfect Aspect), during the event frame (Progressive Aspect), or after the event frame (Prospective Aspect). Several identical dynamic SoAs may be located before as well as after the event frame (Iterative Aspect). In case of the absence of one of these second aspectual characterizations, the internal temporal structure of the SoA is projected on the event frame without further modification.

Languages differ with respect to the aspectual categories which are expressed grammatically, and which aspectual values may be expressed together. Interaction with tense categories also occurs, in the sense that, for instance, Aspect 1 may only be expressed in the Past Tense. In some languages it is possible to indicate that an event frame is characterized by the influence of another event frame, itself characterized by the projection of a SoA. Such a complex configuration is

¹¹ The term *event frame* is from Chung and Timberlake (1985: 214). My treatment of Tense, Mood, and Aspect is inspired by their approach.

tentatively represented by an E-structure with two core variables, c_1 and c_3 , whereby both types of aspectual operator may appear twice in the E-structure:

(23) $\pi_1 c_1 : [\pi_1 c_3 : [\pi_o f_1 : \text{pred}[(\alpha_1) \dots (\alpha_n)](f_1) : \sigma_o(f_1)](c_3) : \sigma_1(c_3)](c_1) : \sigma_1(c_1)$

This 'nesting' of aspects is subject to language-specific constraints, and usually limited to the expression of the continuing influence of an anterior progressive situation, as in (24):

(24) *I am out of breath because I have been running.*

Note that Aspect 2 involves aspectual categories that have been labelled Internal Phasal, External Phasal, and Quantificational Aspect. It is, however, not meant to cover all phenomena described by these labels, as will become obvious in the following account of functions captured by the layer of the extended predication.

3.3. The extended predication e_1

In the previous section I have argued that the core concept c_1 is characterized by the projection of one or more identical SoAs on an event frame. At the layer of the extended predication, the event frame is localized in time, relative to a reference point or interval R.

The position of the reference point or interval R may be implied by the context, but can also be indicated by a satellite or an operator of a higher level (see section 3.5). If no particular position is implied or indicated, R coincides with the moment of Speech. The extended predication is represented as:

(25) $\pi_2 e_1 : [\pi_1 c_1 : [\pi_o f_1 : \text{pred}[(\alpha_1) \dots (\alpha_n)](f_1) : \sigma_o(f_1)](c_1) : \sigma_1(c_1)](e_1) : \sigma_2(e_1)$

The event frame can be localized before R (Past 1), simultaneous with R (Present 1), or after R (Future 1). The event frame may be quantified to indicate that several identical frames are located before and after R (Habitual Aspect). It may also be indicated that the event frame is not localized in time at all (Non-actual Mood). Note that none of these TMA-values (i.e. Tense 1, Habitual Aspect, and Non-Actual Mood) involves a direct relationship with the moment of Speech. All values which directly concern the time, place, and world of the utterance are captured by operators of the interpersonal level.

3.4. The representational level

Now that the part of the E-structure which constitutes the representational level has been built up from the inside out,

it is time to consider some consequences of the suggested approach. First of all, Quantificational Aspect is recognized on three levels. The predicate, or the combination of the predicate with its arguments, may be such that the internal structure of the SoA is necessarily semelfactive or repetitive. In some languages, these qualities of the SoA are obligatorily marked on the verb. It is better to speak of Quantificational Aktionsart in these instances, because the quantification takes place inside of the SoA.

On the level of the core predication, the SoA itself may be quantified, leading to a conceptualized situation c_1 which is characterized by a set of identical SoAs occurring before as well as after the event frame (Iterative Aspect). Habitual Aspect is represented on the level of the extended predication, and involves the quantification of the event frame: a set of identical event frames, each of them characterized by the occurrence of one or more SoAs, is located around the reference point R. The different representation of Repetitive Aktionsart, Iterative Aspect, and Habitual Aspect is used to explain the observed variation in the order of quantificational affixes and auxiliaries (see section 2.2.2).

Another consequence of the E-structure proposed here is that the occurrence of a SoA is never located in time directly. Only the selected event frame, which does not necessarily coincide with the occurrence of the SoA, is located in time. So whenever a time adverbial relates to the occurrence time of a SoA, we have to conclude that this SoA coincides with the event frame on which it is projected.

This approach does not allow for the co-occurrence of Perfect Aspect with time adverbials locating the SoA. Forms that are traditionally labelled as 'Perfect' are interpreted as indicating (Relative) Past Tense if they co-occur with time adverbials relating to the SoA. The distinction of two possible functions of so-called Perfect forms in languages like French and English accounts for the ambiguity in sentences with a (Past) Perfect form and a time adverbial (see also section 2.4.1), such as:

(26) *Bill had arrived at six o'clock.*

According to Comrie (1976: 56), a true perfect-in-the-past interpretation forces us to understand the time adverbial *at six o'clock* as referring to the reference time R, at which the result of Bill's earlier arrival still obtained. If the adverbial is interpreted as the indication of the occurrence time of Bill's arrival, the Pluperfect form indicates that this event preceded a not further specified past situation (past-in-the-past), without implying that the results of Bill's arrival still obtained during that other situation.

The temporal values expressed by operators on the level of the extended predication (π_2) all have the reference point R as their deictic center. In the unmarked case that R coincides with the moment of speech S, the temporal distinctions represented on this level function as absolute tenses.

3.5. The proposition X_1

In the previous sections, temporal distinctions of the π_2 -layer (Tense 1) were related to the reference point R. The position of the reference point R is not represented in the E-structure, but in the Domain of Discourse. R may coincide with the place, world, and moment of Speech S, but may also be located in another time, space, or world. According to Vet (1992: 65), the choice of an evaluation point other than the moment of Speech S reflects a kind of personal attitude on behalf of the Speaker, and grammatical means to indicate the relative position of R (Tense 2) should thus be captured by a π_3 -operator, rather than a π_2 -operator.

This approach is supported by Lyons' description of the semantics of tense (Lyons 1977: 821). Lyons argues that the 'normal' condition in which the reference time R coincides with the moment of Speech S ($S = R$) presents the view that past, present and future are all located (in memory, observation or anticipation) in the experiential present. For the description of Secondary Tenses, Lyons uses the concept of deictic projection into a past (R precedes S) or a future (S precedes R) world.

In the text in (27), everything after *John was in a quandary* involves Secondary Tense (i.e. R precedes S, the location of the event frame is described as relative to R):

(27) *John was in a quandary - it was raining - he had caught a cold on the previous occasion - he would see her (anyway) on the following day.*

In the above sentence, the circumstances described by *it was raining*, *he had caught a cold on the previous occasion*, and *he would see her (anyway) on the following day* are all related as seen from John's perspective at a particular moment in the past in which he was contemplating his situation. The effect of the Secondary Past Tense is, that it takes us back to this moment.

According to Lyons, a sentence like

(28) *It was raining*

can be analyzed as meaning "It is a fact that it was raining" (i.e. with a π_2 -operator with the value Past 1, and a π_3 -operator with the value Present 2), but also as "It was a fact that it is raining" (Present 1 and Past 2). In the first case, the past verb form was is the expression of Primary Past Tense, and in the second case the same form is used as the expression of Secondary Tense.

In the light of his own explanation, I disagree with Lyons' classification of the first clause in (27) as having Primary Tense. The Past Tense form was can here only be interpreted if a reference point R has already been established in the context. Even if it is the opening sentence of a novel, such a Past Tense form is then used to suggest that we are in the middle of an ongoing story. The projection of the deictic center R into the past thus takes place in the first clause, and is continued in the following text.

Apart from the moment of speech S, the Speaker may thus choose another point R¹² as the deictic center for the distinctions indicated by operators of the π_2 -level.¹³ If a temporal operator of the π_3 -level is used, the Addressee must be able to locate R, either by the presence of adverbials, the previous discourse, or the broader context of the utterance. Even without an operator indicating that R is not S, the previous discourse may be such that the deictic center is nevertheless understood to be located elsewhere, for instance in the case of a historical present used in a narrative context.¹⁴ In the absence of clues pointing at a deviating deictic center, S and R coincide by default.

Time adverbials often refer to R, but they may also indicate the location of the event frame, especially when the location of R has already been established sufficiently. It is also possible, as in *it was raining* in (24), that the event frame coincides with R. In that case, time adverbials happen to refer to both R and the event frame, but they are represented as σ_3 -satellites that refer to R. The representation of a possible shift of the deictic center on the propositional level has the advantage that we can thereby account for some modal uses of Tense forms too. In the same way that R can be located at different moments on a time axis, so the reference point may also reside in other worlds than the present one. When talking about hypothetical or imaginary situations, Speakers of a number of languages use the verb form normally used to express Past Tense, to indicate that the reference point R is not located in the same world as S (see Fleischman 1989: 14). Subjective epistemic distinctions may be described by quantifying R over different worlds, after which it is possible to make statements of the type: X is true for all Rs/for most Rs/for some Rs, etc.¹⁵ Note that genericity is here taken to represent a subjective epistemic evaluation, involving personal commitment to the eternal truth of a proposition. Other modal distinctions like Evidentiality or Volitional Modality are not directly concerned with the

¹² Thieroff (1992:86) uses the concept of deictic projection in a similar way in his description of the verbal system in German, but he uses the term Orientierungszeit (O) for the reference time R. Thieroff uses the term Referenzzeit only in relation to Perfect Aspect.

¹³ It is interesting that a shift in deictic center may involve other than temporal factors too. Spatial deictic expressions may relate to another place than the one where the speech act is executed, and the evaluating person is not necessarily the Speaker.

¹⁴ See Dahl (1983: 116) for a definition of 'narrative context'.

¹⁵ Vet (1992) suggests capturing grammatically expressed modal qualifications concerning the truth value of the proposition by quantificational operators on the π_3 -level.

location of R, which seems to coincide with S in most (or all) utterances expressing the source or the desirability of a proposition.

3.6. The clause C_1

In section 2.3.1. the representation of the Basic Illocution by an abstract predicate was rejected, and the emphasis was put on the structural continuity which can be perceived in the gradual build-up of the E-structure. At the layer of the Clause C_1 , the proposition X_1 is provided with a Basic Illocution by a π_4 -operator, optionally modified by an additional π_4 -operator or by σ_4 -satellites. To account for the rather large number of conventionalized 'ways of putting things', I tentatively introduce the concept of *Communicative Pattern*.

Each Speech Act type is associated with one or more Communicative Patterns, in which some fixed formal aspects of the E-structure are coded. These formal aspects always include the Basic Illocution as determined by a π_4 -operator, (additional) prosodic information, and the ultimate degree of complexity of the E-structure. Some Communicative Patterns involve the obligatory use of an illocutionary converter (σ_4 -satellite), or the embedding of a reduced E-structure under a performative or modally used predicate which is inflected for the first person present tense. In most Communicative Patterns some information concerning topic and focus assignment will also be given. In principle, any obligatory presence or absence of operators, satellites, syntactic or pragmatic functions can be specified in a Communicative Pattern.

The Communicative Patterns are not specified by clausal operators, mainly because they do not seem to belong to a closed class, but also because of their possible influence on all layers of the E-structure. It is an open question how many specific Communicative Patterns need to be recognized in a given language. As I see it, the answer to this question can only be approximated through detailed corpus-based investigations. There will certainly be social and even individual differences between Speakers of the same language. The idea is that all Speakers have a considerable number of preconceived Communicative Patterns¹⁶ to facilitate their linguistic interaction, but at the same time to allow, within these patterns, for maximal freedom of individual expression.

3.7. The Expression E_1

The expression variable E_1 is restricted by the Clause. The variable E_1 itself may be modified by clausal π_5 -operators, which account for special particles or verb forms used to

¹⁶ Communicative Patterns may themselves be part of Discourse Patterns, which are adapted to specific interactional situations.

organize the coherence in a stretch of narrative discourse.¹⁷ Clausal σ_5 -satellites represent the lexical means to indicate interclausal relationships. Typical examples of σ_5 -satellites are: *first of all, in response to your question, to conclude my story*, i.e. satellites used to structure the discourse, and which indicate the position of the utterance within the discourse.

A representation of the complete model is given in (29):¹⁸

(29) $\pi_5 E_1 : [\pi_4 C_1 : [\pi_3 X_1 : [\text{extended predication}](X_1) : \sigma_3(X_1)](C_1) : \sigma_4(C_1)](E_1) : \sigma_5(E_1)$

$\pi_2 e_1 : [\pi_1 c_1 : [\pi_0 f_1 [(x_1), (x_2), \dots (x_n)](f_1) : \sigma_0(f_1)](c_1) : \sigma_1(c_1)](e_1) : \sigma_2(e_1)$

- x_1 variable which symbolizes a term
- f_1 variable which symbolizes a basic or derived predicate
- c_1 variable which symbolizes a core predication
- e_1 variable which symbolizes an extended predication
- X_1 variable which symbolizes a proposition
- C_1 variable which symbolizes a clause
- E_1 variable which symbolizes an expression

π_0, σ_0 positions for operators and satellites which modify the predicate, thus creating a derived predicate

π_1, σ_1 positions for operators and satellites which specify an event frame and the relation of the SoA described by the nuclear predication (the predicate and its arguments) to this event frame in terms of quality, polarity and aspectuality, thus creating a core predication

¹⁷ The grammatical marking of interclausal relationships occurs, for instance, in oral texts in Trans-New Guinea languages (De Vries 1993).

¹⁸ For the sake of simplicity, the predicate variable f_1 and the proposition variable X_1 can be replaced by p_1 and P_1 respectively, in which case the representational variables are p_1 (predicate), c_1 (core), and e_1 (extended), and the interpersonal ones P_1 (proposition), C_1 (clause), and E_1 (expression).

- π_2, σ_2 positions for operators and satellites which localize the event frame with respect to a reference point R in terms of place, tense, and actuality, thus creating an extended predication
- π_3, σ_3 position for operators and satellites which specify how the information presented in the extended predication should be evaluated in terms of reality and desirability, thus creating a proposition in a propositional context
- π_4, σ_4 position for operators and satellites which together specify the Illocutionary Force, thus creating a clause
- π_5, σ_5 position for operators and satellites which provide information concerning the function of the clause in the larger discourse

The utterance E_i is itself embedded in the Domain of Discourse, in which vital information concerning the expression and interpretation of E_i is represented.

4. Evaluation

The modified E-structure presented here is quite complex, but the full complexity of the model is perceived very rarely, if at all, in one single utterance. In most utterances, the temporal complexity is reduced by the coincidence of S and R, the event frame and R, or S, R, and the event frame.¹⁹ The distinction between Aktionsart on the level of the nuclear predication, Aspect on the level of the core predication, Primary Tense on the level of the extended predication, and Secondary Tense on the level of the proposition is necessary, however, to represent all meanings related to temporal structure.

The aim to provide for strict, mutually exclusive definitions directly related to the E-structure does not imply that distinct categories may not interact. The kind of interaction involved, however, can be described more adequately after the establishment of isolated categories. The interaction between categories is partly determined by language-specific rules, and will not be discussed here.

As a consequence of the application of rigid definitions, many forms which function on more than one level will have to

¹⁹ For the expression of Perspectivity, however, the complexity is increased to include simultaneous reference to an R' , located before or after R in time, or in another possible world. For a discussion of the complexity involved in expressions of Perspectivity I refer to Van Baar (1990).

be described as polysemous.²⁰ In FG terms, this means that the expression of these forms is intermediated by auxiliary μ -operators. If in a particular language both Progressive and Habitual Aspect, for instance, are expressed by the same Imperfective form, it will be stated that this language has the possibility of expressing Progressive Aspect as the value of a π_1 -operator, and Habitual Aspect as the value of a π_2 -operator. In the expression component both values are replaced by the same type of auxiliary μ -operator, which then maps the Imperfective inflection onto the verb.

The adoption of this multiple-meaning approach does not imply that the uniformity of expression of the two forms is looked upon as a mere coincidence. After a careful synchronic description in which all separate meanings are recognized, it is entirely possible to investigate why particular meanings are expressed by the same form.

Martine Cuvalay
Dept. of General Linguistics
University of Amsterdam
Spuistraat 210
NL-1012 VT Amsterdam
E-mail: cuvalay@alf.let.uva.nl

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²⁰ See Kinberg (1991) for a discussion of polysemy in TMA systems.

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