Aspect, tense and modality: theory, typology, acquisition
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Chapter 1

Introduction

1.1 Introduction

The majority of human beings take one of their most typical characteristics for granted: their ability to use language. However, this ability is one of the most extraordinary and sophisticated properties of human beings. Seemingly simple aspects of specific languages are practically impossible to describe correctly, yet human beings use them without any problems. Although it takes a few years, children learn to speak like their parents, including the most complex constructions, without any explicit instruction. There is large variation in language systems all over the world and all these different systems are adequate systems for human communication. What, then, is language exactly? What is it used for and how does it work? And what are the cognitive mechanisms that make language use possible?

Unfortunately, the above questions are in general studied independently. Theoretical linguists are concerned with the question what language systems look like and, possibly, how they function in communication. Psycholinguists on the other hand are concerned with the question how our brains work and how language is processed and acquired. The two groups of scholars do not often turn their attention to each other’s field of research. However, there are probably strong relations between the two areas. On the one hand, cognitive processes may be of strong influence on possible language systems. What is easier to process and to acquire may be crosslinguistically more frequent. Language systems cannot be fully understood if it is unclear how the system develops in individual language users. On the other hand, the knowledge on variation in language systems may help in understanding the mental processes that play a part in language use and in language acquisition. Recurring linguistic properties may reveal important insights in cognitive processes. Although there is large variation in the acquisition of forms in different languages, from a more abstract viewpoint, there may be universals in the acquisition of the communicative and semantic functions that are expressed by language. Here, the study on linguistic variation might provide helpful insights. It is thus necessary to combine the knowledge of the two disciplines in order to establish
a deeper understanding of language and language users, their communicative needs and cognitive capacities.

In this thesis an attempt is made to examine the relation between universals in typological variation and in first language acquisition. This relation will be examined in the semantic domains of aspect, tense, and modality and the related domains of irrealis, evidentiality and quantification. These domains have been subject to a considerable number of studies on the theoretical side, on typological issues and acquisitional phenomena. This study focuses on the question to what extent the variation in grammatical systems of aspect, tense and modality is identical in languages of the world and in stages of language acquisition. This chapter discusses in more detail the significance of universals in adult language (1.2) and in child language (1.3) and the relation there might be between the two (1.4). Section 1.5 discusses how a functional grammatical theory might help to investigate and explain linguistic phenomena. Section 1.6 discusses the main research question and the structure of this thesis.

1.2 Linguistic Universals

At present there are about 6,000 different languages known, including extinct languages. These languages exhibit a rich diversity in every possible aspect of their linguistic systems: sounds, word and sentence structure, lexicon, social rules for appropriate language use, etcetera. Despite the fact that the variation is immense, there are limits on variation: only a subset of all logically possible combinations of linguistic properties is actually attested. Variation in language systems is not arbitrary. There are systematic similarities, presumably determined by essential universal human characteristics. One of the ultimate aims of linguistics is to discover uniformities between languages and the patterns in rule systems. If it is known what are possible and impossible languages, this will help to understand how the human mind works.

The quest for language similarities or linguistic universals is based on crosslinguistic comparisons (Comrie 1989; Croft 2003; Greenberg 1963). Linguistic universals are of different types. Firstly, there is a distinction between on the one hand unconditional or unrestrictive universals and on the other hand implicational universals. Unconditional universals state a constraint on possible language types on one specific parameter, independent of other linguistic properties, such as ‘Indefinite articles never have more than two syllables’ or ‘No language has only VC or CVC syllables’. More often however the presence or absence of a linguistic property is related to the presence or

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absence of another property, so that the universal is implicational. An example of an implicational universal is the presence of reflexives: If there is a pronominal reflexive for first person, then there is also one for second person and third person (Faltz 1985). In other words, no language has first person reflexives without also having second and third person reflexives, whereas the opposite configuration does occur. Implicational universals reveal important information about languages as they connect linguistic properties that are logically independent. The general format of an implicational universal is: If Q, then also P, which implies that there are languages with both properties, without both properties or with only property P, but there are no languages with only property Q. This is presented in (1):

(1)  \[ \text{IF } Q, \text{ THEN } P \]

\[
\begin{array}{ccc}
P & Q & \text{Attested} \\
- & - & \text{Attested} \\
+ & - & \text{Attested} \\
+ & + & \text{Attested} \\
- & + & \text{Unattested}
\end{array}
\]

A second distinction in types of universals is between absolute and statistical universals: Absolute universals are by definition exceptionless, as far as we know. Statistical universals, however, have counterexamples, but they do reveal interesting information about relations between different linguistic properties. Suppose there are two properties, R and S, then theoretically there are four possible linguistic systems: with both properties, without both properties or with one of the properties. If there is no relation between the properties, it may be expected that the distribution between all four types would be randomly distributed, for example as in (2):

(2)  \[
\begin{array}{ccc}
+ R & - R \\
- S & 26 \% & 22 \% \\
+ S & 23 \% & 29 \%
\end{array}
\]

If, however, the distribution is not random and this deviation is statistically significant, it may be assumed that R and S are somehow related, even though this relation is not absolute. An example of such a relation is: If the dominant word order is VSO, the language is probably prepositional (Dryer 1992). A
possible non-random distribution of the two properties R and S is presented in (3):

\[
\begin{array}{lcc}
 & + R & - R \\
- S & 42 \% & 24 \% \\
+ S & 27 \% & 7 \%
\end{array}
\]

In (3), the presence of S seems to be dependent on the presence of R. There are hardly any languages (only 7\%) in which S is present, but R is not. Such a strong tendency is remarkable and needs an explanation.

In short, if both distinctions are combined, there are four different types of universals:

1. Absolute unconditional universals (all languages have P).
2. Absolute implicational universals (if a language has Q, then it also has P).
3. Unconditional tendencies (nearly all languages have P).
4. Implicational tendencies (if a language has Q, then it will probably have P).

It appears that most linguistic universals are of the fourth type; implicational tendencies. In many cases, there may be dependencies between more than two properties and they can be ordered as a sequence of implications, such as presented in (4):

\[(4) \quad M \subset N \subset O\]

in which ‘\(\subset\)’ can be interpreted as ‘is implied by’. The presence of M is implied by the presence of N, and the presence of N is implied by the presence of O. These sequences are called **implicational hierarchies**. An example of such a (statistical) hierarchy in the domain of phonology is presented in (5) (Jakobson 1941/1968):

\[(5) \quad /p/ \subset /t/ \subset /k/\]

The presence of the phoneme /p/ is implied by the presence of /t/ and the presence of /t/ is implied by the presence of /k/. In other words, a language with the phoneme /k/, also has the phonemes /t/ and /p/ and a language with the phoneme /t/, also has the phoneme /p/. The relation does not hold the other way around. An example within the domain of the lexicon is presented in (6) from Berlin & Kay (1969):
This hierarchy predicts that if a language has a color term more to the right, it also has the preceding color terms on the left.

There has been a recent debate about the usefulness and relevance of implicational hierarchies. Cysouw (2003) has warned against the practice to claim an implicational relationship on the basis of distributional frequency of different configurations of linguistic properties. He argues rightly that the distribution of configurational patterns is only relevant if it is significantly different from what can be expected on the basis of frequency of the individual linguistic properties alone. He concludes that there are only mutual statistically significant correlations between linguistic properties, but no true implications or one-way dependencies. In reaction to Cysouw, Maslova (2003), Dryer (2003) and Plank (2003) have objected to this latter stance and have convincingly shown that different types of unidirectional implicational relationships do exist and can be objectively established by statistical tests. They all, however, stress the importance of finding meaningful interpretations of relationships between linguistic properties after having established a statistically significant distribution of configurational patterns.

What is the information that implicational hierarchies provide? Firstly, they describe the possible or most likely configurations of linguistic properties in languages of the world within a specific domain. The hierarchy in (5) predicts that languages are likely to occur that have only /p/, or /p/ and /t/, or /p/, /t/ and /k/ are likely to occur, whereas languages with only /t/, only /k/ or with /t/ and /k/ but no /p/ are impossible or unlikely.

Secondly, implicational hierarchies describe the frequency of occurrence of certain items, both crosslinguistically and within a single language. The more to the left of the hierarchy an item is positioned, the more frequently the item will be found within languages of the world, but probably also within a single language. With respect to the phonological hierarchy this means that /t/ is more frequent than /k/ crosslinguistically, but also within one language.

Thirdly, implicational hierarchies provide ways to systematically describe differences between languages. From the hierarchy, the 'cut-off point' of a language may be determined: languages may have properties of the hierarchy up to a certain point. For example, if a language has property M and N of the hierarchy in (4) but not property O, then the cut-off point for that language lies between N and O. Since the hierarchy exhaustively defines the permitted configurations, no linguistic system will exist that does not conform to the
Consequently, it is only at the cut-off point that a language will change: it either loses property N or it acquires property O. This relation between typological and diachronic data was first hypothesized in Greenberg (1978) and later confirmed in many case studies. It is also at the cut-off point that there is regional variation and that language users are insecure about the grammaticality of the involved characteristics.

It is an ongoing debate how to explain linguistic universals in general and implicational hierarchies in particular. Within formal approaches to language, linguistic variation is presumably constrained by an innate universal grammar (UG) that contains possible values for different linguistic parameters. Within functional approaches on the other hand, the paradigm in which this thesis is embedded, universals are explained directly by general cognitive capacities of human beings, and properties of human communication (e.g. Comrie 1989: 24-29; Dik 1997a: 7). Implicational hierarchies are said to reflect scales of universal preferences (Haspelmath 2004; Venne mann 1983), also called scales of typological markedness (Croft 2003) and they are also referred to as markedness or preferential scales.

How do cognitive capacities and properties of communication influence linguistic systems? Human beings are dependent on their cognitive capacities in order to produce and interpret language; it may be assumed that linguistic structures that are easy to process are the most efficient and functional in communication and have the greatest chance to emerge and to survive in language use. Structures that cognitively tax our brains, on the other hand, disturb the fluency of communication. Such user-unfriendly structures have little chance to arise and will quickly change to structures that may be processed more efficiently (cf. Haspelmath 2004: 565). The way our brains process information will determine and restrict the possibilities for efficient linguistic rule systems. It is known for example that the processing of subordinate clauses is easier—all other things being equal—when they are at the beginning or end of the sentence (left- or right peripheral), than when they are in the middle of the main clause. It appears that there is a strong tendency for the order of noun and relative clause to correlate with the basic word in such a way that the preferred order arises, i.e., in SOV languages relative clauses tend to occur on the left, and in VSO languages on the right (Comrie 1989: 27).

Although it is not exactly known how the mind works, it is certain that different factors play a part in efficient processing, such as perceptual saliency, frequency, iconicity and economy. Perceptual saliency helps the hearer identify an element; frequent use of an element or structure facilitates storage and retrieval. The principle of iconicity is that ‘the structure of language reflects in some way the structure of experience’ (Croft 2003: 102). It is, for example, easier to process a sentence that iconically reflects the temporal ordering of
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A one-to-one relation between form and function may also be considered a reflection of iconicity. The principle of iconicity competes with the principle of economy: ‘the expression should be minimized where possible’ (2003: 102). It is more economic, but less iconic, to express different meanings in one morpheme (more functions in one form), such as in homonymy or when person and number are expressed in one inflectional morpheme.

Another way in which human cognition plays a part in linguistic systems is through the influence of conceptual structures. A recent approach to linguistic universals is the semantic map model: these are universal structures of conceptual knowledge, represented by the semantic or conceptual space, that describe the universal relations between conceptual values (Croft 2001: 105). Languages differ in how they map linguistic constructions onto the conceptual space, and in what meanings are covered by a single linguistic element (e.g. Anderson 1982, 1986; Croft 2001, 2003; Van der Auwera & Plungian 1998). A linguistic element always maps onto one or more concepts that are related within a conceptual space (Croft 2001: 96; Van der Auwera & Plungian 1998: 112). An example of such a conceptual space or conceptual continuum is presented in Bowerman & Choi (2001) for static spatial relationships, consider Figure 1-1:

![Simplified conceptual space for static spatial relationships and crosslinguistic variation in semantic mapping](adapted from Bowerman & Choi 2001: 485)

Figure 1-1. Simplified conceptual space for static spatial relationships and crosslinguistic variation in semantic mapping (adapted from Bowerman & Choi 2001: 485)

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2 Bowerman & Choi (2001) do not present a form for the expression of the four relations in the middle for Japanese.
It appears that languages do not categorize spatial situations in arbitrarily different ways. All of them appeared to be constrained by an underlying gradient—an implicational hierarchy—that orders spatial situations in the way shown in [Figure 1-1] (…) there was variation in how many spatial terms a language used to cover the situations, and in where the territory of one term left off and that of the next began, but if a term was used for more than one segment of the gradient, it covered adjacent segments. (Bowerman & Choi 2001: 485-86)

Besides cognitive skills of the language users, the function of language itself will be decisive in the development of linguistic systems. Language is an instrument for expressing communicative needs of human beings, such as asking questions; referring to entities, situations or ideas; making other people do, know or believe something; maintaining social relationships; describing events; expressing ones needs and wishes, etcetera. As the functions of language are assumed to be universal, the crosslinguistic variation in linguistic systems will be restricted: every language is an instrument for the same communicative functions. Although there are many different instruments, not every logically possible linguistic system could be an adequate instrument of human communication. For example, probably all languages have means to distinguish between interrogatives, declaratives and imperatives. A common expression form for this distinction is intonation and/or word order, whereas there is no language that expresses tense or number by a change in word order or intonation. It may be assumed that the former functions are very urgent or basic to communication and therefore need to be substantially different from each other: word order and intonation are perceptually very salient distinctions. A rather straightforward example of an assumed relation between form and communicative function is that a warning, for example for an approaching elephant, buffalo, or truck driver, is not efficient or functional if the part of the linguistic structure that signals the warning is at the end of a long construction. Finally, the fact that different linguistic rules have to collaborate and operate as a well-oiled machine probably blocks certain configurations of properties, as they would lead to ineffective systems, unsuitable for communication. Some universal linguistic phenomena thus ‘serve to make language more functional, either as a communication system in general, or more particularly relative to the communicative needs of humans’ (Comrie 1989: 26-27).

No sharp boundary can be drawn between the influence of cognition and of communicative needs, since they are interrelated. It may be assumed that the way human beings conceptualize the world influences what they want to talk about and how they structure their linguistic information. Concepts that are relevant to human beings (entities, activities or properties people naturally pay attention to) will in general also be relevant or basic aspects in communication. Thus, universal
cognitive bias and communicative needs are closely related to each other, and are expected to have influence on language systems. In sum, universal cognitive capacities and properties of communication determine the boundaries for linguistic variation; they are the restraining framework in which languages are shaped and continuously reshaped. Since language users all around the world have comparable cognitive capacities for processing information and constructing concepts, linguistic rule systems will look alike. And since language users all around the world try to reach similar communicative goals, the instruments they use, i.e. their languages, will show similarities. This influence could be schematically represented as in Figure 1-2.

![Figure 1-2. Constraints on typological variation](image)

There are different explanations for different universals. Every linguistic universal needs an explanation in cognitive or communicative terms, rather than in terms of an innate universal grammar (UG) (cf. Slobin 1985). In this view implicational hierarchies reflect extra-linguistic sequences going from least to most abstract in meaning, from most to least relevant to communication, most to least efficient in processing or perceptually most to least salient. None of these sequences is by itself a sufficient explanation for all possible restrictions: they complement each other. Future research may reveal further general social-cognitive characteristics in human beings that constrain possible language types.

### 1.3 Universals in First Language Acquisition

Linguistic universals are not only of importance to the description of linguistic systems of adults. In the study of first language acquisition there is an ongoing debate about what is universal in the process of language acquisition and what is language-specific (see Berman 1986; Bowerman & Levinson 2001b; Lieven 1997; Slobin 1985, 1997). Children start at the same, universal point, but end up
speaking different languages. On the one hand there is evidence that children follow similar developmental paths crosslinguistically, for example, active constructions are acquired before passive constructions and main clauses before subordinate clauses, but on the other hand there is evidence that children immediately pay attention to language-specific characteristics, for example, the acquisition of spatial expressions in English, Mayan languages and Korean follows language-specific patterns from the start (Bowerman & Choi 2001; P. Brown 2001; de León 2001; Levinson 2001).

What is universal in child language and what is language-specific? Similar to what was assumed for adult human beings, cognitive capacities of children are in principle universal (although there is individual variation in age and speed of development) and the same holds for their communicative needs. It thus may be assumed that cognitive capacities and communicative needs form a universal constraining framework in which language is acquired. The fact that children learn to speak different languages is obviously the consequence of a difference in language input.

One hotly debated issue is what the cognitive capacities are that children bring to the job. The debate has largely concentrated on the question of how children acquire the meaning of words. This may at first sight seem a rather uncomplicated aspect of language acquisition, but when one considers all the logically possible referents of a word, the problem of assigning meaning to words turns out to be virtually unsolvable. This can be illustrated by the famous example of Quine (1960: 29), who described this ‘problem of referential indeterminacy’ in the context of a native speaker who says *gavagai* to a field linguist at the moment a rabbit runs by. The linguist immediately assumes that *gavagai* means ‘rabbit’, but how can he be sure that the word does not refer to this specific rabbit only, to animals in general, to a specific part or property of the rabbit such as his head, furiness or color, to the activity of scurrying, etcetera? Besides, as Bloom (2000: 4) noticed, *gavagai* could equally well mean ‘Look!’ or ‘I’m bored’, or it could be the case that the chain of sounds consists of two or more words.

Children continuously need to assign meaning to words. But how do they succeed if there are simply too many possible referents? Apparently, children do not come up with all the logical options: there must be some restrictions on what they consider potential referents. One way to think of these restrictions is to suppose that there are very specific constraints on word learning (see Landau, Smith, & Jones 1988; L. B. Smith 2001; Waxman 1990, 1994). Children could for example assume that words only refer to whole objects or entities (the entire rabbit) and not to parts or properties of it (the ears, the softness) (see Golinkoff, Mervis, & Hirsh-Pasek 1994; Macnamara 1982; Markman 1989, 1994), or that words only refer to a whole category of objects (rabbits), rather than to a
subgroup of it (running rabbits, eating rabbits) (Markman & Hutchinson 1984). There is disagreement whether constraints or word learning principles are innate or learned, generally cognitive or specifically linguistic, universal or language-specific and at what age they play a role in children’s word learning.

A different way to face the problem of word learning is the recent social-pragmatic, usage-based account of first language acquisition, in which the idea of a priori constraints on word learning is weakened or even rejected (see P. Bloom 2000, 2001; Clark 2003; Slobin 2001; Tomasello 1999, 2001, 2003). On the contrary, this approach assumes that general social-cognitive abilities guide the child in language acquisition. In this view, Quine’s description of the problem of referential indeterminacy is mistaken, in that it ignores the influence of a shared context in communication. Children acquire language in social interaction and they make use of the shared context between parent and child for establishing possible referents for a word. Bloom (2000) states that:

words are learned through abilities that exist for other purposes. These include an ability to infer the intentions of others, an ability to acquire concepts, an appreciation of syntactic structure, and certain general learning and memory abilities. These are both necessary and sufficient for word learning. (p.10)

Tomasello (1999; 2001; 2003) poses that understanding of intentional and mental states of other persons is the crucial property that enables human beings to use language and to communicate. He argues that from around nine months, the ability emerges in human infants to understand others as intentional agents like themselves (Tomasello 2003: 3, 21-28). This means that children understand goal-directed behavior and attention of others as manifest in their behavior. This ability becomes manifest by some important changes in the behavior of children around this age, which do not take place in non-human primates. Firstly, children become able to check the attention of others by following gaze: they begin to share attention with others to an object or event of mutual interest (joint attentional frame). Such situations of joint attention create a domain ‘of current relevance’ for the child, a common contextual frame for interpreting the communicative intentions of the other. Secondly, children start monitoring emotional reactions of adults: they begin to understand that the communicative intention of the other is to change their own intentional states, for example, the other intends for the child to change his or her attention towards an object. Tomasello (2001: 133) states that ‘the understanding of intentions—specifically, the understanding that other persons have intentions towards my intentional states—is the very foundation on which

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3 It is only around age four that children understand the other as a **mental agent**: a person with plans, beliefs, and desires that are not necessarily visible in behavior (cf. Tomasello 1999: 179).
language acquisition is built’. The third change that Tomasello mentions is that, because children now understand the other as an intentional agent, they become able of imitative learning, also called social or cultural learning. The crucial point about imitative learning is that the child not just mimics the adult’s action: the child identifies with the adult, and understands the underlying goal or intention of the adult’s action. The child thus intentionally reproduces the adult’s intentional act and imitatively learns the use of tools and instruments. In this approach, the use of language as an instrument to communicate intentions is one of the domains in which social learning takes place. Children start to imitatively use language. The imitation of this intentional linguistic behavior leads to the acquisition of linguistic symbols, as a by-product of social interaction.

Tomasello further states that the process of assigning meaning to sounds takes place in contexts of joint attention and that children’s interpretations of adult speech are based on the assumption that this speech will be relevant to the ongoing social interaction. The ‘social contexts serve to “constrain” the interpretive possibilities’ (Tomasello 2001: 135): children simply do not come up with all the possible hypotheses for linguistic symbols, since they would not make sense in the context. In addition, Tomasello (2001: 135-36) assumes that, when children begin acquiring language, they have ‘an adult-like understanding of at least some aspects of the social activities in which they participate’. They have a growing ability to conceptualize the world similarly to adults, which also restricts them from certain hypotheses about word meanings. These conceptualizations, however, are not a priori tied to language in specific ways.

The process of word learning depends fundamentally on the child being biased to conceptualize the world in certain ways (similar to adults’ conceptualizations), it is just that the connection of conceptualizations to language must be learned in communicative interactions with others. (Tomasello 2001: 153)

In a similar vein, Slobin (2001) argues that the acquisition of grammatical elements is restricted by the communicative context in which these elements are used because this context simply restrains children from postulating certain notions as meanings for these forms. As opposed to his earlier work (1985), he now claims that there are no prelinguistic (grammaticizable) notions in the individual child’s mind that operate as constraints on interpreting linguistic elements. Language variation is limited not because of a universal restricted set of semantic entities that can be expressed grammatically, but because of ‘conditions on the processing, social use and learning of form-function relations’ (Slobin 2001: 438). It is the social-historical development of language that creates forms to express what is relevant, important or salient to human experience and communication.

Finally, Clark (1987; 1993; 2003) proposes that from an early age children are sensitive to the pragmatic principles of conventionality and contrast, which
encompass the assumptions that there is a conventional form for expressing a
certain meaning, and that a difference in form signals a difference in meaning.
Now if a speaker does not use the conventional form in an appropriate context,
then the addressee infers that he must mean something different from what the
conventional form would have signified. This pragmatic understanding also
helps in assigning meaning to words.

Contrary to Bloom (2001: 178), both Slobin (2001: 439) and Tomasello
(2001: 155) argue that the same learning mechanisms apply across the lexicon,
including both content words, purely lexical items, and functors, purely
grammatical items. I subscribe to the position that the acquisition of
grammatical elements as well as whole linguistic constructions are embedded in
a social-pragmatic context and is guided by their communicative functions.

What is universal in language acquisition is the capacity of children to interpret
communicative intentions and to imitate these intentions in addition to general
learning abilities, such as various kinds of pattern finding or categorization.4 A
further domain that probably is of influence to language acquisition is the general
conceptual development of children. The conceptualizations that children make
are to a large extent universal and independent of their native language, although
recent attention to the Sapir-Whorf hypothesis (Whorf 1956), stating that
language-specific characteristics cause their speakers to have different
conceptualizations of the world, suggests that ‘some very moderate form of
“Whorfianism”’ may be unavoidable’ (Bowerman & Levinson 2001a: 13).
Nevertheless, children learning different languages have to discover which
concepts are denoted by which linguistic elements in their native language.
These relations are not pre-determined or constrained. In the words of
Levinson (2001):

Many linguistic categories are simply not natural in any straightforward sense at
all: they have to be learnt from instances of usage. Sure, they may be built out of
underlying “natural” concepts, and moreover the range of variation may be
limited. But the point is that languages *construct* concepts that otherwise might not
have been. And that is precisely the added cognitive value of language: it provides
“un-natural concepts,” complex conceptual wholes which connect across natural
capacities (...), and which can be processed as units in working memory, thus
vastly increasing the power of our mental computations. (…) This picture is
radically opposed to the standard line in child languages research, which assumes
that language rests directly on the fundaments of preexisting categories. (p.584)

The linguistic input to children in social interaction is the primary source for
children that reveals form-function relations and that helps children to construct
linguistic categories. The input to children is not universal: it varies in many
respects, both structurally and in social-interactional ways, both crosslinguistically

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4 Cf. Tomasello (2003: 4) for a summary.
and cross-individually (see e.g. Lieven 1994; Pine 1994). However, the possible variation in input languages, as argued in section 1.2, is limited: the communicative intentions for which language is used are similar in all different input languages and the possible structural and semantic properties are also restricted. Furthermore, the communicative needs of children themselves are in all probability universal. Children all over the world develop similar communicative needs: they want to describe what they see, express desires and intentions, ask questions and give orders, etcetera.

To conclude, there are several important universal factors involved in the process of first language acquisition: general processing and learning capacities, conceptualizations, functional and structural universals in language input, and communicative intentions of the children. These factors are expected to restrict the possible linguistic systems that may arise. During every stage of language acquisition, the child’s linguistic system, however primitive, is evidently controlled by the cognitive capacities of the child and it functions as an instrument for expressing communicative intentions of the child. As was argued in the previous section for adult languages, this will restrict the possible variation in child language.

Language acquisition is thus dependent on cognitive as well as communicative factors, just as similarities between adult languages of the world are dependent on cognitive as well as communicative factors. See Figure 1-3 for a schematic representation.

![Figure 1-3. Constraints on language variation](image-url)
The limits on variation may be described using words of Tomasello:

There are (…) universals in the way symbols are created, learned, and used across languages, of course, reflecting universals both in the way human beings experience the world and in the ways they interact and communicate with one another socially. (Tomasello 2001: 135)

1.4 RELATIONS BETWEEN UNIVERSALS IN ADULT AND CHILD LANGUAGE

If human cognition and communicative intentions are the restraining factors in linguistic variation, both in typology and in acquisition, it may be assumed that there is a connection between typological phenomena and language acquisition: universals will identically be reflected in the typological domain and in stages of language acquisition. What is cognitively more efficient, conceptually more salient or communicatively more basic or relevant will be more frequent within languages of the world as well as within different stages of language acquisition.

In section 1.1 it was explained that variation in adult languages is often described by implicational hierarchies, which reflect scales of cognitive and communicative factors, such as perceptual saliency, communicative relevance, processing efficiency, etcetera. Consider once more the general format of a hierarchy:

\[
P \subset Q \subset R
\]

in which ‘\(\subset\)’ should be interpreted as: ‘is implied by’. The presence of property \(P\) is implied by the presence of property \(Q\). Another approach is to call \(P\) a less marked property than \(Q\). Here, I use ‘less marked’ to refer to conceptually less difficult and communicatively more motivated.\(^5\) Less marked properties have higher frequency of use\(^6\) and occur more often crosslinguistically. It has often been demonstrated that implicational hierarchies are reflected in languages of the world. For example, Bybee (1985) has shown that the ordering of morphemes is motivated by the iconic principle of Behaghel (1932: 4) ‘what belongs together mentally is placed close together syntactically’: morphemes are ordered in such a way that they reflect their relevance to the meaning of the stem they modify.

If the same types of language-external constraints hold for child and adult language, then the assumption is justified that implicational hierarchies or

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5 See Haspelmath (t.a.) for a critical discussion of the use of the term markedness.
6 Contrary to Haspelmath (t.a.), I assume that conceptual difficulty is primarily the cause for low frequency of use in adult languages, and not the effect of it.
markedness scales also describe the variation within child language systems. Analogous to the prediction for adult linguistic systems, it may be predicted that within the process of language acquisition every stage will consist of a linguistic system that is in accordance with the implicational hierarchy. The hierarchy in (7) predicts that there should be no stage in which element Q is present, but P is not, or in which element R is present, but P and Q are not. If variation in child language is actually restricted by similar factors as variation in adult language, then the hierarchies exactly predict in what order elements are acquired. Only if children acquire first the least marked element P, then the more marked element Q and finally the most marked element R, their linguistic system is at every stage in accordance with the hierarchy, i.e. with cognitive or communicative constraints that hold for every human being. Another possibility is that children acquire the different properties simultaneously: for example, children could start out with property P and Q simultaneously and only later acquire property R. The acquisition order will thus follow the direction of the hierarchy: what is more to the left, will be acquired earlier than what is more to the right. If this is not the case, then a system arises in which for example the more marked property Q is present but the less marked property P is. This system would cross the limits of variation.

Implicational hierarchies or markedness scales established for describing adult language variation are thus hypothesized to be reliable predictors of universals in language acquisition. The relation between possible language variation and first language acquisition may even be so strong that the explanation for (some) implicational hierarchies is to be found in the learning capacities of children: the absence or infrequency of certain structures in adult languages might not be caused by the fact that adults would not be capable of using them, but by the fact that children have much difficulty learning them.

Whether the variation in adult and child languages is limited in identical ways will be the main subject of this thesis. The predictive power of implicational hierarchies for phenomena in languages of the world and for acquisition order will be investigated in the domain of aspect, tense, and modality.

1.5 Functional linguistic theory
Before turning to the actual study, the role of linguistic theory will be discussed. This thesis is embedded in the framework of Functional Grammar (Dik 1997a), a grammatical model of language, based on semantics and pragmatics. Within a functional framework, language is considered an instrument for social interaction, meant to establish communicative relations between human beings. This instrument, however, is structured by rules: a rule system of semantic, syntactic, morphological and phonological rules governs the constitution of
linguistic expressions while communicative rules or principles account for the patterns of verbal interaction, in which the linguistic expressions are used. Within this linguistic rule system, phonology is viewed as instrumental with respect to morphosyntax; morphosyntax is viewed as instrumental with respect to semantics and semantics is viewed as instrumental with respect to communicative functions.

The aim of Functional Grammar is to describe the rule systems of languages, from the starting point of communicative intentions or functions and semantics. The model should be general enough to describe every possible language, and specific enough not to describe impossible language systems. Furthermore, it should not only account for sentences but also for connected discourse. These requirements are defined as the descriptive adequacy of a theory (cf. Chomsky 1965). As different grammars could be constructed with the same descriptive adequacy, an even more important criterion for a linguistic model is its ‘explanatory adequacy’ (Dik 1997a: 13). In order to arrive at explanatory adequacy, the grammatical model may not clash with the restrictions on linguistic variation. Therefore the model should be compatible both with cognitive and communicative factors.

Following up on Dik (1997a: 12-15), Boland (1999) defined the criteria to which the model of Functional Grammar should comply as two standards of explanatory adequacy, namely the standard of cognitive adequacy and the standard of communicative adequacy, and as two domains of application, namely the domain of typological variation and the domain of acquisitional variation. The standards of explanatory adequacy serve as the constraining framework within which a theory can be developed. The standard of cognitive adequacy captures general cognitive features of human beings that might play a part in language function and form. A linguistic model should be compatible with cognitive models of linguistic behavior, processing capacities and conceptualizations of human beings. Givón (1988) provides a good example of relating cognition to language use. He explains the fact that in most languages the first position of the clause has a special function by a psychological feature of humans: it attracts more attention from the addressee. Givón states that ‘the string-initial position invites the hearer to pay more attention, and thus to store and retrieve the information more efficiently’ (1988: 276). This kind of relation is precisely what should be understood by the standard of cognitive adequacy. Human cognitive capacities have an impact on language and this relation should be made clear in a grammatical model.

The standard of communicative adequacy requires that a grammatical model should fit in a broader pragmatic theory of verbal interaction. Within a functional approach verbal interaction is described as follows: a speaker wants to communicate a certain intention to an addressee for which he uses a verbal
expression. In the production as well as the interpretation of verbal expressions speaker and addressee make use of pragmatic information: this is the knowledge of the preceding context, the current speech situation and general knowledge of the world. The speaker anticipates the interpretation of the addressee of his utterance by estimating the pragmatic information of the addressee, and shapes his intention in such a way that the addressee will be capable of reconstructing the intention of the speaker. In interpreting the speaker’s utterance, the addressee uses his own pragmatic information but he also makes an estimation of the pragmatic information of the speaker. The utterance in itself does not establish but rather mediates the relation between the intention of the speaker and the interpretation of the addressee. A linguistic model ultimately describes what the communicative intentions and functions of language are, and provides explanations on how different linguistic elements may function as a clue for encoding and decoding communicative intentions. 

The two standards thus set the boundaries within which a linguistic model has to fit: a functional grammatical model may not be in conflict with what is known about communicative and cognitive factors, and should preferably reflect universal cognitive and communicative principles. The goal of the grammatical model is then to provide adequate descriptions of languages and systematic explanations for differences and similarities between natural languages. There are two domains of application of a theory: the theory should account for possible linguistic variation in languages of the world and in stages of language acquisition.

The first domain of application is typological variation. In Dik’s words:

A typologically adequate theory reveals the most fundamental recurrent properties of natural languages, properties which have sedimented into the systems of languages through centuries of intensive use in verbal interaction. It is a reasonable working hypothesis, then, that those principles which are most generally characteristic of natural languages are at the same time the principles which have the most fundamental psychological and pragmatic significance. (Dik 1997: 15)

I propose to define the domain of typological variation as including both crosslinguistic and diachronic variation. As Dik remarks, it is not only the case that a grammatical model should account for descriptions and predictions for specific languages and typological variation, but crosslinguistic comparison can also point to underlying cognitive or communicative factors. Universals may produce ‘hypotheses of cognitive structure that can be tested and confirmed or rejected by cognitive psychological research’ (Croft 2003: 203).

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6 Bakker (1998) proposed a separate standard of diachronic adequacy. In my view, however, diachronic variation may be covered by the notion typological variation.
But the typological domain is not the only descriptive challenge. The assumption is justified that language acquisition is dependent on cognitive as well as communicative factors, just as similarities between adult languages are dependent on cognitive as well as communicative factors. The cognitive and communicative universals that restrict typological variation will also restrict the possible linguistic systems in every stage of first language acquisition. If the grammatical model is in accordance with the standards of communication and cognition, it should not only supply correct descriptions of languages of the world but also of the different stages within the process of language acquisition. In particular, the domain of acquisition includes normal first language acquisition. I assume that in the process of language acquisition of disordered children and in language attrition, there may arise atypical linguistic structures as there are atypical factors involved, such as possible deficits in the cognitive capacities of the language users. The process of second language acquisition will also have specific peculiarities: there may for example be interference of the first language.

From a functional perspective, it is fruitless to describe linguistic rule systems in isolation from the question why language is organized the way it is. The organization of verbal interaction is influenced by several human qualities and skills, such as biological properties, social capacities, cognitive development, information processing mechanisms, knowledge of the world, etcetera. One of the most intriguing questions is how all these different mechanisms co-operate in such a way that newborn human beings eventually become capable of verbal communication and speak like adults. In order to answer this question, it is crucial to examine how language is learned and what language is. The ultimate theory of language should answer both questions. A language theory that correctly describes the communicative purposes and linguistic rules of adult language, but cannot account for the developmental aspects of language is inadequate. A grammar of adult speech should be rejected if it is incompatible with the developmental stages and psychological processes of language acquisition. On the other hand, a theory of language acquisition is not complete if it does not explain why children eventually use the same rule system as adults to encode communicative intentions and decode linguistic expressions.

Why do we need a linguistic theory in the quest for universals? According to Dryer (t.a.) a theory-neutral “metalanguage” would do. Haspelmath (2004: 569) also argues that a phenomenological description of linguistic systems is enough for discovering linguistic universals: a grammatical model does not need to reflect the real underlying mental patterns of language users. His main objection to functional theoretical models is that they often claim to be cognitively real, whereas there are many subjective decisions in the construction of such models. He does, however, recognize that descriptive models may be more or less
adequate and that external evidence can determine which of two observationally adequate descriptions should be chosen (2004: 574).

Theoretical models that comply with explanatory adequacy may provide helpful information in understanding the limits on possible linguistic systems. This is exactly what the theory of Functional Grammar aims at: describing relations between different semantic and pragmatic functions of language in such a way that they are in accordance with general cognitive characteristics and communicative principles. Whether Functional Grammar represents real mental structures is not the most relevant question: to date, it is unknown what the real mental structures look like and we are far from understanding how neurological processes lead to conceptualizations, attention, memory, etcetera. Only provisional models of the human brain are available. The function of a linguistic model is to relate these mental models to linguistic structure and to account for the relation between communicative needs and their semantic and formal structuring. Descriptions of these relations and structures are helpful or even necessary for crosslinguistic research since the definition of a category for crosslinguistic comparison must be based on semantics, pragmatics, discourse function etcetera, and not on morphosyntactic criteria (see for example Croft 2003: 13-14). A further goal of functional linguistic models is to account for the relations between different aspects of the language system. A phenomenological description of grammar lacks an explanation for the relations between different linguistic aspects: establishing an ever-growing list of linguistic universals without being able to unify them and understand relations between them does not seem to be a fruitful enterprise. A functional linguistic model does not only try to account for variation within a restricted domain, but also for relations between linguistic phenomena as they occur within an entire linguistic system. If the relation between cognitive and communicative functions and language is modeled, it becomes possible to investigate if these functions are reflected in languages of the world. And if linguistic universals in languages of the world can be interpreted in terms of cognition and communication, new hypotheses can be formulated about human cognition and communication.

To recapitulate, a functional model of language serves as an interface between the standards of adequacy and the domains of application. On the one hand a theoretical modal has to fit in the framework of communicative and cognitive properties and on the other hand it has to provide correct descriptions of actual adult and child language data. Whereas the cognitive and communicative standards operate as restrictions on the possible grammatical models, the typological and acquisitional domains operate as tests of the theory. On the one hand, typological research and research of language acquisition may point to cognitive and communicative factors through the intermediate of a
linguistic theory: on the other hand, the modeling of cognitive and communicative factors is a helpful tool in describing and accounting for phenomena in typology and acquisition. This is represented in Figure 1-4. In this thesis I will show how the semantic representations in Functional Grammar are necessary tools for the crosslinguistic and cross-stage comparison of categories.

![Diagram](image)

**Figure 1-4.** Demands on a functional model of language

### 1.6 Structure of this thesis

The main research question in this thesis is:

Are the limits on variation across adult languages of the world identical to the limits on variation across stages of language acquisition?

The underlying assumption is that universal cognitive and communicative aspects constrain possible language systems, both in adult language and in child language. Since implicational hierarchies or markedness scales can often describe these restrictions within a linguistic domain, I predict that such hierarchies or scales are not only reflected in the typological domain but that they are also predictive with respect to the order of language acquisition. As mentioned before, this hypothesis will be tested in the semantic domains of aspect, tense, and modality, and the closely related domains of quantification,
irrealis and evidentiality. Functional Grammar provides an analysis of grammatical expressions of these notions that relates cognitive constraints and communicative needs to linguistic structure. On the basis of this analysis it is possible to predict limits on variation in adult and child language.

This thesis is divided in four parts. Part I is dedicated to theoretical approaches to aspect, tense and modality. In Chapter 2 a broad outline is given of the theory of Functional Grammar and in particular the analysis of grammatical expressions of aspect, tense and modality is explained. This analysis leads to the formulation of an implicational hierarchy. Chapter 3 defines the semantics of the domains of aspect and tense and the related domains of quantification and situation types. Chapter 4 presents a classification of different types of modality and the related domains of irrealis, future tense and evidentiality. Finally, in Chapter 5, the specific research questions for this study are formulated and motivated, using the implicational hierarchy of Chapter 2. Part II investigates the limits on variation for languages of the world. Chapter 6 discusses quantitative and qualitative properties of morphemes that express notions of aspect, tense and modality in English. Chapter 7 investigates universals in the systems of aspect, tense and modality in a sample of 76 languages. Part III is dedicated to first language acquisition. In Chapter 8, a detailed examination is presented of the acquisition of aspect, tense and modality in English. Chapter 9 examines the contexts of use of expressions of aspect and tense in English child language. Chapter 10 investigates the acquisition of aspect, tense and modality in a crosslinguistic perspective, using a survey of existing studies. Finally, Part IV consists of a discussion of the findings and the implications for further research.