# Deconstructing Meaning : a semiotactic approach to gerundival constructions in English

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# Chapter 1 – The semiotactic framework

## *1.1 – Introduction*

In the present work, I will develop a complete account of the various uses of *–ing* forms in English. I will do so making use of the semiotactic framework, as I believe this system is discerning enough to analyse the minute distinctions between each of them. This, in itself, is a hypothesis I wish to provide evidence for. The semiotactic framework is underused in my opinion, especially considering the preciseness of its function. I hope to demonstrate this preciseness in the analyses that follow. In particular, a semiotactic explanation for the distinction between the clausal gerund (henceforth referred to as *situational gerund, situation* being a semiotactic term) and the *to*-infinitive will be sought. I believe that a refreshing, new perspective can be gained on this controversial topic by applying the semiotactic framework to analyse these two forms. This will be the third goal of the present work. In total, this means that we have three separate aims:

1. To give a full inventorisation of gerundival forms;
2. To present a new distinction between the situational gerund and the *to*-infinitive, based on semiotactic principles;
3. To prove that the semiotactic framework provides an adequate analytical method for distinguishing all the gerundival forms under discussion in this work, as well as a method of formalisation that is sufficient to express the differences between them.

Since many of the constructions in which *–ing* forms are found have already been satisfactorily analysed, the present work may be said to consist of two separate parts. The first, which spans chapter 1 to 3, is explanatory in nature. The semiotactic framework itself will be described in such detail that the notations that occur throughout this work can be understood. Apart from that, the framework will be applied to constructions about which not much debate is going on: their nature is understood, which makes the application of the semiotactic framework more explanatory than innovative, although the analyses this yields may or may not fall in line with those of other analysts. These analyses may concern uncontroversial constructions (e.g. *a walking man*), but providing a satisfactory analysis for all of them naturally requires a system sufficiently sophisticated to do so. A full definition of the clausal gerund also requires positive as well as negative definition: to find out what the situational gerund *is*, we must know what it is *not*. These analyses will therefore serve to reach all three of the goals set above.

The second part of this work is rather more *exploratory* in nature. Here, I will attempt to give a single meaning description of the situational gerund and the *to*-infinitive, both of which will be argued to be applicable in all contexts in which they may be found. This is in keeping with the principle of *one form – one meaning*, which is essential to semiotactic analysis. A great advantage to the semiotactic framework in this regard is that it does not simply require one to give a description of these meanings, but also to write out in detail how these meanings interact with the rest of the sentence on a case-by-case basis. As such, every notation presented below may be regarded as a clear and falsifiable hypothesis on the nature of the meaning of the sentence.

On the whole, this work is divided into two parts: one part, which spans from chapter 1 to chapter 3, describes the semiotactic framework and applies it to data which have been explained, at least to my knowledge, to a sufficient degree by other linguists. I have done so in an attempt to show the explanatory value of the semiotactic framework. This model was designed to indicate every semantic relationship that can be expressed by the grammar of any language. Significantly, it makes it possible to notate very precisely which meaning interacts with which directly and, as such, also where structural ambiguities may arise. In giving such a notation, a linguist presents the results of his own analysis of the data in the form of a clear and falsifiable statement. This is what makes the semiotactic framework an indispensable tool in the search for the meaning of grammar. I hope to have proven that the semiotactic framework is up to the task of expressing these statements in the first part of this work. Moreover, the description of these more clearly defined gerundival forms made it possible to isolate the topic of the second part: the situational gerund. Here, the (mostly structuralist) principles on which the semiotactic framework is based have been applied to a controversial topic to propose a novel explanation.

As stated before, the present chapter will be dedicated to the explanation of the framework. Chapter 2 will be the first chapter dedicated to *–ing* forms specifically. When one thinks of a gerund, the first example to enter one's mind is most likely a nominal *–ing* form, which is used to introduce a verbal meaning into the sentence as a noun, as in *the changing of the guards*. However, not all nominal gerunds can rightly be thought of as merely nominalising anymore. Reading the sentence *I saw the building*, for example, probably does not lead one to assume that what the writer saw was a process. Rather, a *building* is thought of as a thing, a structure. It is of interest here to analyse the differences between such constructions, and to provide a complete account of them.

Naturally, these two types of nominal constructions do not exhaust the uses of the *–ing* suffix. What to think, for instance, of the difference between *the driving man* and *the man driving*? Can a unified account be given of the subtle meaningful differences between such constructions? Both, naturally, are *participles* in this case, rather than gerunds. In this case, we would probably consider both gerundives to be adjectivally used, but what could motivate the choice for one over the other? These questions will be discussed in chapter 2.

There also is a lot of variation to be found in gerundives that are used adverbially. I will provide an analysis of these in chapter 3. Some of these take the suffix *–ly* (e.g. *He performed astoundingly well*) where others do not (e.g. *She admitted to the crime leaning her head on her hand*). Naturally, a discussion of such participles cannot gloss over other forms, so others will also be discussed. A small group of gerundives can even play the role of a preposition (as in *He did not give any information concerning the whereabouts of the money*) or even that of a conjunction (e.g. *It's a miracle he's alive considering he fell from quite a height*). These last two instances are particularly interesting as these two word groups are considered to be *closed-class*: new words are added to these only very rarely. The term *gerundive* will be used for any participle *–ing* form, and *gerund* will be used for any *–ing* form that introduces an entity. Both are referred to as *gerundival* in this work.

As stated, it is necessary to analyse the gerundival constructions discussed above in order to isolate the construction that is usually called the situational gerund, which I will call the *situational gerund* from now on. This form, which may be said to describe a situation, can be used as a subject (e.g. *Working there is driving me mad*), an object (as in *I don't mind staying here*) or as the complement to a preposition (e.g. *I lost my watch while swimming across the lake*). Formally, these constructions are very similar to constructions discussed above: what is the structural difference, for instance, between *I caught her smoking* and *I remember her smoking*?, or between *She sat talking* and *She enjoyed talking*? This form has been the focus of a lot of discussion, especially among semanticists, because its precise meaning, which in many ways is similar to that of the *to*-infinitive (which can also function as the object of a verb: *I want to be free*), is difficult to isolate due to this 'competition', and the positions each construction can and cannot take (why can one say *I like swimming* and *I like to swim*, for example, but not **I don't mind to swim* or **I want swimming*?). A perfect semantic description of these forms will naturally be one which can account for all these differences purely on the basis of the meaning, rather than invoking any arbitrary selection restrictions

which are not based in semantics. This, then, may be regarded as the biggest challenge to be faced in the present work.

This chapter will present an overview of the essentials of the semiotactic framework. The rest of this study will take the principles explained here as a basis. First, the theoretical background of the framework itself will be discussed. After that, various aspects of the practice of semiotactic notation will be discussed. Following this, some of the relations that syntax allows speakers to forge between meanings will be discussed. In semiotactic notation, these relations are expressed using *functors*: symbols that are placed between meanings. After that, some grammatical meanings will be discussed: *tempus*, *mode*, and *intention*. The sections that follow these descriptions will be concerned with more specific concepts.

### *1.2 – Theoretical background*

The aim of semiotactic analysis is to lay bare the interrelations which exist between separate meanings in a sentence; to find the complex meaning that the sentence as a whole has. The first time Ebeling published some of its fundamentals was in 1954. In the first line, he notes: "[a] description of a linguistic utterance, if it is to be thorough, must contain an analysis of the utterance into the elements out of which it is constructed (sentences, word groups, words, morphemes, etc.) and, moreover, it should indicate the arrangement of these elements within the utterance" (Ebeling 1954, p. 207). In this early paper, the semantic contribution of placement is highlighted using the opposition of *finger-ring* and *ring-finger*. This pair exemplifies two meanings which are related to one another in a different fashion, solely due to the structure of the utterance: a *finger-ring* is a ring that is meant to be worn around the finger, whereas a *ring-finger* is the finger on one's hand around which a ring is commonly worn.

In order to work towards the essential goal of the semiotactic framework, one has to work within the principles that the framework is based on. Naturally, the analysis of language is only possible under the assumption that "a language is a system where all elements are interrelated" (1978, p. 1). This is a presupposition that is made by anyone investigating language. A sequence of pictures without an explicit connection between them could also be perceived as a story, due to the creative power of the human mind. In a similar way, a sequence of words like *man car road house bed* may be interpreted in many ways. One might think of a man driving home to sleep, for instance, or a man using a car to drive in, to live in, and to sleep in, or any other connection. However, in stating that I believe language to be a system within which everything is interrelated, I state that I do not assume it is (merely) this cognitive power that helps us to connect

the dots. Rather, the language itself forges the connections without forcing the hearer or reader to look for them on their own.

Ebeling's work is further influenced by Ferdinand de Saussure's conception of language, in which the idea of the *form-meaning-unit* (i.e. the conception of signs as consisting of two separate but interdependent aspects, that is, the phonological aspect and the semantic aspect) and the principle of *one form–one meaning* as two of the most important principles of the framework. This adage forces the analyst to consider every formal element a single entity, and not to assume the same form to have more than one meaning, or vice versa. The consequence of this is that when a form is isolated, all of its instances must, in the case of semiotactic analysis, be explained giving only a single definition of that form. The meaning must therefore be general enough to subsume all occurrences. Naturally, this does not always hold in practice: homonymy and polysemy can be found in any language. The analyst, however, should not assume that the phenomena he is faced with fall into these categories unless all other possible explanations prove insufficient. For this reason, Ebeling cites Kirsner (1979, p. 11), who argues about this principle: "It is [...] a claim of the analysis that a particular signal always indicates a particular meaning and that a particular meaning is always indicated by a particular signal. Though a given grammatical meaning in combination with different lexical meanings may communicate what are intuitively felt to be widely different meanings, this fact alone cannot justify the setting up of homophonous signals" (cited in Ebeling 2006, p. 11). As the phenomena that will be discussed in this study are exactly of this kind, the challenge is to hold true to this principle.

Now that these terms have been explained, it is possible to show what Ebeling considers to be the steps that speakers and hearers take in communication. As an example, let us take a situation in which I see a necklace on the street somewhere walking with somebody who has lost theirs. Within this context, as in any other, there are a few steps that I take before coming to verbal communication. The image in my mind of the situation of the necklace on the floor is the *communicandum*, that is, that part of the world I wish to communicate verbally. Note that this also requires some interpretation on the part of the speaker. To come to communication, first I must *program* the information, meaning I select the words for (the) appropriate referent(s) to linguistically point out the actual referent. After selecting the most appropriate meaning, I will *code* the message, that is, access the phonological form connected to the meaning. Finally, a speaker will *realise* the speech act by speaking (Ebeling 2006, p. 32). In this case, uttering the word *necklace* itself might suffice. The hearer may then envision a specific necklace they recall from memory (this would be the projection),

but what I have actually communicated is the category to which every necklace belongs (the type), by invoking the semantic features which an object must possess to be referred to with the word *necklace* in English. Any actual necklace would be an *appropriate referent* in this case. Every single object fitting such a category will be referred to as a *token*.

Although the above may sound highly psychological, it is as far as Ebeling will go in the discussion of the psychology behind language. As stated, he argues that "the potentialities of language should have precedence, in linguistics, over the abilities of man" (Ebeling 1978, p. 8), meaning that the linguistic data must stand on its own in analysis, and the way in which the data is connected to the real world is not of linguistic importance. This is an important point to make here, because it leads into a distinction that is fundamental to the present work, namely between *interpretation* and *meaning*. This may seem obvious at first glance, but drawing a fine distinction between the two may in practice be difficult, yet it is essential for the description of language (and only language). Interpretation can be defined as "the search for the referent on the grounds of a given meaning plus the circumstances in which this meaning is presented (context, situation of the speaking event, background knowledge of the interlocutors etc.)" (Ebeling 2006, p. 27).[1] In a sentence like *Five men are carrying five tables*, for instance, interpretation is required to select between a *distributive* reading (i.e. five men each carrying five tables) or a collective one (i.e. five men carrying five tables in total). The language itself does not distinguish between the two; the object of the action is a set of five tables. The *meaning* must therefore be that five tables are being carried, and that the carriers are the five men. In practical use, however, a hearer would be able to come to a distributive interpretation given an appropriate context. This is interpretation. This is not more or less *correct* than the collective reading: if this is what the speaker means, then communication has simply been successful. In fact, use of any language requires a measure of interpretation. The point is merely that whatever must be interpreted cannot be part of the language, and therefore does not fall within the scope of the semiotactic framework. Related to the distinction between *meaning* and *interpretation* is the distinction between *appropriate referents* and *referents*. *Appropriate referents* are all the entities in the real or imaginary world which fit the *meaning* of an utterance, whereas the *referents* are those things that are actually referred to by the speaker. In order for the hearer to select the referents from all the appropriate referents,

[1] "Interpretatie als proces is niet anders dan het zoeken van de referent op grond van een gegeven betekenis plus de omstandigheden waarin deze betekenis wordt aangeboden (context, spreeksituatie, achtergrondkennis der gesprekspartners, e.d.)" (Ebeling 2006, p. 27).

an interpretive step must be taken. For instance, when someone says *That man is looking at me*, a hearer may readily identify who the speaker is referring to in that moment, but the linguistic data does not refer to the same person every time this sentence is uttered. In a different situation, a different man may just as well be looking at a different speaker, and the same sentence could still be used. The term *interpretation*, then, will be used to refer to cognitive steps taken by the hearer on the basis of the *meaning* of an utterance. Only the meaning can be analysed systematically through the use of the semiotactic framework, which is not to say that interpretation is any less important in the use or understanding of language. The image of the object or the situation in the mind of the hearer, referred to in this framework as a *projection*, is an instance of interpretation. Language provides meanings which interact with one another in a specific way, and the way in which this complex meaning relates to the rest of the world is for the hearer to determine.

### *1.3 – Application of the framework*

Apart from these abstract outlines, there are more specific notions that underpin the semiotactic framework, which must be borne in mind when formulating meanings using this system. These will be discussed in this section.

*Convergence and divergence*: in the semiotactic framework, *convergent* elements are elements that refer to the same entity, and *divergent* elements refer to separate entities. A phrase like *the white dress on the table*, for instance, contains both convergent meanings and divergent meanings. The first part of this phrase, *the white dress*, is completely *convergent*, for instance: they all contribute to the projection of a single entity. The entity in question is *dress*. We are given more information to narrow down which dress it is, however. For one, the phrase *a dress* has different appropriate referents than *the dress*. An indefinite is one that is not *autoprominent*, i.e. one that cannot be isolated within the context of the speech situation. The phrase *the white dress*, on the other hand, shows that the dress is prominent in the context of the speech situation (i.e. the dress is *autoprominent*). Moreover, we are not just looking for an indefinite dress, but also for one that is white. As this explanation shows, *the* and *white* have separate meanings, but they do not refer to separate entities: they are simply there to specify which group of dresses can be called *appropriate referents* of the phrase. As such, the three meanings *the, white,* and *dress* are convergent in the phrase *the white dress*.

However, the phrase *the table* does not refer to something that directly combines with the features of *the white dress*, because, on its own, it does not say anything about the

dress. Rather, *the table* has its own entity, i.e. the table in question. The speaker gave us only definiteness (autoprominence) on which to base the set of appropriate referents for this phrase. In other words, they assumed that the hearer would understand which table was meant. It is not just any table, it is a table you know I am referring to. As this rephrasing already shows, *the* as a meaning is convergent with *table*: both narrow the set of appropriate referents of the same thing. *The, white,* or *dress* do not do so, however, so *the white dress* and *the table* are *divergent.*

Interestingly, there is a clear connection between these two meanings in the whole of the phrase. This connection is indicated by the word *on.* The two separate entities are coordinated in relation to one another through this word. As such, *on* must distribute two *roles*: one role for the dress, which is on the table, and one for the table that the dress is on. The word *on* first and foremost specifies *a white dress*: the rest only follows to help the hearer narrow down the group of appropriate referents of *dress* again. To do so, its relation to another entity is given here: *x on y.* A meaning which connects two entities, like *on* in this phrase, is called *divergent valence.*

*Event period (EP) (narrated event)*[2]*, narrated period (NP), and* THE *period*: these terms are crucial for a complete understanding of the place of temporality in the semiotactic framework. These terms break down in the following way:

| | |
|---|---|
| Event period (EP): | the period during which the event described is projected to take place |
| Narrated period (NP): | the period which is actually being referred to using the sentence |
| THE period: | the *autoprominent* moment |

Starting from the top, the EP refers to the lexical content of any sentence. For instance, when I say *I wrote a book*, this indicates that at some time, there was an event in which I performed this action. The NP is the time the sentence is about. In this case, the two are the same. That is to say, the message is that this book-writing event took place at some point in the past. The difference between the EP and the NP may appear small from this explanation, but there are meanings, i.e. aspectual meanings, which separate the NP from the EP. For example, *I have written a book* is not directly about the book-

[2] In this work, the term *event period* will be used instead of *narrated event*, because the term is essentially used only for temporal analysis, and in this context it is not the event itself (i.e. the information below the sigma) that is important, but rather the period which this state of affairs occurs and the place it takes with regard to other periods.

writing event. Rather, it is about the present, and the fact that it is marked by the book-writing event having been completed. In other words, the EP is placed before the NP. The full implications of this will be discussed in section 1.6 below, but this example is given here to show that the difference between the two can have important implications. The NP is the *actual* situation that the sentence describes, which may simply temporally be related to, rather than defined by, the event that is described in that sentence. Lastly, THE period is called *autoprominent*. The notion this expresses is essentially "being in the forefront of the frame of reference" (Ebeling 1978, p. 14). The frame of reference is the moment of speaking or writing, usually. In other words, it is defined not by the information within the sentence, but rather by the context within which the sentence is found. This meaning, and its relation to the NP, are crucial for an understanding of tense. When I say *I wrote a book*, this means that the action is in the past with regard to the autoprominent moment. In this case, one would interpret the autoprominent moment to be the moment of speaking. In other words, the NP of this sentence is *before* THE period in this case. A sentence like *I am writing a book*, on the other hand, places the autoprominent moment within the NP. This leads to the conclusion that the book-writing event is still ongoing. This, too, will be discussed in detail in 1.6.

### *1.4 – Notation in the semiotactic framework*

What follows is a short explanation of some of the essential symbols and their application, taken from both Ebeling's *Semiotaxis: over theoretische en Nederlandse syntaxis* (2006) and *Syntax and semantics – a taxonomic approach* (1978). The principles above are in themselves important. They are part of an endeavour to elucidate the relations that syntax lays between unitary meanings. In these works, Ebeling aims to establish a formal system to express these relations. For instance, how would one express the relation between subject and predicate? How are the words in *the loudly barking dog* related to one another? Ebeling posits a number of relational symbols (functors), to express all of these relations. In order to express these relations, Ebeling has designed a notational method, designing it to be able to capture all semiotactic relations that languages around the world can make. The notions described above are important to understanding it, but they do not directly describe the symbols and conventions that make up this notational method. Explaining the notational system of the semiotactic framework is the aim of the present section.

#### 1.4.1 – The sigma ('Σ') and the nexus

Arguably the most important symbol within the semiotactic theory is the *sigma*, which commonly *dominates* the *nexus* ('='). Before delving into the meaning of these two

functors, however, it is important to note that it is here assumed that any full sentence will describe a *situation*: a temporally limited state of affairs. For instance, *the reading man* is not a situation, because there is no explicit temporal limit to the relationship between *man* and *reading*. However, *The man is reading* is of a rather different nature. In this case, one ascribes to the man the agent role in a reading event. Not only that, but it is also placed in the present. The connection between *the man* and *reading* can, in such cases, be expressed using the nexus. The relationship thus forged is temporally limited: rather than ascribing a feature to an entity, we are saying that there is a situation within which that entity carries that feature. In order to accommodate the meanings which specify the temporal scope of a situation (tense and aspect, for example), the sigma is introduced, which is placed directly above the nexus, so that it *dominates* it: it contains everything within it. The sigma thus comes to represent the entire situation, and meanings like tense and aspect are placed on the same line as the sigma to specify them.

The 'bare bones' of a notation of a full sentence thus come to look like this:

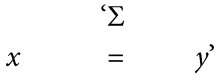


**Fig. 1 - The bare bones of a sentence notation**

In the figure above, the apostrophes are added to show that it is a semantic notation. Ebeling takes a *sign* to be construed out of form and meaning (*a*, 'p'), following De Saussure. The apostrophes enclose the entire notation rather than every individual element, because as a whole it expresses the complex meaning of the sentence as a whole. As the semiotactic framework is used to describe the meaning of the sentence, apostrophes are always placed around the notation, as is done around the *p* in (*a*, 'p'). The sigma itself adds no information to the meaning of the notation; it simply contains the sum of all elements below it. This is necessary, because it allows us to specify the occurrence of the entirety of the situation, as will be shown below. The *x* in the notation above is called the *first nexus member*, and the *y* is called the *second nexus member*. Ebeling uses these terms to avoid the terms "subject" and "predicate", as these terms have become opaque through overuse (Ebeling 2006, p. 152). I will use these terms interchangeably with Ebeling's terms, however. The equals sign is appropriately chosen: what any sentence usually does is ascribe a meaning, usually a property or an action, to the first nexus member. Not only that, but this relation between the first and second nexus member is usually limited in time. For instance, *Father is reading the newspaper* does not imply that father's entire existence revolves around reading the

newspaper. It rather indicates that he is doing so right now, and might stop at any moment (see 1.7 for a discussion on aspect). Because this temporal limitation is part of the meaning of this sentence, it must be notated. This is where the sigma comes in: it presents the situation described in its entirety, without adding or detracting anything from it. Any temporal meaning (tense, aspect, etc.) will therefore be notated on this level, and thus specify the timeframe of the situation as a whole.

Ebeling cites Otto Jespersen as his source of inspiration for his conception of the nexus. Jespersen compared *The dog barks*, which contains a nexus relationship, to *A barking dog*, which does not, but instead involves what he calls *junction*. He notes: "a nexus always contains two ideas which must necessarily remain separate: the secondary term adds something new to what has already been named. Whereas the junction is more stiff and rigid, the nexus is more pliable; it is, as it were animated and articulated" (Jespersen 1969, p. 114-6, cited in Ebeling 2006, p. 152). I would argue that this animation is due to the fact that *The dog barks* indicates a *proposition* (statement) about the dog, namely that it is barking. In semiotactic terms, the dog is the first nexus member, and the meaning that constitutes the second nexus member (the agent role of a barking action) is ascribed to it. Such a proposition by necessity has some (abstract) temporal features. It is for this reason that the sigma dominates the nexus relation specifically: it contains the result of the connection that the nexus entails, and it is this connection that is limited in time. In the example *The dog barks*, the proposition is made that, during the time which may be referred to by using the present tense, the dog is the agent of a barking action. If the sentence is transformed to read *The dog barked*, the proposition does not refer to the present, but to some unspecified time in the past. This sort of temporal specification does not specify either the dog or the barking directly, but the whole of the situation. This is therefore notated by specifying the sigma rather than any element within the situation (see 1.3.4). In the case of *a barking dog*, however, no proposition is made about the dog as such, and no temporal features are implied: this phrase simply refers to a dog that carries the feature that it barks, regardless of time. This also explains why Jespersen argues that the two ideas in a nexus relation remain separate: in *The dog barks,* its barking is not necessarily a feature of the dog per se, nor is the dog introduced to specify the barking action. Rather, it is stated that the situation exists that the dog is performing the action, and that the connection between the two meanings is temporally limited. The rigidity Jespersen refers to concerning junction, on the other hand, may be explained by the fact that *a barking dog* simply refers to a dog that is defined by his barking, irrespective of the time in which it occurs. As this description already implies, the two notions also do not remain separate: the barking is introduced to specify the dog.

Before elaborating on other examples, it should be noted that it is also possible to create a situation in which no nexus is present. Ebeling notes that in some cases singular agreement can also refer to a situation rather than a plural meaning. Consider the truncated notation of (1), for example:

(1) "Two glasses is good, but five is bad" (Ebeling 1978, p. 279).

'Σ. . .

'Σ = good. . .'

glass. . .'

The triple dots in the notations above serve to show that the notation is not complete. Rather than simply notating a subject that is marked for number, the first nexus member of (1) contains a sigma, as the notation shows, which dominates the meaning 'glass',[3] because there is no plural agreement on the verb *be*. This type of notation is defined by Ebeling as "such a situation Σ that *x* is a component of Σ" (2006, p. 195).[4] It may already be noted that there is no proposition being made about the existence of the glasses. Rather, the speaker of this utterance only presents a situation within which the glasses exist. As we will see in chapter 4, lack of a proposition in a situation yields a different projection: not a claim concerning the real or imaginary world which can be affirmed or denied, but simply a situation in which something is present.

### 1.4.2 – The assignation of roles

When a nexus is present, *x* and *y* are both represented on the same line, whereas the sigma is on the line above it, dominating the nexus. In semiotactic notation, this has a specific purpose: meanings that are notated on the same line refer to the same entity and as such are *convergent* (see section 1.2). In other words, when we say *The dog barked*, the assertion is that in the timeframe described (i.e. before the present), the dog in question is the agent of a barking action. However, it is worth noting that *x* and *y* remain separate still: the connection between the subject and the predicate is what is conveyed, and this connection only is temporally limited to the timeframe that the tense and aspect of the sentence indicate. Outside of the temporal boundaries of the sigma, then, the two meanings are not stated to converge. *The dog barked* is in the past tense, so at some point before the present *dog* was the agent of *bark*, but that tells us

[3] For uses such as those described in (1) above, Ebeling uses the symbol 'Σ$^{sup}$', which stands for "superimposed sigma", indicating that the projection of a situation in which *two glasses* occurs is superimposed by the syntactic form of the sentence as a whole, rather than as a consequence of the form itself.

[2] "Een zodanige situatie Σ dat *x* een bestanddeel van Σ is" (2006, p. 195)

nothing about the present moment, for example. The story is different in the case of *a barking dog*. Here, the connection is not temporally limited. That is to say: the meaning of *a barking dog* is such that *barking* is a property of the dog in question, and therefore both *barking* and *dog* relate to the same entity. That is the essence of convergence. Although our real-world knowledge helps us to determine that the dog probably is not incessantly barking for as long as it exists, there is no limit to the connection between *dog* and *bark* in this instance.

In order to further exemplify this distinction, let us analyse the sentence *The boy eats an apple*. Within this situation, there are clearly two divergent entities: the boy and the apple. As such, what falls below the sigma line must contain two lines. A closer look at this sentence tells us that both entities are in some way connected to the meaning *eat*: the first nexus member *boy* is the agent of the action, whereas *apple* describes the entity that undergoes this action. As such, the verb distributes the roles that each of these entities play in the sentence. These notions may become a little less abstract when we apply them in a notation. Using the semiotactic framework, this yields the following:

(2) The boy eats an apple.

| | | |
|---|---|---|
| | ‘Σ. . . | |
| boy. . . | = | [*x*; *x* eats *y*] |
| | | [*y*; *x* eats *y*]; apple. . .’ |

As the figure indicates, the boy is the first nexus member. This entity is equated to the *x*-role (the agent role) of the eating action in this notation. The apple is the undergoer of that event: it takes the *y*-role of this action. It is on a separate line, because it is a separate entity.

The above explains why the boy and the apple appear on two different lines in (2), but not necessarily the notation of the verb. A bivalent verb is assumed to have a single meaning namely one “of a relation between entities in the world” (Ebeling 1978, p. 148). It describes a single process involving two entities. As such, there are still two features to this single meaning, because it describes what each of them does at any point during the process. This means that a verbal meaning like this must ascribe something to both meanings, even though they are divergent. In this case, it describes what the eater does, and what is eaten. These separate meaningful parts are referred to as *relational features*, for obvious reasons: in (2), the verb links the apple and the boy by presenting them as separate players in a single eating event. Relational features are always presented in brackets, and when these are notated directly above one another,

this indicates that they each are a part of the same single meaning. In (2), the two bracketed features together represent a single eating event this way.

There is another aspect to the notation above that must be discussed, and that is the symbol for complementation: ';' outside the brackets. About this symbol, Ebeling notes: "its value partly corresponds with that of "="[5]" (2006, p. 238),[6] in that it forges essentially the same relation between *apple* and the object role of *eat* in (2) above. However, it is not identical to this functor. The difference is in the *assemblage* that it implies: the order in which the syntactic structure of the sentence presents items. Active and passive voice sentences are primarily different for this reason: *The boy eats an apple* presents the agent of the eating-event as the subject (i.e. the first nexus member), whereas *An apple was eaten (by the boy)* presents the patient in this position.

In the case of Ebeling's own example "Piet eet brood" (*Pete eats bread*, Ebeling 2006, p. 238), Ebeling argues that "that which is conjured up by the part of the complex dominated by 'Σ' is a situation which concerns Pete first and foremost; the bread is merely mentioned to further specify Pete's situation" (p. 238).[7] He further states that "the symbol ";" indicates that what is to the right of it realises a subordinate valence within a plurivalent property by which the dominating valence is characterised" (p. 238-9).[8] In other words, the relation between the agent role and the first nexus member is the primary message of a situation with a nexus, whereas the complement merely adds extra information to this essential message.

### 1.4.3 – Functors

Apart from the basic elements described above, there are a limited number of other relations, which can be used in a wide variety of ways to express particular meanings. In the present section, the most fundamental of these will be explained. The discussion will start with *limitation*, which is most often used to express the relation between noun and adjective. After that, *gradation* will be explained, which primarily describes the

[5] In the present work, Ebeling's own use of apostrophes will be maintained, as these are meaningful in his work. Single apostrophes indicate that what is between it is a *sign* in his 2006 work, whereas in his 1978 work, double apostrophes are used to signal this.

[6] "De waarde ervan komt gedeeltelijk overeen met die van "="" (Ebeling 2006, p. 238).

[7] "Dat wat door het door 'Σ' gedomineerde gedeelte van het complex wordt opgeroepen is een situatie die in de eerste plaats Piet betreft; het brood wordt vermeld ter nadere specificatie van Piets situatie" (Ebeling 2006, p. 238).

[8] "Het symbool ";" geeft derhalve aan dat wat er rechts van staat een ondergeschikte valentie realiseert binnen een plurivalente eigenschap waardoor de dominerende valentie gekarakteriseerd wordt" (Ebeling 2006, p. 238-9).

relation between adverbial meanings and other elements. *Stratification*, which is commonly associated with meanings relating to number, will be explored in the third section. *Temporal gradation* and *temporal limitation* will be discussed separately. Lastly, *incorporation* will be discussed, which indicates most of the synthetic structures found in the English language, and is often accompanied by a separate symbol denoting *divergence*.

#### 1.4.3.1 – LIMITATION

An example which elaborates on the sentence notated in (2) would be *The hungry boy eats an apple*. By applying what is commonly referred to as an adjective, we specify the subgroup of boys to which we refer: only the hungry ones are now appropriate referents. This relationship is expressed using the symbol "–", which expresses *limitation*, meaning that it limits the appropriate referents of "boy" to those boys who also have the property that they are hungry. This relation is naturally convergent, as the meanings on either side of the limitation symbol refer to the same entity. This property is placed to the right of the word describing the category. *The hungry boy* would thus be notated as 'boy – hungry…'. The relationship described above also applies to the meaning introduced by the article, which Ebeling notates using the symbol 'DEF', which denotes that the entity which it specifies is *autoprominent* (Ebeling 2006, p. 112) ('DEF' is presented in small capitals because it constitutes a meaning that is grammatical). This may be paraphrased as "contextually highlighted." For example, when faced with a boy and a girl, saying *The boy eats an apple* tells the hearer that the appropriate referent is found within the autoprominent state of affairs within the context of the speech act. Naturally, the context of a speech act is not set in stone. It takes interpretation to single out the correct entity. Conversely, when the article *a* (symbolised as "INDEF") is used, the referent is *non-autoprominent* (p. 113), which means that the referent is not inferable from the context. For this reason, the sentence *The hungry boy eats an apple* is notated as follows:

(3) The hungry boy eats an apple

'Σ. . .

boy – hungry – DEF. . . = [*x*; *x* eats *y*]

[*y*; *x* eats *y*]; apple – INDEF. . .'

#### 1.4.3.2 – GRADATION

Another important functor is that of *gradation* (symbol: '>'). This relation is different from limitation, in that it symbolises a relationship which is not directly convergent, but one that is convergent with an *abstraction*, i.e. a representation of a given property

as an independent entity (t. For example, when I say *the very hungry boy eats an apple*, it cannot be said that the boy is *very* or that we take a set *hungry* and take from that set the subset of *very hungries* to infer the subset of appropriate *hungries*. Rather, what is specified is the *hunger* inherent in the meaning *hungry*, rather than *hungry* itself. Of this hunger we then say that it is present to a high degree within the situation we are describing. *Hunger* is an *abstraction*, as it refers to the state of being hungry. In semiotactic notation, such a meaning is traditionally indicated using '<>', e.g. '<hungry>'. In the present work, this symbol will be replaced by '^', e.g. '^hungry'. When gradation is used, however, the abstraction itself is not present in the notation, so this symbol does not play a role in (4) *The very hungry boy eats an apple* is simply notated in the following way:

(4) The very hungry boy eats an apple.

| | | |
|---|---|---|
| | | 'Σ. . . |
| 'boy – hungry > very – DEF. . . | = | [*x*; *x* eats *y*] |
| | | [*y*; *x* eats *y*] ; apple – INDEF. . .' |

Gradation is especially important, because it can be used in a myriad of ways. Consider, for example, that this functor does not only describe the attribution of a property to an abstraction of another attribute, but also to abstraction of actions. In a sentence like *The very hungry boy quickly eats an apple*, the abstraction of *eat*, i.e. the eating action, is specified by *quick*: its features occur in rapid succession. In other words, although the meaning *quickly* is connected to the agent role of the eating event, we are not specifying the agent directly (i.e. we are not saying that the agent himself is quick). Rather, we are specifying the action that the subject engages in: *eating*. Paraphrasing this, we might say that *the boy eats, and the eating was quick*. The notation of this sentence would therefore come to look like this:

(5) The very hungry boy quickly eats an apple.

| | | |
|---|---|---|
| | | 'Σ. . . |
| 'boy – hungry > very – DEF. . . | = | [*x*; *x* eats *y*] > quick |
| | | [*y*; *x* eats *y*] ; apple – INDEF. . .' |

In this instance, note that within the notation, every *syntactic index*, i.e. every element showing a specific relationship without itself attributing a semantic element, e.g. *–ly* on *quickly*, is removed. Of course, the phonetic indicators of such relations are not necessary within a description of the relations themselves.

The above does not, however, exhaust all possible semantic relations. Specifically, a point made by Geerdink-Verkoren (2008) is that these relations may also be *reversed*. She argues that reversed symbols ought to be used "with the added meaning of a reversed word order" (p. 22). Central to the notion of reversed symbols is the idea that any complete sentence consists of two parts: the first and the second nexus member. The subject is the first nexus member in any notation. Any other element (including, importantly, the sigma), is part of the predicate. Notably, when an element (e.g. an adjunct) occurs in initial position, without referring to the subject, this may alter the notation. Example (6) shows an instance of this:

(6) I saw the man yesterday.

'Σ. . .

me = [*x*; *x* sees *y*] > yesterday

[*y*; *x* sees *y*]; man – DEF. . .'

However, the notation changes the moment the order of the elements is changed to (7):

(7) Yesterday I saw the man.

'yesterday < Σ. . .

me = [*x*; *x* sees *y*]

[*y*; *x* sees *y*]; man – DEF. . .'

In this instance, it would not be entirely accurate to state that *yesterday* as an element specifies the type of entity the first person is. Rather, it specifies the situation as a whole, by specifying the condition under which it occurs. The essential difference between the meanings of these two sentences is that in (6) the projection of *yesterday* specifies the seeing event. In Hilde Hasselgård's (2011, p. 53) terms, the adverbial takes *predicational scope* in (6). In this position, then, it places the action in a specific temporal position. However, in the case of (7), *yesterday* as an element has taken *sentential scope*, in which position it therefore effects a modification of "the whole proposition plus following sentence(s) [or] the speech act" (p. 53), according to Hasselgård. The connection of one sentence to another is outside the scope of the semiotactic framework, so that aspect is not relevant here, but its effect on the entire proposition is. This semantic distinction, then, can only be expressed by making use of the reversed gradation symbol ('<'). Note also that *I* is represented as 'me' in the notation, to avoid using a capital letter for a meaning which is not grammatical.

#### 1.4.3.3 – STRATIFICATION

A further functor to be discussed is that symbolising *stratification*. For this purpose, Ebeling uses the symbol '/', and it essentially quantifies independent elements within a sentence. For instance, when we say *two newspapers*, we take a projection of the independent unit *newspaper*, and then multiply it as a whole, without specifying the newspaper itself. By inference, every instance of an independent unit without this marker refers to a single instance of such a unit (notated using 'SG' in the present work). Extending the previous example sentence this way leads to the following:

(8) The very hungry boy eats apples.

'Σ. . .

boy – hungry > very / SG – DEF = [*x*; *x* eats *y*]

[*y*; *x* eats *y*]; apple / PL'

As the above notation shows, *the boy* is both definite and singular, whereas *apples*, because there is no article present, is indefinite. This meaning is evident, because the contrast with the same element with *the* is as clear as it is in the case of a singular with *a(n)* contrasted with the same word occurring with *the*. When a plural occurs on its own, then, it may be taken to be indefinite, not autoprominent.

#### 1.4.3.4 – TEMPORAL LIMITATION AND TEMPORAL GRADATION

Apart from entities and events being ascribed certain features, it is also possible to single out the same entity within a certain situation. To indicate this connection, a different symbol is used: *temporal limitation* ('~').[9] As has been explained above, non-temporal limitation is used to link two meanings in such a way that the meaning of the one becomes a property of the other. This relation is given using the symbol '–'. Temporal limitation is slightly different: rather than focusing on the overlap between

[9] It must be noted here that Kortlandt (1980) considers the distinction between temporal gradation and temporal limitation to be irrelevant, as they are simply in complementary distribution: wherever one can be used, the other cannot (p. 2). In broad strokes, we may say that temporal limitation only specifies those meanings that are typically specified by adjectives, i.e. entities, whereas temporal gradation is used in combination with meanings which normally combine with adverbials, e.g. verbs or entire situations. Their function is the same, however: to contrast the occurrence of a meaning *with* a certain meaning attributed to it to the occurrence of that meaning *without* that meaning. He concludes: "Thus, temporal gradation and temporal limitation are variants, the choice between them being determined by the semiotactic context" (p. 2). In this work, the distinction is maintained, however, as I believe the parallel between these forms and atemporal limitation and gradation to be a useful one in illustrating the differences between various gerundival constructions.

two meanings in order to select only those which meet both criteria (e.g. *red apples* are both apple and red), *temporal limitation* focuses on an entity in a specific state. That is to say: when someone refers to water as *totally clear water*, the clarity is presented as a property of the water. However, in the context of a water purification facility, for example, one might well use a different construction. Someone working at the plant may show you the water coming in dirty. When this water is processed, the result is crystal clear water. At that point, one might say: *This is the same water totally clear*. The difference between *totally clear water* and *water totally clear* is that the former example specifies the water on the basis of an inherent property, but on its state in the latter case. This relation is indicated using a squiggly line instead of a straight one: '~'. The notations of the example sentences above would therefore look as follows:

(9) Totally clear water
'water – clear > total. . .'

(10) Water totally clear
'water ~ clear > total. . .'

As the examples given here already show, there is a clear formal difference between these two meanings.

There is yet another semiotactic relation that is relevant in the context of adverbial specification, namely that of *temporal gradation*. There is a close connection with non-temporal gradation, just as there is a close connection between temporal and non-temporal limitation. The distinction between non-temporal limitation and temporal limitation may be described as a difference in dimension: rather than specifying a category (i.e. the entity described by the noun) 'flatly' and selecting the appropriate referents within that category on the basis of an additional feature, temporal limitation takes that category described by the noun, and specifies it by indicating what state the entity must be in to be appropriate. Similarly, gradation selects a meaning, and takes the abstraction of that meaning to specify it. Temporal gradation, on the other hand, specifies the temporal dimension of it occurring. For example: one might say *He works fast*, and mean that the working that is performed by him proceeds quickly. In other words, not just any type of working action is referred to, but only the type that is fast. However, if one states *He works fast having drunk a cup of coffee*, work is not proceeding quickly at all times, but only when it is concomitant with his having drunk a cup of coffee. It is still the abstraction *working* that is specified here, but the specification of it being fast has a further stipulation, which is on the temporal plane. To further elucidate this point, fig. 2 is added, which contains a metaphorical

illustration of the difference in interaction between non-temporal gradation and temporal gradation:

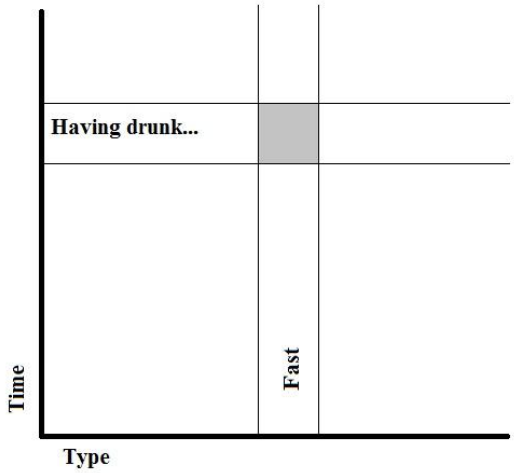


**Fig. 2 – A representation of temporal gradation vis-à-vis non-temporal gradation using the example sentence *He works fast having drunk a cup of coffee.***

In the figure above, the entirety of the plane may be taken to represent all potential meanings of the abstraction *working*. The *x*-axis represents all (atemporal) types of *working*, from which the specific type *fast* is selected. Rather than simply attributing this to the first nexus member of the sentence, a further stipulation is given, namely *having drunk a cup of coffee*. This specification gives a margin of time which is appropriate in this context. The cross-section of these two meanings is what is ascribed to the first nexus member of the sentence. This relation is notated using the symbol ',' by Ebeling. However, as certain relational symbols must be reversed, this symbol alone is not sufficient. Following Geerdink-Verkoren (2008), therefore, I will use '⊃' for ordinary temporal gradation, and '⊂' for reversed temporal gradation. The truncated notation of (11) therefore looks as follows:

(11) He works fast having drunk a cup of coffee.

'Σ . . .

he = [*x*; *x* works] > fast ⊃ [*x*; *x* drinks *y*]. . .'

The interaction between the aspectual meaning, expressed by *have* and the perfect form of *drink*, and the rest of the construction will be discussed in chapter 3. For now, it will

suffice to say that the above shows that his working fast is concomitant with his having drunk coffee.

#### 1.4.3.5 – Incorporation and divergence

Another functor to be explained is *incorporation*, which is best explained in conjunction with *divergence*, as they often occur together. Incorporation is explained by Ebeling using the phrases *a blot of ink* and *an inkblot*. This example will here be used to explain this relation.

Ebeling notes that "it is intuitively felt that for a speaker of [*an inkblot*] the assemblage is such that for the characterization of the referent he selects from the start the whole complex of features… while a speaker of [*a blot of ink*] proceeds more analytically, first selecting the features mapped as [*blot*] and then those mapped as [*ink*]…" (1978, p. 387). In the former case, incorporation (also called *close-knitting*) is used. Before we get to the functor, however, it is important to note the ramifications of the difference between these two constructions. It may be clear from their forms that *inkblot* is more synthetic, less analytic, than *blot of ink*. This has consequences for the relations that these elements (can) have with other meanings: whereas in *blot of ink* it is possible to specify both the blot and the ink individually (e.g. *a red blot of ink* and *a blot of red ink* (p. 387)), an *inkblot* can only be read as a unified entity. In other words, not only is the form of *inkblot* more like a single word, but it also functions more like a single word in relation to other elements. This explains why the relation between the elements needs to be represented differently. Moreover, *inkblot* must be treated as a construction rather than as a single word. Combining nouns in this way is a productive word-formation process, so the relation between the words in the resulting compound must be predictable.

In both cases, however, the two elements *ink* and *blot* appear as *divergent* entities. *A blot of ink* indicates that a *blot* is discussed, with some relation to (the meaning of) *ink*. This does not mean, however, that the relation between them is semantically equal: it is a blot specified by the properties of ink, not the other way around. In other words, the meaning of *ink* is separate from the meaning of *blot* in a meaningful way: it is affected by the meaning, but it *is* not that meaning. Just like one would say that *a purveyor of marmalade* is not himself made of marmalade, grammatically this distinction holds equally true for *a blot of ink*. In the same way, the close-knitting relationship also does not create a convergent relation: just like a notepad is not a note in the same way that it is a pad, an inkblot is not ink in the same way as it is a blot. Only *blot* describes the entity directly. For this reason, this type of compound is an *endocentric* compound:

"the semantic head (or *centre*) of the compound is 'inside' (*endo-*) the compound" (Haspelmath & Sims 2010, p. 139).

How then does one notate the relationship that exists between *blot* and *ink* in *inkblot*? This is done by using two separate functors: one to indicate that the two meanings are indeed divergent (which is done using the symbol '↓'), and another to show that the two elements are in a synthetic relationship (for which we use the symbol '‿'. Together, they would be used as shown below:

(12) An inkblot
'blot ↓ / SG – INDEF
‿ ink'

Divergence is not required in cases in which a specifying word is itself connected to an entity or another property word through close-knitting, e.g.:

(13) A blue-black sky
'sky – blue‿black / SG – INDEF'

In (13), both the features of *black* and of *blue* are convergent with *sky*, but the relation between them is synthetic. That is to say, the relation is not semantically specified in a way that can be further analysed, as would, for instance, be the case with *a blue and black sky* or *a blue yet black sky*. The synthesis of the two words, then, is all that the semiotactic notation can express, alongside the convergence of the two meanings.

1.4.4 – Unspecified relations

Another relation that has not been discussed up to this point concerns the *possessive* construction. Using the example "John's coat", Ebeling notes:

> The relation between John and the coat designated by an occurrence of John's coat and specified by the frame of reference, is one from an infinite set of relations, each designated by an occurrence of *John's coat*, and specified by different frames of reference: the appropriate referent may be not only a coat owned by John, or given by him as a present to somebody else, but also his wife's coat which he is bringing to the laundry, etc." (1978, p. 149)

In other words, the relation that is indicated by the possessive *'s* does not, in itself, denote possession at all. Rather, when the context changes, the relation indicated seems to shift. At that point, one may wonder whether or not one may speak of one meaning,

"to the effect that all interpretations are subsumed under one meaning '[a coat] which has something to do with John'," (p. 149) or whether each of these meanings are taken separately "because there are relations thinkable which are covered by this generalized meaning but unacceptable as an interpretation of the relation expressed by *John's coat*" (p. 149). As Ebeling writes: "In the latter event this phrase remains infinitely homonymous" (p. 149). Syntactic *homonymy* is the occurrence of two separate meanings which take the same form in a language, whereas syntactic *polysemy* is the occurrence of a meaning, from which the multitude of meanings are derived through the process of interpretation. Semiotactically relevant to this distinction is that *syntactically homonymous* relations must be given in separate notations, whereas this does not go for syntactically polysemous meanings, since the distinction between them essentially boils down to the interpretation of a single relation. In this case, Ebeling argues for an *unspecified* relation, by which he means that "the infinite set of relations is reduced to one unspecified relation" (p. 150), which does boil down to *a coat which has something to do with John*. The proper way to indicate this would have to show that a. the coat is the entity specified; and b. that the entity by which this coat is specified, i.e. Jack, indirectly specifies the coat (because the coat is not Jack, but rather has something to do with him). As said in the above, Ebeling introduces the downward arrow '↓' for a relation of divergence. This divergence alone is no indicator of the relation between the two elements, however: still the type of relation needs to be specified. In this instance, limitation accurately describes the specification: out of the group of coats, only those coats that are in some unspecified relation with Jack are referred to. Any implication of *possession* is therefore interpretive. The totality of the notation therefore becomes:

(14) Jack's coat
'coat ↓
– Jack'

### 1.4.5 – Intention and Mode

Apart from the aspects already discussed above, every sentence has a meaningful word order (which, as a sign, is referred to as *mode*). In English, the word order SVO expressed in *I eat apples,* though inconspicuously, does also add meaning to a sentence, namely that the projection it represents is perceived by the speaker to be part of the real world (symbolised by 'REAL' in the notation) which means that it is "projected in the brain of the speaker as something of which he assumes that is present in the time in

which the projection situates it" (Ebeling 2006, p. 290).[10] However, we may also ask *Do I eat apples?* which, by the invocation of the auxiliary *do*, changes the word order to what Ebeling describes as "hypothetical" (symbolised as 'HYP'), which means that the situation is "projected in the mind of the speaker as something of which he is not sure if it or the contrary is present in the time in which that projection situates it" (Ebeling 2006, p. 290).[11]

Finally, the intonation of a sentence is also important to its meaning. Ebeling uses the term *intention* for the sign that this adds to the sentence. Take the following example:

(15) Do I eat an apple?

| | | |
|---|---|---|
| | 'Σ . . . / HYP / INC | |
| me | = | [*x*; *x* eats *y*] |
| | | [*y*; *x* eats *y*]; apple . . .' |

The usual intonation of a question is one which rises toward the end of the sentence, whereas the sentence *I eat an apple* is likely expressed with more neutral or falling intonation toward the end. The intonation pattern prototypically employed with a question would be symbolised by 'INC' (for "incomplete"), and is defined by Ebeling as expressing that the described situation is "something of which the speaker shows that the given projection of it without further information is not necessarily the correct one" (2006, p. 290).[12] The prototypical declarative sentence intonation is symbolised as 'DECL' (for "declarative"), and it is used when expressing "something of which the speaker shows that the given projection of it is correct" (2006, p. 290). The distinction between intonation and word order makes it possible to account for non-prototypical combinations. For example, a 'REAL' mode could be used in combination with an 'INC' intention, for instance, to express the expectation that the answer will be affirmative (e.g. a question aimed toward a partner could be *You have been to the store?* when you find new groceries in the cupboard). On the other hand, the combination 'HYP' and 'DECL' could be used to express something like disapproval (e.g. *How could you do that!*). The relation between both mode and intention, and the situation itself, is one of limitation: it defines the category of situations the projection falls into. A question

[10] "in het brein van de spreker afgebeeld als iets waarvan hij aanneemt dat het aanwezig is in de tijd waarin die afbeelding het situeert" (Ebeling 2006, p. 290).

[11] "in het brein van de spreker afgebeeld als iets waarvan hij niet weet of het zelf of het tegendeel ervan aanwezig is in de tijd waarin die afbeelding het situeert" (Ebeling 2006, p. 290).

[12] "iets waarvan de spreker te kennen geeft dat de gegeven afbeelding ervan zonder verdere informatie niet noodzakelijkerwijs de juiste is" (Ebeling 2006, p. 290).

would, for instance, fall into the realm of the possible, a propositional statement would fall into the realm of the situations which are argued to be true, etc. These meanings are notated on the sigma line, as they are applicable to the projection of the entire situation. Specifically, they have to do with the knowledge of the speaker and his or her need for more information. The relation between these meanings and the sigma is presented using stratification, because these meanings deal with the extent to which the situation described is present in the real or imaginary world.[13]

### *1.5 – A note on simplification*

In the sections above, every element of every phrase is given in the notation for clarity's sake. However, in what follows I will abbreviate the notations in a number of ways. For example, above I might have used the notation '[*x*; *x* eats *y*]' every time the agentive role of the eating action had to be presented, but from this point on the same meaning will be given using '[eat$_1$]' (as introduced by Geerdink-Verkoren (2008)), taking the identity of the two notations to be given. Likewise, the subscript number 2 might be used for the direct object, and the subscript number 3 will be used for the indirect object. Moreover, Ebeling has created some symbols for more grammatical meanings, e.g. '$_1$DEM' for *that* as a demonstrative marker, or 'ID' for the same word used as a relative pronoun. In what follows, none of these types of symbols will be used. Also, the grammatical number and definiteness will not be notated every time an entity is introduced, unless this entity itself is the topic of discussion. Lastly, since the symbols for mode and intention have been explained above, these will not be given in what follows unless this has a specific explanatory function. The temporal specification will be given, however, since the presence or absence of this is an important aspect of discussing the various properties of different kinds of situations.

### *1.6 – Coordination*

Coordination is the act of making two or more elements take the same syntactic position in a sentence. Classic examples of coordinating conjunctions are *and* and *or*. Semiotactically speaking, this should result in a convergent meaning. As discussed in

[13] Ebeling (2006) argues that these meanings ought to be notated using limitation instead, for the following reason: "because these situations differ from one another, albeit interpretively" ("Doordat deze situaties van elkaar verschillen, zij het interpretatief" (Ebeling 2006, p. 290)) per sentence, "the interpretation of 'DECL' changes" (p. 290) ("past de interpretatie van 'DECL' zich aan" (Ebeling 2006, p. 290). This may be true, but it does not change the character of the situation described, only its applicability to the real world. In my view, this does not make it into a type of situation, just one that is only applicable to the world insofar as the speaker is sure of his assertion.

chapter 1, *convergence* is expressed by placing elements on the same line, indicating that they are part of the same meaning. In particular, when *and* is used, both meanings apply equally, whereas in the case of *or* only one of the two applies exclusively. For instance, when one says *I like chicken and beef*, what the speaker presents to the hearer is that *chicken* and *beef* are both the object of the liking to the same degree. On the other hand, when one says *I usually drink coffee or tea with breakfast*, *coffee* and *tea* each have the same potential for being the object of the drinking. In any given event to which this sentence appropriately refers, only one of the two is present. For this reason, they are not set apart. Rather, each element has an equal claim to the role, so both occur on the same line: they are convergent. If coordinated elements fill the same syntactic position, then it stands to reason that they would also be notated on the same line within the semiotactic notation. The connection that a coordinating conjunction makes, then, must relate meanings on the same line in the notation. Consider the following example:

(16) The cat and the dog
'(cat / SG – DEF) > and < (dog / SG – DEF)'

In (16), the immediate constituent (IC) structure of this notation is given explicitly by employing brackets, because the relation the coordinator creates is versatile: it does not simply relate to the element directly adjacent to it, but the entity as a whole in this instance, with all the specifications that have been applied to it. The brackets show that the gradation symbol relates the whole phrase *the cat* to *the dog*, rather than just *cat* and *dog* in isolation.

Coordinating conjunctions can do more than placing two entities in the same position, however. For instance, two properties can be coordinated and attributed to an entity, resulting in a notation like the following:

(17) Proposed notation for "a red and white dress" (Ebeling 1978, p. 220).
'dress – (red > and < white) / SG – INDEF'

Once again, the two properties are specified to take the same position in the notation, and therefore presented on the same line. Gradation is used in this instance, because neither colour takes on any shade of the other, turning them into hues of pink. Rather, it is the property that *red* represents as a whole that takes a semiotactically equal position to the property *white*. As Geerdink-Verkoren (2008) explains: "In the mathematical descriptions the phrases that are conjoined by coordinative particles are all put on the same line, between the relation symbols '>' for gradation, and the

reversed gradation symbol '<', thus indicating that these particles are bivalent in that they connect two sentence parts, but these parts are coordinate and not subordinate" (p. 88). The bivalence referred to does indicate that each of the two elements is presented as separate, although they do occur in the same syntactic position.

This approach to coordination is different from Ebeling's, however. According to him, in a phrase like *the cat and the dog*, the entity *cat* is not convergent to *the dog*. Rather, what conjunctions do, in his opinion, is include both of them into one entity (Ebeling (1978, p. 218-20; 2006, p. 281–8)). As has been discussed in chapter 1, brackets are used to indicate that separate parts of a single meaning are represented in more than one line. In the case of transitive verbs, the fact that they take both a subject and an object exemplifies this. Both the subject and the object play a role in the event, but both entities are separate, and each plays a different role within the same event. As such, these roles must remain divergent within the notation, but part of the meaning of the transitive verb occurs in both divergent positions (see (2)). In essence, Ebeling applies the same logic to coordination. Note the following notation:

(18) "The cat and the dog" (1978, p. 220) notated in the style of Ebeling (2006).
'[$x$; $x = y + z$]
[$y$; $x = y + z$]; cat / SG – DEF
[$z$; $x = y + z$]; dog / SG – DEF'

As the symbols within the brackets show, the elements within *y* and *z* are combined via the word *and* (symbolised by the '+' in the notation above), and together they form a resulting entity consisting of both elements together. In the case of (18), this would imply that relation indicated by *and* is *inclusion into one entity,* which distributes two distinct roles, namely the first and the second element within that new entity. These two together form the topmost layer of the meaning.

However, there are some problems with Ebeling's notation. First of all, it is not the function of coordination to represent two elements as being part of one entity, within which each element has its own role. Rather, a coordinator simply places two elements in the same semiotactic position. This is more accurately represented by convergence. Moreover, the method proposed by Ebeling seems to entail abstraction: rather than indicating the relation on its own, there is a third element which abstracts from that relation a third entity. In other words, not only does *and* indicate a relation between two meanings in this case, but also the relation of these meanings together with a third entity: the sum of their parts. The problem that this gives rise to is the fact that it implies that *the cat* and *the dog* are both *divergent* from the meaning *the cat and the*

*dog*, whereas they are precisely the parts that make up this phrase's meaning. Convergence is exactly the tool that is used to express this sameness of meaning.

### *1.7 – Time: tense, aspect, temporal adverbials*

Tense and aspect are fundamental notions to the English language, yet arriving at a clear definition of them is a complicated matter. Moreover, any definition given here must also be compatible with the semiotactic model. These two problems must each be addressed separately. First, the notions of tense and aspect will be discussed. The placement of these meanings within the semiotactic notation will follow after that.

#### 1.7.1 – Tense: Past simple, present simple, 'future simple'

Before we can delve into these topics, it is important to go over the various aspects of time that the semiotactic framework distinguishes. For one, there is THE period, or *orientation point*. This meaning is not markedly different from that of the article *the*. In fact, it is introduced with the article in mind. The notion this expresses is essentially "being in the forefront of the frame of reference" (Ebeling 1978, p. 14). This is also referred to as *autoprominence*. The event under discussion and THE period are independently defined. In the case of the present tense, the event contains the orientation point: at that point, a present tense sentence is current. In introducing the notion of *autoprominence*, Ebeling appears to solve a number of related problems all at once. He notes:

> The definitions of some meanings require a reference to something that is fixed separately each time these meanings are used. If this fixed something is temporally or locally determined, it is usually called the "orientation point". For example, the statement *x is behind y* makes sense only if it is known with respect to what or whom it is meant to be true. . . Thus a rough paraphrase of "*x* behind *y*" is "*x* so placed with respect to *y* that *y* is between *x* and THE object. (1978, p. 13)

It appears, then, that a thing "being in the forefront of the frame of reference" is pervasive in language as a whole, and not just in time. He goes on to note that "the meaning of a past tense [stands for] 'preceding THE period'" (p. 14). The period preceding THE period in this case is the *narrated period* (NP): this is the time which is actually being discussed. This period being discussed must be distinguished from the *event period* (EP) of the sentence, i.e. the timeframe of the event described in the sentence.

It appears that these three notions are sufficient for the description of time in language: the statement *I was hungry* normally implies that at THE period (which is the moment of speaking in most cases) the situation of me being hungry no longer applies. In the same way, the definition of the past tense given above also assumes such a relation between the NP and THE period. The projection evoked in the sentence is my being hungry (i.e. NP = EP, I am referring to the entire time of my being hungry), which occurred before the orientation point (i.e. before THE period). This configuration of NP and EP (NP = EP) may be considered to be *aspect-neutral*. That is to say, when someone does not add any aspectual meaning, the entire event (i.e. the EP) is the message of the sentence (i.e. the NP). When no aspect is present, these two elements therefore overlap completely.

The present tense is arguably the most common tense. Ebeling gave the following definition of the semantic element 'NOW' in the context of a present progressive sentence ("John is reading a newspaper"):

> 'NOW' is to be understood as 'a fact |f| such that NP(|f|) has its beginning and ending period in NE(|f|) [EP in this work], and NP(|f|) includes THE period as its orientation point'. (Ebeling 1978, p. 239)

For the purposes of the present explanation, we may take |f| to refer to an event or a situation. Ebeling continues: "However, since the NP, the NE [or EP], and the orientation point can be three different situations, there are contexts where the procedures relegate their projections to different layers. In order to arrive at uniform notations, the application of a special rule is required" (p. 239). In other words, whenever a distinction is made between these three periods, they each must be treated as divergent meanings. In the quote above, however, specifications of all these periods are still conflated, but these different periods clearly require separate meanings to specify them. He applies the principle of giving each of these periods its own separate layer to the Latin sentence "*urbs condita est* 'the city is/was founded'" (p. 240). This sentence contains a perfect aspect meaning as well as a present tense meaning. Ebeling describes the meaning of 'CONCL', his symbol for the perfect aspect, as "a fact |f| or a feature |f|, such that the NE(|f|) [or EP] has an ending point which characterizes NP(|f|) by being the first moment of NP(|f|)" (p. 240). Given that we are talking about aspect on a sentential level in this chapter, it suffices to regard "|f|" as a situation. Paraphrasing the above in this way yields: *a situation in which the EP has an ending*

*point which characterises the situation's NP by being the first moment of that NP.*[14] This meaning, as well as the present tense meaning, are represented in his notation in the following way:

(19) Notation of *urbs condita est* in Ebeling (1978, p. 241)[15]

"... Σ . [*x*; *y*R$_1$(NE(*x*))]
[*y*; *y*R$_1$(NE(*x*))] . [*z*; *w*R$_2$ *z*]
[*w*; *w*R$_2$ *z*] . THE moment
city = [founded]
[founding]..."

About this notation, Ebeling notes that $R_1$ signifies "starting at, and characterised by, the point of completion of" (p. 241), which naturally corresponds to 'CONCL', whereas $R_2$ refers to "included in" (p. 241). Let us analyse this notation from top to bottom. The sigma line represents the EP: this is characterised as *x*. It is said about *y* that it is characterised by the point of completion of *x*, which corresponds exactly to the definition of the perfect given above. The second line of the notation above refers to the NP: this is the meaning that is itself characterised by the point of completion of *x*, but it is also the period in which THE moment is included: the present tense meaning says *w* is *included in z*, and that *y* is *convergent* with *z*. In contrast to the past tense meaning described above, then, the present tense meaning is presented here as "NP includes THE period", as *w* is convergent with THE period, which $R_2$ connects to *z*, the NP, by stating that it is "included in" *z*.

Although the above notation is more precise, it is clearly much clunkier than the notations we are used to. Rule c in Ebeling's work (p. 241), which allows us to rewrite these meanings, which are essentially relational, as single meanings on the sigma line as a notational convention: the two notations are identical in meaning. The above notation of *urbs condita est* thus becomes:

[14] As we will see in section 3.4, sometimes aspectual meanings can also be applied directly to verbs within a larger sentence, in which case it is the EP (i.e. the event) which is coordinated with the NP (i.e. the rest of the event described).

[15] Note the use of '.'. At this stage of the analysis, Ebeling uses this symbol to indicate an as yet unspecified relation. Later this symbols is replaced in these positions by the '/' symbol.

(20) Notation of *urbs condita est* in Ebeling (1978, p. 240)
"... Σ . CONCL . NOW
city = [founded]
[founding]...."

In the above, then, 'CONCL' refers to the perfect aspect meaning, and 'NOW' refers to the NP being included in THE period. This is the definition of the present tense that will be maintained in this work.

To recapitulate, the definition of the past tense held to here is "preceding THE period" (Ebeling 1978, p. 14), and the definition of the present tense is "including THE period". The above definitions are sufficient for the description of the present simple and the past simple. However, a different picture emerges when discussing what is commonly referred to as the *future simple*. An example of this would be *I will be hungry*. The structure of this sentence is clearly different from the other sentences. The 'tense' in this sentence is not morphologically given. Rather, it is introduced by the verb *will*. This might not have made a significant difference. However, 'another' tense meaning also can also affect this verb itself: *I would be hungry* is the past tense version of present tense *I will be hungry*. This being the case, the semantics of the verb *will* cannot simply take the place of either of these tenses. The future reference that is contained in *will* can therefore not be said to place the event with regard to the orientation point, as this is what the tense marking does. One might be tempted to argue that it places the event period after the narrated period. In other words, when one says *I will be hungry*, one is still talking about the present, but marking the present by placing it in a relation to an expected event – in this case being hungry. *I will be hungry* would present the present as the narrated period, and the event period as following the present moment. *I would be hungry*, by contrast, places the narrated period in the past (i.e. before THE period), and places the event of being hungry in some projected future from the perspective of that narrated period.

However, this description falls short, because there is nothing wrong with present tense sentences which also convey messages about the future, e.g. *The train leaves tomorrow* or *We're having dinner at eight*. If the function of *will* were simply to project the event into the future from the perspective of the NP, then surely it would be required in these cases. However, *The train will leave tomorrow* and *We will be having dinner at eight* sound rather less definitive than the present variants. Contrasting these examples, it appears that *will* gives information about the attitude of the speaker towards its occurring. In this way, its modal meaning is similar to that of a *mode* or *intention* (see section 1.5), rather than a tense.

### 1.7.2 – Aspect and modality

Aspectual meanings have already been discussed above to a considerable degree. Ebeling considers the function of tense to be relating the period under discussion to the autoprominent period. When they occur without any aspectual marking, it is also assumed that the narrated period and the event period are one and the same: the meanings are not made divergent. For instance, *I was hungry* places the NP of the situation before THE period (usually the moment of speaking). Moreover, it refers to the entire time I was hungry: no part is explicitly included or excluded of this state of affairs. As we have also seen in the above, the 'future tense' in the English language fulfils a rather different function, namely indicating the speaker's uncertainty about the situation described, rather than simply future reference. As will be shown in what follows, aspectual meanings coordinate the NP and the EP of a situation, rather than the NP and THE period of a situation.

Two aspects are distinguished in the English language: the perfect aspect and the progressive. As noted, Ebeling gives a clear definition of the perfect aspect: "a fact |f| or a feature |f|, such that NE(|f|) [EP here] has an ending point which characterises NP(|f|) by being the first moment of NP(|f|)" (Ebeling 1978, p. 240), which can be paraphrased as *a situation in which the EP has an ending point which characterises the situation's NP by being the first moment of that NP*. The EP in question, though part of the message, is placed outside of the period that the situation specifically refers to. As such, a perfect aspect sentence does not refer to the event itself directly, but to the time that follows that situation. A simple example of a perfect sentence would be *I have written many words*. This sentence does not refer to the present moment as the moment in which words are being written. Rather, the period after this EP is the NP, meaning that the word-writing event (i.e. the EP) precedes the moment under discussion (i.e. the NP), which includes the present. In other words, perfect aspect made it so that the time that the sentence refers to is different from the time in which the event discussed in the sentence occurs. In this case, the event precedes the moment discussed: right now, the writing event is complete.

The progressive also needs to be discussed. As argued above, the first time Ebeling discusses 'NOW', aspect and tense are still conflated. He gives a provisional definition of 'NOW' in the context of a progressive sentence ("John is reading a newspaper" (p. 239)) as a "a fact |f| such that NP(|f|) has its beginning and ending period in NE(|f|) [EP here], and NP(|f|) includes THE period as its orientation point" (Ebeling 1978, p. 239). The part "includes THE period as its orientation point" refers to the present tense, as discussed above. Although Ebeling does not define the progressive again in isolation,

the unequivocal meaning of the present tense presented above in the context of "*urbs condita est*" (p. 241), as well as the requirement of the NP, EP, and THE period to be defined divergently, leaves "a fact |f| such that NP(|f|) has its beginning and ending period in NE(|f|) [EP here]" as the definition of the progressive aspect. This would mean that the event is not related as a whole, but rather only the parts *within* the event, without the initiation or the conclusion of the event. To verify this perspective on the progressive aspect, it seems appropriate to turn to another analyst, who provides a more extensive discussion of this aspect. Wolfgang Klein (1994) does just this. He bases his work on terms which are different, but in practice correspond to various components of semiotactic analysis as well. For one, he uses the term *time of utterance* (TU) instead of *THE period*. In most cases, this term does lead to an accurate representation of time: the statement *I am hungry* is true if the speaker is hungry at the moment of speaking. Klein does note some of the limitations of this definition, however:

> In a sense, a coherent sequence of utterances – a text, be it written or spoken – is a unit, and it should have a single relatum. But then, it would be strange to assume that this relatum is, for example, the time at which the whole text was produced: what is, then, the utterance time of the Bible, or the first book of Moses? In these cases, the characterisation of the deictic relatum as 'time of utterance' is clearly insufficient. (1994, p. 67)

Ebeling seems to have resolved this problem by defining this orientation point by its deictic nature alone. Nevertheless, because Klein is cognisant of this caveat to his term, his generalisations are still compatible with a semiotactic perspective.

Klein further distinguishes between what he calls the *time of situation* (TSit), which he defines as the timeframe within which the situation described actually holds, and the *topic time* (TT), which is the "time for which such a claim is made" (1994, p. 3). As an example, he provides the sentence "There was a book on the table. It was in Russian" (p. 4). The topic time of the latter sentence is relegated to the past, but naturally the situation of the book being Russian does not end in that past. This proves that "tense doesn't directly specify the 'time of the situation'; rather, it imposes a temporal constraint on the time for which the assertion is made" (1994, p. xii). If one were to look for semiotactic analogues to these two terms, EP and NP would naturally present themselves. Both the *topic time* and the NP refer to the timeframe the sentence refers to, regardless. It appears that TSit does not refer to any aspect of the sentence itself at all, but rather to the real world. The notion of *event period*, on the other hand, strictly

refers to an aspect of the semantics of the sentence. Given that *interpretation* falls outside the scope of the semiotactic framework, the notion of EP therefore seems to be better suited for the present work. On the other hand, the notion of TSit does make it possible to make some more generalisations about the compatibility of aspectual features with different types of verbs. For instance, Klein notes that 0-state contents (i.e. indefinitely true statements) do not combine with aspectual meanings: "*Two plus two is making four" (p. 101) (the asterisk symbolises unacceptability). Klein: "[0-state verbs are] those for which there is no TT-contrast; if they are linked to a particular TT, then they are automatically linked to any other TT" (1994, p. 101). From a semiotactic perspective, we would merely say that the interpretation leads to an illogical situation. In any case, when Klein's work is interpreted with this in mind, the generalisations he presents are valuable within the framework. This corresponds with the observation above that tense marking positions the NP with respect to THE period.

Interestingly, Klein also argues that "aspect concerns the relation between TT and TSit – the way, or sometimes ways, in which some situation is hooked up to some TT" (p. 6). Given that TT corresponds to NP, and TSit is comparable to EP, this would suggest that this is equivalent to saying that aspect concerns the relation between EP and NP, which is exactly the distinction Ebeling describes. On the topic of the progressive, Klein notes that "the time for which an assertion is made falls entirely within the time of the situation; this gives the impression that the situation is, so to speak, seen from its inside" (1994, p. 108). This leads to a contrastive reading between sentences like "*John slept*" and "*John was sleeping*" (p. 110), for example. Klein notes:

> Somehow, the latter sounds 'stative'. . . The former, by contrast, sounds 'like an event', on par with *John opened the window*, although *to sleep* is normally not considered to be an event verb. The time-relational analysis of PERFECTIVE and IMPERFECTIVE accounts for these intuitions: in the IMPERFECTIVE, nothing changes within TT, no matter whether the lexical content includes one or two states. In the perfective, there is always such a change within TT. . . for the latter, the ensuing state is lexically characterised, whereas this is not so for the former. (p. 110)

The term *perfective* must not be confused with the term *perfect* in the quote above. A *perfective* event contains its own conclusion, whereas the *perfect* is marked by this event already having been completed (hence TT follows TSit in the perfect). In the above, *John slept* is regarded as perfective: the entire event is referred to, including its end. By contrast, the *imperfective* refers to an event as it is ongoing, but not being completed. In

the case of *sleeping*, this means that nothing is happening: the person remains asleep. By contrast, *John slept* covers the entire sleeping event, i.e. also its beginning and endpoints, which is why it sounds like an *event*. For this reason, the *imperfective* variant (i.e. the progressive "*John was sleeping*") is characterised by Klein as "TT INCL TSit" (p. 108), which means "TSit is interpreted as fully including TT" (p. 99). In other words, TSit encapsulates TT completely. Klein's definition is equivalent to what has been taken to be Ebeling's definition of the progressive, i.e. "a fact |f| such that NP(|f|) has its beginning and ending period in EP(|f|)" (1978, p. 239). This definition of the progressive will therefore be maintained. One is not reading when one starts to read, nor is one reading when one is done reading. One is only reading when the reading event is ongoing.

In sum, the definitions of the two aspectual meanings in English can be contrasted to the definitions of tense by the things they relate: aspectual meanings relate the NP to the EP, whereas tense relates the NP to THE period. It has been argued above that *will* has a function similar to mode or intention: it marks the amount of certainty of the speaker rather than simply referring to the future. Tense meanings do not combine in the same clause. One cannot say, for instance, **He hassed problems*. However, aspect meanings can appear in the same sentence. To exemplify this, note the following examples:

(21) She is reading in my room.
(22) She will be reading in my room.
(23) She will have been reading in my room (for hours).

All of these sentences are perfectly acceptable. This leads to two conclusions: a) any clause can only have one tense; and b) there can be more than one aspectual meaning in a clause. The relations between all these meanings must be clarified for a complete picture of tense and aspect to emerge.

The first example is fairly easy to explain: the aspectual meaning places the NP within the EP of *reading in my room*, and the tense marking makes explicit that THE period falls within this NP. As the semiotactic notations above showed, the state of affairs that marks the EP (i.e. the nexus relation in most sentences) is dominated by the sigma, so that this can be specified by temporal meanings (see section 4.5.3.2 for a deeper discussion of nexus and sigma). Looking at the form of (23) allows us to deduce the order in which these temporal meanings apply. The two temporal meanings here distinguished are the present tense and the progressive. In a present simple sentence, there is agreement between the subject of the sentence and the main verb, e.g. *She reads*

*in my room*. The progressive meaning, on the other hand, is associated with the structure *be* + V-*ing* (i.e. the finite verb of the original sentence is affixed with –*ing*, and *be* becomes the new finite verb). If the tense meaning were applied before the progressive meaning, this would therefore lead to *She reads in my room* first, which would then be turned into **She be readsing in my room*. The fact that the result is not a present progressive sentence means that the order must be reversed: the progressive is applied first, which singles out a part of the reading event in which it is ongoing. Then, THE period is related to the NP in the way the present tense requires: NP includes THE period. The order in which the meanings are applied is important, because this will have to be reflected in the notation.

Example (22) refers to a situation in the present, in which the speaker is projecting an ongoing event (in the future). Looking at the form of this construction shows us a lot about the order in which the temporal/modal meanings are applied here. To analyse this, let us first discuss these forms. As mentioned, the progressive in English takes the form *be* + V-*ing*. Apart from that, the modal verb *will* is applied in the following way: *will* + VINF, as a sentence like *I will eat* shows. Lastly, tense marking requires present tense agreement on the main verb. In the case of (22), however, the verb *will* takes this agreement, and it never shows number agreement, as *He will eat* shows. It can only be contrasted to its past tense form: *He would eat*. Taking these notions together, the following picture emerges:

| | |
|---|---|
| *She read*INF *in my room* | No temporal meanings applied |
| *She be*INF *reading in my room* | Progressive applied |
| *She will*INF *be reading in my room* | *Will* and progressive applied |
| *She will be reading in my room* | Tense, *will* and progressive applied |

As we can see, the order in which these meanings are applied to the situation as a whole is reflected in the form. The progressive meaning comes first, which is followed by the modal meaning *will*. The tense of the sentence cannot be shown overtly on *will*, but it may be noted that the past tense variant of this sentence is *She would be reading in my room,* showing that the verb *will* does take tense agreement.

This ordering can be further exemplified by looking at (23), in which two aspectual meanings peacefully coexist. This raises the interesting question of how these meanings interact. It may be clear, right off the bat, that the NP of the one aspectual meaning is not identical to that of the other. This would mean that we are both viewing the event from the outside (as the perfect aspect requires) and from the inside (which is what the progressive contributes). This likely means that the meaning that is applied first will

have an effect on what the second meaning specifies. It will here be assumed that when two aspectual meanings occur together, both meanings are left intact, and change the meaning in a particular order, rather than both affecting exactly the same situation.

With this in mind, let us turn to what Klein has argued about the interaction of the perfect and the progressive, using the contrast between "John had washed the car" and "John had been washing the car" as an example (p. 119):

> The first utterance puts TT into the posttime of *John washed the car*, the second in the posttime of *John was washing the car*. In the first case, the target state of John's washing the car was reached ('car washed'). In the second, it is not, or at least, not necessarily; we may be still in the source state of John's washing the car; nothing in the lexical content tells us how this posttime is: John could be bored, tired, wet, the car may be half-washed, or whatever. It is only our world knowledge which tells us how the world is after someone's having been washing the car. (1994, p. 119)

This characterisation of the perfect progressive suggests that the progressive meaning is the first meaning to specify the situation, because when an imperfective event is placed in the past, it is unclear whether it has been completed. The opposite (i.e. the perfect being applied first) would lead to a reading in which a situation in which something is completed is still ongoing, which is illogical. If we apply the progressive meaning first in the case of *She will have been reading in my room,* this would again be *She be*INF *reading in my room*. How do we progress from this point forward? We may consider the first NP/EP configuration, in which a reading event is ongoing, as an entirely new situation. Doing so allows us to take this situation and configure the NP and EP in the way the perfect aspect prescribes. Note, however, that *have been reading* does not imply that the reading event is completed in the past, as Klein has also noted. Rather, it is the *ongoing* reading event that is placed before the NP of the perfect situation. Since what is placed before the NP by the perfect is the EP, this leads to the conclusion that *the NP of the progressive situation plays the role of the EP in the perfect situation*. As such, *She will have been reading in my room* does not imply that the situation of her reading in my room appears in the future of a completed period. Rather, it means that the reading will have been going on for some time at a certain point in the projected future. The perfect aspect will therefore influence the meaning of the progressive, before *will* projects this as uncertain. This corresponds to the way in which these temporal meanings are applied. First, the progressive (*be* + V-*ing*) is applied, after which the perfect (have + V-

*ed*) is. The modal *will* and the tense meaning follow in the same way as they did in (22). This leads to the following ordering:

| | |
|---|---|
| *She read*INF *in my room* | No meanings applied |
| *She be*INF *reading in my room* | Progressive applied |
| *She have*INF *been reading in my room* | Perfect and progressive applied |
| *She will*INF *have been reading in my room* | *Will,* perfect and progressive applied |
| *She will have been reading in my room* | Tense, *will,* perfect and progressive applied |

In the above, the perspective taken here on tense, aspect, and modality has been laid out. It boils down to the following main points:

a. Tense relates THE period to the NP of a situation;

b. Without aspect, there is no explicit distinction between the EP and the NP of a situation;

c. Aspectual meanings specify the NP in relation to the EP of the event;

d. Modal verbs, such as *will*, serve to specify the truth value the speaker attaches to his or her description of the situation;

e. When more than one aspectual meaning is given in a sentence, they occur in a specific order, and $NP_1$ plays the role of $EP_2$ in the successive configuration;

f. When more than one aspectual meaning is given in a sentence, the final NP is specified for modality and tense.

### 1.7.3 – The notation of tense and aspect

It is important now to implement these principles in the semiotactic framework. Before any notations can be drawn up, the relations that the tenses and aspectual markers contribute must be linked to symbols which can be included in the notation. These are presented below:

| | | |
|---|---|---|
| 'PR' | = | "containing THE period" |
| 'PA' | = | "preceding THE period" |
| 'PF' | = | "an event or situation of which the EP has an ending point which characterises the situation's NP by being the first moment of that NP" |
| 'PROG' | = | "an event or situation of which the NP finds its beginning and ending points in EP" |
| 'WILL' | = | "presented as existing in the imagination of the speaker" |

Most of these correspond to slightly different symbols in Ebeling's (1978) work, and the definitions presented are somewhat simplified, but the essential message conveyed using them is the same. Concerning the notation of tense and aspect, Ebeling notes that stratification is to be used when elements refer to the EP and NP (1978, p. 372). Taking 'PR' as an example, the fact that the projection is limited to a time connected to the present quantifies, rather than giving any specific characteristic of the situation itself. That is to say, it does not add anything to the projection of the situation itself, but it rather says something about where on the timeline this situation is to be found. Remember that one would notate *five apples* using stratification (see 1.3.3.3) because it does not specify anything about the kind of apples, but rather about the number of times the meaning 'apple' is projected. In the same way, any specification of the temporal properties of a situation as a whole does not change that situation in itself, but rather what place it takes on the timeline (i.e. what part of the timeline it covers). Since tense and aspect deal in temporal quantification rather than changing anything about the situation itself, both these types of meaning belong on the sigma line. The order in which the temporal meanings here described are applied to the situation must be presented from left to right in the semiotactic notations. Take the notation of (23) above (repeated in (24) below):

(24) She is reading in my room.

| | | | |
|---|---|---|---|
| | 'Σ / PROG / PR | | |
| she | = | $read_1$ > | $[in_1]$ |
| | | | $[in_2]$; room. . .' |

In the notation above, the progressive meaning is applied before the present tense meaning is. The interaction between these meanings has already been explained in section 1.7.2. Moving on, (22) (repeated in (25)) provides a further meaning, i.e. a modal one. As stated, the progressive applies before the modal verb, and the present tense meaning applies last. This is semiotactically notated as follows:

(25) She will be reading in my room.

| | | | |
|---|---|---|---|
| | 'Σ / PROG / WILL / PR | | |
| she | = | $read_1$ > | $[in_1]$ |
| | | | $[in_2]$; room. . .' |

It is useful to consider the implications of notating the modal verb *will* in this way. Is this an adequate way of representing all modal verbs? Note that *can, may, shall* etc. and their past tense variants are all considered modal verbs. I would also say that the impact of all these verbs is not on the projection of the event itself, but rather on the possibility

of its manifestation in the world. In this sense, they must all bear at least some relation to the NP as a whole, rather than the event described. Without defining all these meanings, it is assumed here that they must all be notated on the sigma line for this reason, and because they are all formally equivalent (i.e. they all require a bare verb to follow them and do not inflect for person).

The final example to be notated is (23) (repeated in (26)). As discussed above, *She will have been reading in my room* characterises THE period by being before a period after an ongoing reading event. This configuration is notated as follows:

(26) She will have been reading in my room.

| | | | | |
|---|---|---|---|---|
| | ‘Σ / PROG / PF / WILL / PR | | | |
| she | = | $read_1$ | > | $[in_1]$ |
| | | | | $[in_2]$; room. . .’ |

1.7.4 – Temporal adverbials

In the above, just a few sentences containing temporal adverbials have been mentioned. Of course, their status in the semiotactic notation must also be elucidated. Is their status different from that of other adverbials? Ebeling has consistently notated temporal adverbials on the sigma line (1978, p. 372; 2006, p. 172). An example of this is given below:

(27) “She often cries” (Ebeling 1978, p. 372).

| | |
|---|---|
| | “...Σ / often / NOW |
| she | = crying. . .” |

About this notation, Ebeling notes: “ ‘Σ’ with its dominated layer is the projection of features of one act of crying, ‘often’ of features of the sum of all these acts, and ‘NOW’ of features of the period in which these acts are intermittently present” (p. 372). There are some problems with this assessment, which have to do with what the EP is, what it expresses, and what it can do. Ebeling considers the EP to be more or less homogenous: it can only refer to the event on the nexus line, and this event can only be a full event. I would argue for a different perspective on these meanings, however. In Ebeling’s example, *often* is an adverb because it attributes its meaning to the verb *crying*. The notation we would get if we left this relation intact is the following:

(28) “She often cries” (Ebeling 1978, p. 372) alternatively notated.

| | | | |
|---|---|---|---|
| | ‘Σ / PR | | |
| she | = | $cry_1$ | > often’ |

The EP of this notation would be one in which 'she' is the subject of an intermittent crying event. In other words: in this notation, the verbal meaning '$cry_1$' would be specified by a meaning containing 'intermittent' and 'frequent'. If these are regarded as properties of the event itself, then the EP of the event is just a straight line, in which crying often occurs (but, by implication, also times in which is not crying). This representation has certain advantages. For one, it may be noted that it keeps the relations that the grammar of the language presents intact. It also keeps every lexical meaning, i.e. every part of the projection of the event itself, under the sigma. The features of the EP are completely determined by situation described below the sigma. In fact, the two are identical. The term EP focuses on the duration of the nexus event, the length of which is always determined through the use of interpretation. When an element only concerns this EP, rather than its position compared to the NP, it must therefore be notated below the sigma. For instance, we may say *She read the book quickly*, and this might lead to the projection of a shorter EP with the word *quickly* than without, but this does not mean that *quickly* should be on the sigma line. Rather, it specifies the way in which the reading event proceeds, which may lead to the logical conclusion that the EP was not as long as might have been expected. Something may consistently be true, even though it does not always manifest itself. For instance, when one says *I speak a little Russian*, clearly this does not indicate that the sentence one utters at that moment is Russian itself, which one might have expected, because the sentence is in the present tense. The sentence simply conveys that one has the capacity to do so, and may therefore be assumed to engage in the activity occasionally. It is this state of affairs that the nexus relation conveys – and this therefore functions as the EP, which holds also true at the moment of speaking. Similarly, *often crying* may give rise to the projection of a longer EP, in which crying and not-crying follow one another in succession, but that does not mean that both these states together are not part of the EP. The word *often* does not change the relationship between the EP and the NP or between the NP and THE period: it merely specifies the event itself. For this reason, I would propose not notating it on the sigma line, but rather below the sigma line. The implications of this can be shown using other examples:

(29) The train leaves tomorrow.
'Σ / PR
train = $leave_1$ > tomorrow'

(30) They checked out yesterday.
'Σ / PA
they = $check\_out_1$ > yesterday'

(31) I haven't done anything like this in years.

| | | ‘Σ / PF / PR | | |
|---|---|---|---|---|
| me | = | [$do_1$] | > | [$in_1$] |
| | | [$do_2$]; anything . . . | | |
| | | | | [$in_2$]; year’ |

(32) We're having dinner at eight.

| | | ‘Σ / PROG / PR | | |
|---|---|---|---|---|
| we | = | [$have_1$] | > | [$at_1$] |
| | | [$have_2$]; dinner | | |
| | | | | [$at_2$]; eight’ |

Sentence (29) is in the present tense, yet it contains the word *tomorrow*. If this were notated on the sigma line, one might have expected the present (THE period) to be contained in the timeframe contributed by *tomorrow*, which is does not cover the meaning of the sentence: the time denoted by *tomorrow* is by definition not the present. The present tense indicates the relevance of the event to the speech situation: the situation in the present is marked by the event which is set to happen tomorrow. The point of a sentence like this is to connect the eating event to the temporal adverbial, and together they are relevant to the present moment. This is markedly different from saying that the moment of speaking *is* tomorrow, which would be the projection of the event if the NP was specified by *tomorrow*, and THE period was found in that period. In (30) the past tense makes clear that there is a lack of relevance to the speech situation: in THE period, this event does not play a role. Of course, the event only occurred *yesterday* from the perspective of *today*, which includes the present moment, but this is no reason to use the present tense. Rather, it contributes the occurrence at the relevant moment. Past events are not relevant in this way, unless the present perfect is used, in which case it is relevant in that the conclusion of the event marks the situation as it exists right now.

The importance of contextual relevance can be shown by analysing a present perfect sentence. Such a sentence contains the present tense, yet the event described is placed in the past, before the NP. Sentence (31) requires that *in years* only specify the event, and nothing else. If *in years* positioned the NP (or THE period), this would mean that *in years* occurs now. This does not seem to hold, however. Rather, what is conveyed is that at the present moment, the time of *me doing nothing like this for years* has ended. For this reason, the meaning of this sentence can only be maintained if the event itself is specified. The event is in the past from the perspective of THE period. In this case, the situation is described because of its contrast with the present. The situation in which it

has ended is the NP in which THE period is found for this reason. This is what the perfect aspect contributes to this sentence. The fact that it does not occur anymore *is* relevant to the present in this case: it is what sets it apart. The present tense makes sense for this reason.

Similarly, (32) contains a present progressive as well as a time indication. We assume that this is a reference to the future, even though there is no explicit prompt to do so. That is to say that when we take the sentence literally, it means that it is now eight o' clock, and we are eating, but the fact that this statement is made, makes clear that interpretively, the event is to take place in the future. This cannot mean that the situation as a whole is set there, however, through overt means: if the narrated period were to fall into the EP if the NP were determined by *at eight o' clock*, the present moment would have to be in the future. We may say, rather, that the point of a sentence like this is to connect the eating event to the timeframe, and together they are relevant to the present moment. For this reason, the present tense is used here. The progressive is used because the event is projected to be ongoing at that moment. For these reasons, the notation given above is presented in the way it is.

### *1.8 – Conclusion*

In summary, the following fundamental points form the basis for the semiotactic framework:

- *Language as a set of form-meaning units*: linguistic signs consist of two parts: a phonetic part (i.e. the sound associated with it), and a semantic part (i.e. the message associated with it). The connection between these forms may be arbitrary (e.g. there is nothing doglike about the sounds that make up the word *dog*), but the connection between them is invariant within the same language;

- *One form – one meaning*: the assumption that one form only expresses one meaning, which forces the linguist to distinguish signs on the basis of their forms, and to generalise in order to give a single, unified meaning for a single form;

- *Distinction between interpretation and meaning*: the meaning that a given sentence or phrase conveys is often not sufficient: the hearer will have to complete the projection through *interpretation*: he or she will have to take the context of the speech situation into account to find the intended message of the speaker. This does not mean, however, that his or her speech situation itself is part of the linguistic data;

Moreover, the following notions are important in the application of the semiotactic framework:

- *Convergence and divergence*: elements can either be used to specify the same meaning (in which case they are convergent, and occur on the same line in the notation) or they refer to separate meanings (in which case they are placed on different lines in the notation). When a divergent relation is presented without any accompanying meaning, the symbol used is '↓'. If a meaning connects two divergent meanings, this means that it distributes two divergent roles. These are each expressed on a separate line, notated directly above one another, and enclosed by brackets '[ ]', to indicate that both aspects are part of a single complex meaning;

- *Situation* (symbol 'Σ'): every full sentence projects a situation, i.e. a state of affairs which is limited in time (although this may not be overt in every language). The sigma dominates the rest of the notation, and can be specified by temporal, modal and aspectual meanings;

- *Nexus* (symbol '='): the message contained in a full sentence is usually that something is true about something else for some specified amount of time. The thing about which the statement is made and the attributes ascribed to it are separated through the nexus, indicating that the two forms are divergent: the first nexus member is not argued to carry the properties described in the second nexus member forever, but only for the time referred to by the situation. The relation between first and second nexus member only serves to characterise the situation, not either of these elements individually;

- *Limitation:* limitation (symbol '–') indicates that the entity or entities to the left of it carry the properties of what is to the right of it (e.g. *the barking dog* → 'dog – $bark_1$'). This relation can also be temporal in nature (temporal limitation, symbol '~'), in which case it does not limit the category of entities referred to, but rather the state such an entity must be in to be an appropriate entity (e.g. *a dog barking* → 'dog ~ $bark_1$');

- *Gradation* (symbol '>'): gradation also specifies meanings, but not directly. Rather, it specifies the *abstraction* of such a meaning (i.e. a meaning represented as an entity, itself symbolised here using '^'). In *I ran quickly*, for instance, it is not the subject that is described as quick, but the running (→ 'me = $run_1$ > quick'). This relation can also be temporal (temporal gradation, symbol '⊃'), meaning that the occurrence of that meaning is predicated upon some other meaning also occurring, e.g. *I work hard having drunk a cup of coffee* → 'hard ⊃ $drink_1$. . .';

- *Stratification* (symbol '/'): some meanings do not specify other meanings per se, but rather the amount of times a given meaning occurs (e.g. *five apples* → 'apple / 5'). This

is also used to indicate temporal specifications on the sigma, as these do not change the situation itself, but rather the time within which it is found;

- *Incorporation* (symbol '‿'): sometimes two words are presented as a single unit: they specify or indicate whatever meaning they are connected to together (e.g. *blue-black* → 'blue‿black').

- *Time*: in the analysis of time, three different periods are distinguished within the semiotactic framework:

| | |
|---|---|
| Event period (EP): | the period during which the event described projected to take place |
| Narrated period (NP): | the period which is actually being referred to using the sentence |
| THE period: | the *autoprominent* moment |

*Tense* meanings relate THE period to the NP, *aspectual* meanings relate the NP to the EP, and *modal* meanings specify the certainty of the speaker towards NP, much like the *mode* (meaningful word order) and the intention (meaningful intonational pattern) of any spoken sentence. These meanings are all placed on the sigma line, and specify the situation through stratification.