

The Acquisition of Relative Clauses in Chintang

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Introduction

1 Introduction

1.1 Preliminary remarks

In 2006 I became a member of the Chintang and Puma Documentation Project (CPDP), which I will introduce later in this work. Since then, I interlinearize Chintang child language texts; and my interest, actually lying in psycholinguistics, moved a little bit towards typology as well. What I now try in this master's thesis is to combine both fields by assaying language acquisition in the data of this project. Thus, this paper deals neither exclusively with cognitive abilities of humans, especially children, nor solely with typical features of a particular language. My thesis simply is part of the documentation of an endangered language. I contribute to a still ongoing project to extend the awareness of this language.

To my knowledge, this is the first study that investigates the acquisition and children's usage of Chintang relative clauses in spontaneous speech. For this reason, it implies among other things the description of the structure of Chintang relative clauses and the look at previous studies about relative clause acquisition. Nearly all findings about the language Chintang are gained in the course of the mentioned project and there is not much material about it at all; at least there is none about the acquisition of relative clauses. Hence, I cannot refer to previously established theories. All results issue from my analyzed data and reveal my own interpretations. So it is possible that I may be mistaken at some point and that other researchers may investigate the same or other data resulting in different outcomes. Furthermore, the current paper provides an introduction to the topic of Chintang relative clause acquisition, occupying with selected questions and leaving some aspects disregarded because of the time limit for this thesis. Thus, this work does not claim to be complete and comprehensive; it only can highlight some aspects of the given topic. The documentation of Chintang is still in progress, and many questions are worth an examination in future. The acquisition of relative clauses is one of them, since not all aspects are covered by this thesis.

1.2 Structure of my thesis

As already stated, the current thesis is rather a description for the given purpose than an analysis being capable of covering all areas of the topic. Before investigating the complex topic of relative clause acquisition in Chintang I will give an overview about relative clauses in general and have a look at studies of other languages concerned with relative clause acquisition to find differences and similarities when testing the suggested theses in Chintang later on. Thus, the first part of my thesis sets the general framework summing up the theoretical background about these two topics. The first section of this part presents the definition of relative clauses, their main characteristics and the several types of relative clauses according to their syntactic and semantic structure. The second section of this part summarizes different approaches about the acquisition of relative constructions and hypotheses that are suggested on the basis of previous studies on children's comprehension and production of relative clauses. The second half of my work, Part II, then is dedicated to the corpus analysis of the Chintang data. The first section of this part describes the methodology of my study and gives an overview of the relativizing strategy used in Sino-Tibetan languages, and especially in Chintang. In the subsequent section I present the results of my corpus analysis, quantitative as well as qualitative findings. I point out the features of children's and adult's relative clauses in spoken discourse and furthermore will have a look at the communicative functions of this construction. Finally, in the conclusion I will summarize the factors that influence children's development of the usage of relative clauses.

Overall, this work can be seen as an example of testing cross-linguistic hypotheses concerning relative clause acquisition on a non-Western language.

Before I come to this, I firstly introduce the Chintang language which will be subject of examination in this paper.

1.3 The Chintang language

Nepal, a state in the Himalayas in South Asia, is bordered to the north by the People's Republic of China, and to the other three directions by the Republic of India. Approximately 30 million people live in this country; Kathmandu is the capital and the largest city.



Figure 1. Map of Nepal with the location of Chintang VDC ¹

¹ cf. <http://www.geographicguide.net/asia/maps/nepal-map.jpg>

Although Chintang gets more and more displaced by Nepali, the national lingua franca, it still has its own culture and tradition. But because of the increasing suppression of Chintang all the people are at least bilingual; most of them are fluent in Bantawa and Nepali as well. This multilingualism and the constantly influence of all coexisting languages makes it hard to detect a true genuine Chintang (Dirksmeyer 2008).

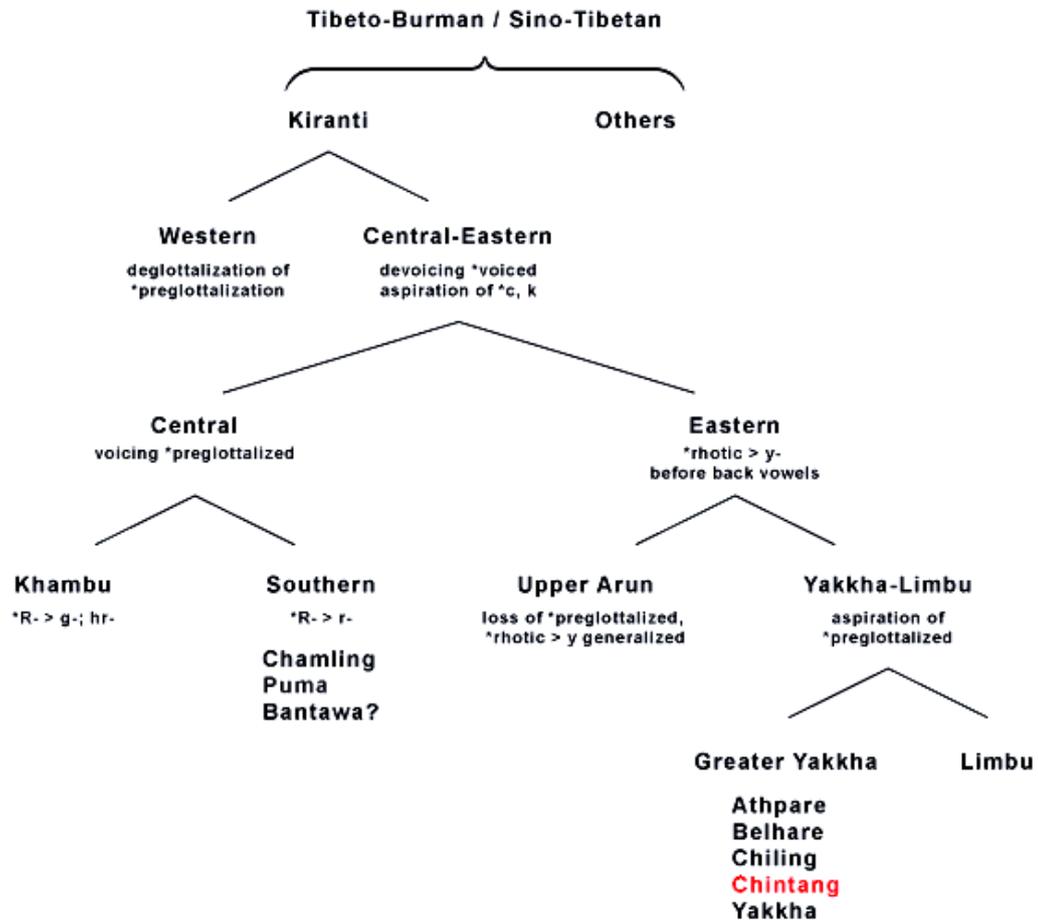


Figure 3. The Sino-Tibetan Family of Languages ⁴

One project that examines this hardly documented language is the Chintang and Puma Documentation Project (CPDP), administered by the Departments of Linguistics at the University of Leipzig and the Tribhuvan University in Kathmandu. More about this project, the researchers and the data follows in section 4.2 of this paper.

⁴ cf. http://uni-leipzig.de/~ff/cpdp/frameset_map.html

As can be read on the website of the CPDP (<http://uni-leipzig.de/~ff/cpdp>), most of the children in the Nepalese region grow up multilingually, so it is interesting to see how this affects the language acquisition. The documentation of language learning also enriches the small amount of child language data of non-European languages.

Before the CPDP started, there was hardly any attempt to describe this language. Even the speakers themselves were not aware of Chintang being an own language. They considered themselves as speaking a variety of Athpare (Dirksmeyer 2008). Therefore, first work on this language has been made within this project.

For example, there is a discussion about triplication and ideophones (Rai and Bickel et al. 2005), a description of ritual language (Rai and Bickel et al. 2009), and a paper demonstrating that prefixes may have a free order in Chintang (Bickel et al. 2007). Besides these published works there are various conference presentations and master's theses. One of them analyzes spatial deixis (Dirksmeyer 2008) and another examines the system of grammatical aspect (Polkau 2009) for instance.

As far as I know the acquisition of relative clauses in Chintang has not been topic of any discussion. Therefore this thesis might be the first one concerned with this area.

Part I
Theoretical background

2 Relative clauses

2.1 Definition of relative clauses

A relative clause is a subordinate clause that modifies a noun phrase, in some literature called antecedent. This construction is used to give additional information about that noun phrase without starting an additional sentence. “Subordinate” means that a relative clause is a constituent of the antecedent; it does not necessarily mean that this clause is embedded inside the main clause. According to its position in the sentence the relative clause can be either embedded and therefore interrupt the main clause or it can be detached and therefore precede or follow the main clause. As a subordinate clause the relative clause contains a verb and its arguments (depending on the language), but it does not express a complete statement by itself. Thus, it cannot stand alone as a complete sentence.

The noun phrase (NP) that is modified by a relative clause, in de Vries’ article (2001) called ‘*pivot constituent*’, is semantically shared by the matrix clause and the relative clause. In the relative clause it often leaves a gap that can be filled by a relative pronoun for instance. The pivot noun phrase prototypically consists of a head noun, and optionally a determiner (article, demonstrative, numeral, quantifier...), adjective, complement or other modifiers. It is also possible that the head noun is only represented by a pronoun for example. Another option is that the antecedent is not a noun phrase like in (1), but any other phrase, for example a prepositional phrase (PP) like in (2) or even a whole sentence as in (3):

(1) He puts the toy on [the desk], which is in the middle of the room.

(i.e. [*The desk*] is in the middle of the room.) = NP

(2) He puts the toy [on the desk], where we can see it.

(i.e. [*On the desk*] we can see it.) = PP

(3) [He puts the toy on the desk], what surprises me.

(i.e. [*The action of putting it on the desk*] surprises me.) = sent.

Though for similar examples like (2) and (3) the term “head noun” is inappropriate, I will use this term throughout this paper, according to other authors dealing with this topic. But we have to keep in mind that “head noun” denotes in general the relativized constituent, even if it is not necessarily a noun phrase.

There are many different types of relative clauses; distinctions can be drawn on any aspect of the construction. I will present the main types of relative clauses according to the syntactic scheme, the semantic aspect, the internal structure and the strategies of forming relative clauses in different languages of the world.

2.2 Syntactic classification

Like already indicated relative clauses (RC) can take different positions within a sentence with regard to the head noun. Headless relative clauses are not taken into account in this classification.

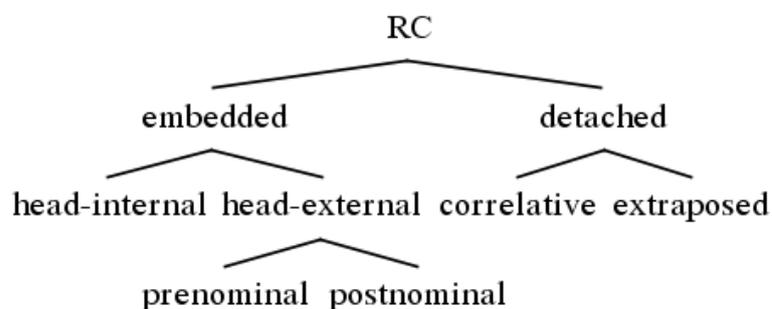


Figure 4. Syntactic types of relative clauses⁵

In general, we can distinguish embedded and detached relative clauses. Embedded relative clauses interrupt the main clause; they form a constituent with the head noun which is part of the main clause. Detached relatives occur outside the main clause and can structurally be separated from it.

⁵ cf. de Vries (2001): Patterns of relative clauses. In: *Linguistics in the Netherlands 2001*.

In the category of embedded clauses further distinction is drawn between head-internal and head-external clauses. Internally-headed relative clauses have their head noun within the modifying clause, whereas in head-external clauses the head nouns are outside the relative clause. In the latter the relative clause can either stand immediately before the head noun (prenominal) or behind the head noun (postnominal).

Examples for these three embedded types are taken from Dryer (2005):

(4) Mesa Grande Diegueño (Yuman):

[’ehatt gaat akewii]=ve=ch chepam *[head-internal]*
 [dog cat chase]=def=subj get.away
 ‘The cat that the dog chased got away.’

(5) Alamlak (Sepik, Papua New Guinea):

[ni hik-r-fë] yima-r *[prenominal]*
 [2s follow-irreal-PST] person-3s.m
 ‘a man who would have followed you’

(6) Maybrat (West Papuan):

aof **[ro ana m-fat]** *[postnominal]*
 sago [rel 3pl 3obj-fell]
 ‘the sago tree that they felled’

On the other hand, detached relative clauses can occur before the matrix clause, so left-branching (correlative) or after the matrix clause, on the right edge of the sentence (extraposed or adjoined). In these cases, the relative clause is not embedded in the matrix clause, but it is still subordinate to it and simply precedes or follows the main clause.

Again, Dryer (2005) provides samples for these two detached types:

(7) Bambara (Mande, Niger-Kongo)

[muso min taara], o ye fini san *[correlative]*
 [woman rel leave] 3s PST cloth buy
 ‘The woman who left bought the cloth.’

(8) Diyari (Pama-Nyungan; South Australia)

ŋaŋi wiŋa-ŋi yaŋa-ŋa ŋana-yi [**yinda-ŋaŋi**] [extraposed]

1s woman-loc speak-fut aux-NPST [cry-rel]

'I'll talk to the woman who is crying.'

According to the statistics of Dryer, who listed 704 languages in a map, the type of postnominal relative clauses has been found in more languages than the total of the other four types. As can be seen in the map (figure 5), the red dots marking postnominal relative clauses are the overwhelmingly dominant type cross-linguistically. In the second position comes the prenominal relative clause, which is the prevailing type in Asian languages (marked via blue dots). The less frequent internally headed relative clauses are found in North America and West Africa for example. The correlative type Dryer detected only in seven languages (West Africa, South Asia) and the extraposed/adjoined one in five languages only (four of them in Australia).

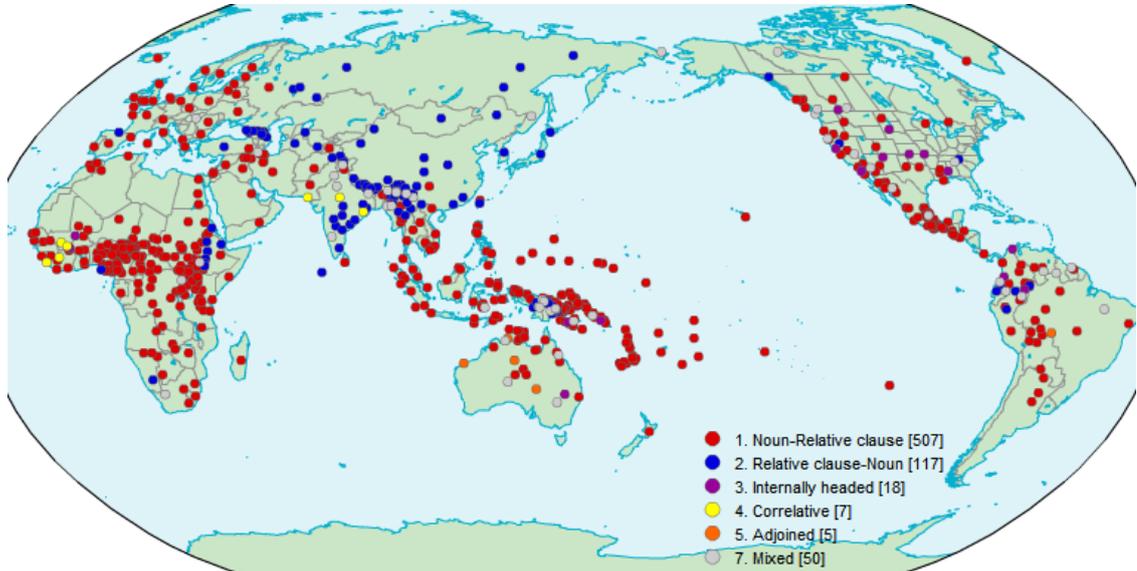


Figure 5. Syntactic types of relative clauses and their geographic distribution ⁶

⁶ Dryer (2005): Order of relative clause and noun. In: *The World Atlas of Language Structures*, chapter 90. generated by WALS Online (Haspelmath et al. 2008)

Many languages of the world have more than one of the listed types of relative clause, without one being dominant. According to Dryer, 50 of the 704 analyzed languages use more than two types.

Besides these five syntactic types some languages use headless relative clauses as their basic form and relatives with an overt head are therefore nominal expressions in apposition to the head. Dryer (2005) here takes an example stated by Curnow (1997):

(9) Awa Pit (Barbacoan; Colombia and Ecuador):

na=na [pishkatu pay-nin-tu=mika]=ta pyan-ta-w
 1s=top [fish buy-CAUS-IPF=NMLZ]=acc hit-PST-1
 'I hit the one who was selling the fish.'

Relative clauses of this kind are often called nominalizations. This type will play a role in the course of this paper when coming to the analysis of the Chintang data.

2.3 Semantic classification

Semantically, the traditional distinction is drawn between restrictive and non-restrictive (or appositive) relative clauses (cf. de Vries 2001). A non-restrictive relative clause adds non-defining information describing the head noun only, as in (10). The given information is additional and not necessarily needed for specification. A restrictive relative clause limits or restricts the reference of the NP, as in (11). The provided information is needed to specify the referent and narrow the field of possible referents.

(10) My mother, who works as a secretary, visited me last week.

(i.e. My mother visited me. By the way, she is a secretary.)

(11) My brother that is a doctor visited me last week.

(i.e. The brother (out of several) that is a doctor visited me.)

In example (10), there is only one possible referent, for speaker and listener it is clear who is denoted with “*my mother*”. The relative clause “*who works as a secretary*” is not important for the statement itself, it only provides additional information. On the contrary, in example (11) the noun phrase “*my brother*” could refer to different persons, assumed that the speaker has more than one brother and the listener knows that. In saying “*that is a doctor*” the possible ‘amount of brothers’ is restricted to one, so the relative clause points out which concrete NP is referred to.

One of the structural differences between these two types named by de Vries (2001) is the lexical category of the head noun. While restrictive relative clauses can only modify NPs, non-restrictive relative clauses can modify NPs and other phrases, like PPs, AdjPs or even whole sentences. Additionally, non-restrictive are often used to relativize discourse-new predicate nominals that are part of existential constructions (e.g., “*There is a x*”), according to previous studies (cf. Fox 1987).

Some linguists suggest a third semantic category besides the two classical types. They name it ‘maximalizing’ (de Vries 2005); examples would be ‘degree relatives’ or ‘amount relatives’. The following sample (12) is taken from de Vries (2005):

(12) John looked at the mice that there were in the cage.

The meaning of such sentences is not restrictive as probably assumed at first sight. There are not several mice, of which some are in a cage and some are not and the relative clause limits the reference. It is rather the case that the whole amount of mice is in the cage. Thus, the relative clause contains a degree variable that has a maximalizing function.

Correlations between syntactic and semantic types are shown by de Vries, who scaled the connection between the different relative clauses based on the analysis of a huge language corpus:

<i>syntactic</i> <i>type</i> ↓	<i>semantic</i> <i>type</i> →	non-restrictive	restrictive	maximalizing
postnominal		+	+	+
prenominal		-	+	+
extraposed		-	+	+
correlative		-	-	+

Table 1. Correlation between syntactic and semantic types of RC ⁷

A plus means that the combination exists in languages of the world, a minus means that it is not possible. As can be seen in the table, the postnominal relatives are the most flexible regarding to the semantic type. This could be one of the reasons why this seems to be the most frequently used strategy in the world (as asserted above).

2.4 Structure of relative clauses

The structure of relative clauses is in most of the literature characterized by two features: the syntactic role of the head noun in the main clause that is relativized and the syntactic role of the element that is gapped in the relative clause. In both cases it refers to the same noun phrase, the pivot, but it can fulfill different syntactic roles within the two subclauses. De Vries formulates this property of relative clauses as follows:

“The semantic θ -role and syntactic role that the pivot constituent has in the relative clause, are in principle independent of its roles in the matrix clause.” (de Vries 2001)

Linguists make a distinction between four types of relative clauses (cf. Diessel and Tomasello 2000). The abbreviations are SS, SO, OS and OO, naming the role of the main-clause head noun and the role of the relative-clause head noun, in other words the role of the filler and the gap:

⁷ cf. de Vries (2001)

(a) SS relatives, in which a main-clause subject is modified and a subject is gapped in the relative clause; (b) SO relatives, in which a main-clause subject is modified and an object is gapped in the relative clause; (c) OS relatives, in which a main-clause object is modified and a subject is gapped in the relative clause; and (d) OO relatives, in which a main-clause object is modified and an object is gapped in the relative clause. The following examples, taken from MacWhinney and Pléh (1988) demonstrate the four types:

- (13) The boy [who ____ sees the girl] chases the policeman. (SS)
 (14) The boy [who the girl sees __] chases the policeman. (SO)
 (15) The boy chases the girl [who __ sees the policeman]. (OS)
 (16) The boy chases the girl [who the policeman sees __]. (OO)

These four types are at least the available structures in English; there is a huge diversity of relative clauses in the world's languages. Previous studies mainly focused on these four types, because they comprise the basic factors that are important for the processing of relative clauses. For this reason and for the sake of completeness I present this classification. Nevertheless, why this typology plays no huge role in the acquisition of relative clauses will be discussed in section 3.1.

2.5 The Noun Phrase Accessibility Hierarchy

In many languages there are restrictions on the role the head noun may have in the relative clause. Keenan and Comrie (1977) formulated a cross-linguistic accessibility hierarchy saying that the processing of relative clauses varies according to the role of the antecedent:

Subject > Direct Object > Indirect Object > Oblique > Genitive >
 Object of comparative

In this hierarchy “>” means ‘is more accessible than’. If a language can relativize elements lower in the accessibility hierarchy, it can also relativize elements higher up, but not vice versa.

Subject relatives, the left-most category in the hierarchy, are clauses in which the relativized element plays the role of the subject (17a). In English, for example, where relative pronouns fill the left gap in the relative clause, the pronoun that resumes the subject position can never be omitted (17b).

- (17) a. The boy [who is playing there] is five years old.
 b. *The boy [___ is playing there] is five years old.

In direct object relatives the relativized element is the direct object of the transitive or ditransitive verb in the relative clause (18a). In contrast to subject relatives, the relative pronoun can be omitted in English (18b).

- (18) a. The book [which/that I read] is very exciting.
 b. The book [I read] is very exciting.

The same is the case with indirect object relatives. The relativized element is the indirect object of a ditransitive verb (19a); without a relative pronoun the sentence is still acceptable (19b).

- (19) a. The friend [whom I wrote a letter] visits me next year.
 b. The friend [I wrote a letter] visits me next year.

Oblique relatives are clauses which require a prepositional phrase (20a). When omitting the relative pronoun, the position of the preposition may change within the clause and move to the end of the constituent, a phenomenon called *preposition stranding* (20b).

- (20) a. The shop [about which I told you] closed last week.
 b. The shop [I told you about] closed last week.

In genitive relative constructions the relative clause shows a genitive/possessive relationship to the head noun in the matrix clause (21).

(21) That is the student [whose presentation was the best].

The last category in the hierarchy and therefore the rarest form of relativization is the group of relative clauses in which the relativized element is an object of comparative (22).

(22) Look at the girl [than who I am taller].

Based on the Noun Phrase Accessibility Hierarchy, Keenan and Comrie (1977) propose constraints that can be summed up as follows:

A. *Hierarchy Constraints*: If a language has a relativizing strategy at all it must be able to relativize subjects. Strategies that apply at one point of the hierarchy may cease to apply at any lower point.

B. *Primary Relativization Constraint*: A language must have a primary relative clause-forming strategy. If a primary strategy in a given language can apply to a low position on the hierarchy, then it can apply to all higher positions; it may cut off at any point on the hierarchy.

Fox (1987) proposes a slightly different point of view, reinterpreting the hierarchy by Comrie and Keenan. The '*Subject Primacy Hypothesis*' should rather be changed into an '*Absolute Hypothesis*' in Fox' opinion. That means the crucial factor for a hierarchy is rather the semantic role of a noun phrase than its syntactic role. Instead of working with the categories 'subject' and 'object' Fox works with 'agent' (doer of an action in transitive clauses = A), 'patient' (recipient of an action in transitive clauses = P) and 'single argument' (unique argument/ agent in intransitive clauses = S).

Her study results contradict the '*Subject Primacy Hypothesis*', so it is obviously not really the relativization of subjects that is prominent and

easier to process. Her data show an unexpectedly high frequency of object relatives. She suggests the '*Absolutive Hypothesis*', which states that every language that has a relativizing strategy at all must be able to relativize on S and P at least. As a result, it seems to be the category *absolutive*, rather than *subject*, that stands on the leftmost position of the accessibility hierarchy. S and P form a joint category *absolutive*, A is treated as an own category *ergative*, which follows in the hierarchy. The reviewed version of the hierarchy then is:

Absolutive > Ergative > Indirect Object > Oblique > Genitive >
Object of comparative

Lehmann's hypotheses (1986), published nearly around the same time, also agree with that. Conforming to Fox, he says it seems more neutral to use S (or U (=unique argument), as he calls it), P and A, instead of the categories *subject* and *object* to form a hierarchy. The reason for the prominence of S- and P-relatives lies inter alia in their discourse function, to which I come back in my corpus analysis.

2.6 Strategies of relativization

The languages of the world use very different strategies to form relative clauses. In many European languages for example, relative clauses are introduced by relative pronouns. Other languages mark relative clauses in different ways. In some languages, more than one mechanism may be possible. Linguists differentiate between four major types of relative clauses that can be found across the world (cf. Comrie 1998).

The first is the already mentioned *relative pronoun strategy*. In this type the relative clause is introduced by a pronominal element conforming to the syntactic and/or semantic role of the antecedent. The pronoun can be sensitive to grammatical features, such as gender, number and case. Typically, the relative pronoun is found between the relative clause and

the head noun. In English for example, relative pronouns are *who*, *which*, *whom*, *whose* and *that*. Germans also use this strategy to form relative clauses. The relative pronoun strategy is common in many European languages, but outside Europe this form of relative clauses is quite exceptional.

Secondly, there is the *gap strategy* in which there is a gap between the head noun and the relative clause. Mostly there is no overt reference to the head noun within the relative clause; the absent relativized constituent leaves a gap in the relative clause. Sometimes a complementizer (subordinating conjunction) is filled into the gap. The role of the antecedent is not important; it has no influence on the complementizer. English examples with a complementizer would be “*The book that I bought.*” or “*I hope that he comes.*” If the marker is deleted (“*The book I bought.*” and “*I hope he comes.*”), this structure is called “reduced relative clause” in English. Both sentences (as long as “that” is analyzed as a conjunction and not as relative pronoun) are examples for the gap strategy.

Thirdly, some languages use the *non-reduction strategy*. In this case the antecedent is a full-fledged noun phrase within the relative clause. Since the head noun appears in the relative clause, either it is taken up by a pronominal element in the main clause or it has no explicit representation in the matrix clause. Non-reduction is used in head-internal relative clauses and in correlative relative clauses. In both structures the head noun is realized as an NP inside the clause. An English (ungrammatical) equivalent would be “[*You see the child over there*] is playing.”

The fourth major type of relative clauses is the *pronoun retention strategy* (or resumptive pronoun strategy), in which the head noun is explicitly indicated by a personal pronoun in the relative clause. This strategy is similar to non-reduction in that there is as well an internal realization of the head noun in the relative clause, but in this case this realization must be a pronoun. This is placed on the same syntactic position as it would occur in the main clause. So the gap in which a noun phrase typically occurs within a simple main clause is filled with a pronoun in the relative clause. An English equivalent that exemplifies that type would be “*The*

child that I carried it.” (In English, the “*it*” is ungrammatical in this case). Pronoun retention is frequently used in African and Asian languages, but most of them have other strategies for relative clauses besides this. Most of the world’s languages use one of these strategies listed by Comrie, that is why they are treated as the main types of relative clause strategies, though there are more than these.

3 Acquisition of relative clauses

3.1 Previous studies about relative clause acquisition

The acquisition of relative clauses has been studied by many scholars over the past 40 years. Most of the work is occupied with children's comprehension of relative clauses in experiments. Previous studies are mainly based on repetition tasks or comprehension tests in which children show the meaning of a given sentence with toys.

The big problem with the material that has been used in former experiments – based on the structural classification presented in section 2.4 – is that it describes perfectly which structural types of relative clauses do exist, but children do not produce such types in spontaneous speech. The great majority of early produced relatives are attached to an isolated head noun or, even more frequently, to the predicate nominal of a copular clause (Diessel 2005). This is the case at least in English and some other languages. Sentence-repetition tasks and tests about relative clause comprehension which have been used in most of the previous studies on relative clause acquisition are often implemented with unnatural and very complex material. Relative clauses which children had to act out or repeat in studies are very far away from the relative clauses that children hear and use in everyday conversation. Children's acquisition of relative constructions is influenced by the form and function of relative clauses and similar constructions in the speech addressed to them. The used structures in experiments do not share many features of the relative clauses that occur in social interactions (Brandt & Kidd, forthcoming). Although some scholars suggest that children's imitation behavior is a good evidence for their grammatical competence, one cannot fully rule out that some of the tested children were just parroting the experimenter. Therefore, some earlier results and interpretations about relative clause acquisition may be misleading.

Diessel for instance is one of the very few who examines the natural spontaneous speech. Besides his papers there is not much literature

about naturally produced relative clauses within spontaneous speech of children. Additionally, there is also hardly any literature about relative clause acquisition in a language outside the Western culture in rural societies. Nevertheless, what kind of studies and hypotheses are presented so far and which of them play a role in a language like Chintang, I will elaborate in this paper.

3.2 Children's comprehension of relative clauses

Despite the obviously unnatural material in former experiments, there are several hypotheses resulting from previous studies. Most of them make a clear statement about the assumed strategy children use to interpret relative clauses. Children under the age of four or five mostly showed poor comprehension of complex sentences, therefore it has been claimed that this is due to the fact that they use simplified processing strategies. Diessel and Tomasello (2000) outline proposed hypotheses about children's processing of relative clauses:

1. *The non-interruption hypothesis*. Right-branching relative clauses that follow the main clause are easy to comprehend, whereas embedded relative clauses that interrupt the main clause cause difficulties (cf. Slobin 1973). The reason for this difficulty seems to be the short memory limitation. This hypothesis results from studies with adults and we would expect the same with young children that learn complex structures, since their short term memory is even more limited than the adults'. Thus, the *non-interruption hypothesis* generally predicts that subject relatives (SO, SS) are harder to process than object relatives (OS, OO).

Sheldon's studies (1974) with English-speaking children showed something different: Children avoid continuous constituents and prefer discontinuous main clauses. So they behave differently than adults. Slobin's hypothesis might be right for adult speakers, but it does not apply in all cases to children's processing of relative clauses.

2. *The parallel function hypothesis.* Relative clauses with coreferential NPs having the same syntactic role as in the main clause are easier to comprehend for children than sentences with nouns in different syntactic roles in each clause (cf. Sheldon 1974). According to this hypothesis children prefer interpreting the grammatical function of the relative pronoun as being identical with the antecedent, the head noun of the main clause. It follows from this suggestion that SS- and OO-relatives are easier to process than SO- and OS-relatives. The parallel function hypothesis seems to be crucial for the explanation of certain results in studies about acquisition of relative clauses in English.

3. *The NVN schema hypothesis.* Children apply a noun-verb-noun schema to all complex sentences, regardless of the boundaries between main clause and relative clause (cf. Bever 1970, de Villiers et al. 1979). Originally, tests were made with English children, the found use of a NVN schema to interpret all kinds of sentences was then assumed for all languages. Since that is not transferable to languages in which the verb is in last position in relative clauses (like German for example), a slightly change is assumed: Relatives are processed by children as simple sentence structures. Diessel (2005) modifies Bever's hypothesis saying that the initial position of the agent is important rather than a full word order schema that determines the acquisition of relative clauses. The children prefer relative clauses in which the actor is expressed by the sentence-initial NP, just like it is the case in the majority of simple sentences.

4. *The conjoined clause hypothesis.* Children interpret relative clauses as two conjoined sentences rather than as embedded clauses (cf. Tavakolian, 1981). That means the relative clause is not seen as embedded under the head noun but simply attached to the whole main clause. This parsing principle can possibly lead the children to wrong interpretations of the sentences. Because there is no concrete link to the antecedent, some other constituent (mostly the subject) of the main clause may be seen as head noun of the relative clause.

5. *The filler-gap theory*. The processing difficulty of relative clauses depends on the distance between filler and gap (cf. Wanner and Maratsos 1978). According to this theory, we keep the information of the head in our working memory until it fills the gap in the relative clause. The longer the distance between filler (head noun) and gap in the relative clause, the more difficult the relative clause is to parse. Thus, subject relative clauses (SS, OS) seem to be easier to process than clauses in which the head is the object (SO, OO), because in object relatives the filler must be retained longer in the working memory. Therefore these sentences are harder to parse. However, this account only applies to English and similar languages, in which the relativized element can be indicated by a gap. The hypothesis is based on the specific properties of relative clauses in English, so it does not apply to a language like Chintang.

These five strategies based on experimental studies may characterize the children's comprehension of relative clauses, but linguists who are concerned with natural speech of children (e.g. Diessel 2005), found no evidence for such strategies in their spontaneous production of relative clauses. Usage-based accounts suggest that categories and constructions are gradually learned from and strengthened by exemplars in the input.

According to such studies children do not use a specific strategy at all in the production unlike in the comprehension. Rather, there is a general development from simple to complex structures that characterizes the acquisition of constructions like relative clauses.

3.3 Children's production of relative clauses

Diessel and Tomasello (2000) suggest that the early produced relative clauses are semantically simple, express only one proposition and mostly consist of a copular clause and a relative clause. The copular clause in most cases includes a deictic pronoun making reference to something in

the surrounding situation. Young children tend to talk about objects in their direct environment and thus, such constructions are suitable for the communicative needs of children. The main clause of such sentences is mostly propositionally empty and the verb does not denote an independent situation or action but only presents a referent. So the whole structure is not really biclausal. One reason is that children under the age of three have a limited processing capacity and relative constructions with two propositions would exceed this capacity. Diessels results show that the spontaneous produced relatives are less complex than those that have been used in most of the comprehension experiments. Most of the children's sentences could be paraphrased by a simple clause. Thus, outside experimental tasks they have not much to do with the classification of SS, SO, OS and OO mentioned in the comprehension hypotheses above and in section 2.4.

The prototype examples of spontaneous relative clauses show that these constructions rarely contain two transitive propositions. The majority of subject relatives found in spoken discourse are intransitive and stative. Thus, in most cases the verb of subject relatives is a form of *be* (Fox 1987). Although object relatives are transitive by definition, most of them found in spontaneous speech do not refer to a prototypical transitive action with intentional agents and affected patients (Brandt, in press). Thus, the majority of all object relatives contains the semantically vague verb *have* (Fox 1987).

Only the structures produced by older children are more complex; they express two propositions and are composed of a main and a relative clause which convey two different states of affairs.

This assumption applies for the English language. So the acquisition of English relative clauses is a process from propositionally simple structures to semantically and structurally complex constructions. Diessel describes this development as "*a process of clause expansion*" (2005).

The question is if this phenomenon is a specific feature of English or if the frequent use of presentational relative clauses in early child speech is also common in other languages. Diessel (2009) names several other studies that show a similar development in other languages. Parallels to

the results of English-speaking children are found in Spanish and Hebrew (Dasinger and Toupin 1994), in French (Hudelot 1980) and in Indonesian (Hermon 2004). Brandt and Tomasello (2008), who conducted studies with German-speaking children, confirm this hypothesis for German as well. Starting from simple structures that are only little different from simple sentences, children gradually produce more complex relative constructions. Generalizing these studies, one might suggest that there is a cross-linguistic pattern of development from simple non-embedded to complex relative clauses.

One of the factors that affect the ease of acquisition is frequency. It is quite plausible that the more frequently a certain grammatical structure occurs, the more deeply engrained is it in the mental grammar and the easier is it to activate the construction. Therefore, I will mention the role of frequency and additionally similarity in the next section.

3.4 The role of frequency and similarity

Pursuant to Diessel (2009) and the usage-based approach to language acquisition, frequency and similarity/analogy are important for the development of more complex grammatical structures, for example relative clauses.

Firstly, the frequency of occurrence plays a role in the acquisition of language. Every time a child hears an expression it leaves a trace in its memory and facilitates the activation of it in future language use. The more frequent an expression or a syntactic structure is used by adults and persons in the child's surrounding, the faster it will acquire these structures.

Secondly, analogy is an important learning mechanism. Information is mapped from one particular situation, the source, to another situation, the target. Either source and target share attributes (substantial similarity) or they share structures or relationships (structural similarity) (cf. Gentner 1983). Diessel proposes that new and more complex relative clauses

which children acquire are always based on similar structures the children already know, in a kind of bottom up method.

For example, English- and German-speaking children are better in producing (transitive and intransitive) subject relatives (Diessel and Tomasello 2005). One reason lies in the structure of these two languages: subject relatives are similar to simple main clauses. In both constructions the subject precedes the object. In English and German object relatives the object precedes the subject what makes it obviously more difficult for the children to produce them. As Brandt reports, Cantonese children, on the other hand, showed no difference between subject and object relatives. In this language it is the other way around. Cantonese has prenominal relative clauses and object relatives have the same structure like simple sentences. This shows that the similarity to simple main clauses plays an important role in the acquisition hierarchy of young children (Brandt, submitted).

Children are assumed to have an abstract and item-general representation of the structures of a language as soon as they have some comprehension and production knowledge about that construction with highly familiar words (Brandt & Kidd, forthcoming). Any sentence with formal, functional or semantic similarities can be classified as an example of a particular category or construction that strengthens the representation of it. Thus, the more examples a child experiences, the stronger the representation of this construction becomes. To develop a strong item-general representation, children have to hear and use a certain construction with a variety of verb and noun/pronoun types using analogy strategies.

These two principles are used by children during the early stages of grammatical development when learning the basic rules of their language. In particular, the acquirement of relative clauses (and other complex constructions) seems to depend on the frequency of different relative clause types they hear from their environment and their similarity to simple sentences they draw from their current knowledge.

Part II
Corpus analysis

4 Data analysis

4.1 Methodology

In order to examine the children's development in production of complex syntactic constructions different methods are suited to this intention. Two opposed methodologies are the analysis of natural spontaneous material collected in a database on the one hand and the interpretation of purpose-built experiments that test the target structures on the other hand.

The clear advantage of corpus analyses is that the utterances occur in natural settings and are spontaneous. Researcher can enumerate the frequency and specify the structure of complex constructions in everyday conversation. One disadvantage is that even extensive databases which include many hours' recordings of adult-child or child-child interaction do not catch enough exemplars of infrequent complex constructions to allow completely reliable calculations and conclusions (Tomasello and Stahl 2004). Most corpus data result from a limited number of specific settings and contexts, such as playtime or a meal with the family, which can restrict the range of linguistic constructions used by the children.

Therefore, experiments designed for the purpose of testing children's representation of complex constructions that are quite infrequent in spontaneous speech, to which relative clauses belong to, probably allow a more detailed analysis (Brandt & Kidd, forthcoming). Nevertheless, data from experimental settings also have to be interpreted with some caution. Children have relatively short attention spans and a limited working memory, and these cognitive limitations influence children's behavior in language experiments (cf. Hamburger and Crain 1982). Thus, studies using different methodologies, especially acting-out or pointing studies which require the coordination of cognitive processes and motor skills, sometimes diverge in their results and conclusions.

In general, despite potential problems of sampling or limited contexts, a corpus analysis appears to be a good indicator of children's knowledge of

linguistic constructions, since children do not need to have a good short-term memory like in experimental tasks.

My data are taken from a corpus of recorded all-day situations in Chintang village. In longitudinal studies, such as the one I use, children are video- and/or audio-recorded in their interaction with their caregivers and other children. To avoid a change in their behavior and to reduce their awareness of being recorded, the researcher is mostly absent. Only microphones and/or cameras are positioned recording the particular situation. After having recorded material of several months or years, the data are organized in chronological order. Afterwards the sessions are transcribed (and translated if necessary), in a fourth step they are glossed and tagged for special features (for example parts of speech and speaker groups). Finally, the data can be analyzed with regard to different objectives.

I will introduce the used corpus in the following section.

4.2 The CPDP-corpus

The Volkswagen Foundation founded the DoBeS programme (**D**okumentation **B**edrohter **S**prachen = documentation of endangered languages) with the objective of documentation of languages that are in danger of becoming extinct within the near future. Various projects work on different languages recording, archiving and analyzing them. One of these projects is the *Chintang and Puma Documentation Project* (CPDP), aspiring at the linguistic and ethnographic documentation of these two Kiranti languages (cf. the official website: <http://www.uni-leipzig.de/~ff/cpdp/>). The project is administered by the Department of Linguistics at the University of Leipzig and connected with the Department of Linguistics at Tribhuvan University in Kathmandu. Additionally the project cooperates in Kathmandu with the Centre for Nepal and Asia Studies and in Leipzig with the Max Planck Institute for Evolutionary Anthropology.

Besides linguistics and ethnography the data analyzed by the CPDP also include language acquisition information. Unfortunately, there are hardly any studies about the language acquisition in non-western, rural societies. The goal of this area of the project is to gain insight into the acquisition of a non-European language and into the communicative environment in which the children grow up in Nepal. One of the findings is that children of rural regions are surrounded by more reference persons than children of urban, technological regions. For this reason children of Nepalese villages for example get diverse input, whereas the input of western children growing up in urban societies is mostly restricted to very few persons (cf. <http://www.eva.mpg.de/lingua/research/chintang.php>). The data of the language acquisition part within the CPDP are the basis for my work and further analyses.



Figure 6. In Chintang village ⁸

The members of the team regularly spend time doing field research with native speakers. They recorded the people of the village at their homes (figure 6) with microphones and video cameras. Most of the records were produced on the verandas of the cottages, in the courtyard and on the adjacent fields. The video tapings were recorded in the years 2004 and 2005; the project has material of approximately one year and a half.

⁸ cf. <http://www.uni-leipzig.de/~ff/cpdp/frameset.html>

The material I use for my analysis documents the language of four children learning Chintang as their first language. They were recorded in everyday situations: while playing with other children, cooking and eating with their parents or learning new things.



Figure 7. Chintang children ⁹

Two of the four children are male and two are female, all of them between two and four years old during the time of recording. In the study they are divided into the so called *two-year-olds* and the *three-year-olds*.

The *two-year-olds* are target child 1, Khem Kumar (m), and target child 2, Kamala (f). When starting the recordings in 2004 they were both two years old (2;1 = two years and one month), at the end in 2005 they were three and a half years old (3;6 = three years and six months). The *three-year-olds* are target child 3, Kalpana (f) and target child 4, Man Kumar (m). At the beginning they were three years old, when the records were finished, they were four and a half years old. ¹⁰ The data are sorted according to the child that is recorded (target child), the month in which it is recorded (round or cycle) and the particular situation of recording (session).

⁹ cf. <http://www.uni-leipzig.de/~ff/cpdp/frameset.html>

¹⁰ Ch1: Khem Kumar (m), born 09.03.2002, sessions 18.04.2004 (2;1) - 04.09.2005 (3;6).

Ch2: Kamala (f), born 21.03.2002, sessions 18.04.2004 (2;1) - 04.09.2005 (3;6).

Ch3: Kalpana (f), born 06.04.2001, sessions 20.04.2004 (3;0) - 04.09.2005 (4;5).

Ch4: Man Kumar (m), born 20.05.2001, sessions 20.04.2004 (2;11) - 04.09.2005 (4;4).

The rounds correspond to the month of recording – R01=April 2004, R02=May2004, R03=June2004 and so on. In March and May 2005 there were no recordings, so R12=April2005, R13=June/July2005, R14=August/September2005 (for example file Ch1R03S02 = target child 1, round 3 (= June 2004), session 2). Each of the rounds consists of several sessions with an average of 28 minutes length.

The Chintang data for this study are drawn from naturally-occurring conversations among relatives and friends. The conversations are face-to-face, some of them are two-party, but most of them are multi-party. So everything of my analysis is based on spontaneous children's utterances which I in many points compare to the utterances of the adults that occur in the recordings. The used data consist of 148 files with a total of approximately 69 hours recording of child-adult and child-child interaction. Like already said in the last section, different factors have an impact on the database: The density of the recordings, the frequency of the specific items and structures and the context of the particular situations affect the results. Thus, we have to keep in mind that the corpus is a good overview but only an excerpt of the entire knowledge and linguistic competence of the target persons. An additional factor is the individual development of the children. The different children do not acquire a particular structure at a certain age and develop in the same speed. Therefore, researchers, and I will do so as well, sum up several sessions to bigger units according to the age. In my relative clause analysis I order the children in different age groups of three or six months intervals (2;0-2;2 / 2;3-2;5 / 2;6-2;8 / 2;09-2;11 or 2;0-2;5 / 2;6-2;11 (=year;month) and so on) to notice possible developments with increasing age.

4.3 Relative clauses in Sino-Tibetan languages

Different languages of the Sino-Tibetan family use different strategies for relativization. What they have in common is that all relative clauses get along without relative pronouns. One strategy that is important in this

context, since this is the way Chintang relative clauses are constructed, I will present now.

In many Sino-Tibetan languages, as also in Chintang, the basic structure of relative clauses is a general “*all-purpose attributive syntax*” (Bickel, in press). This is not exclusively used for relativization but it comprises all kinds of clausal attributes and nominalizations. In most Sino-Tibetan languages relative clauses, genitive markers and nominalization devices are identical (Bickel 1999). The morphological congruence of these three syntactic functions has been referred to as the “*Standard Sino-Tibetan Nominalization*” (SSTN) and is known in several eastern and southeastern Kiranti languages. This phenomenon is not restricted to Tibetan languages; several scientists have found similar occurrences in other languages as well. For example, Matisoff (1972) describes relations between nominalization and relative clauses in Chinese and Japan, Foley (1986) found similar structures in Papuan languages and Weber (1989) identified that phenomenon in Quechua.

This syncretism is not accidental, but reflects a structural relationship among these functions, at least in Sino-Tibetan. The SSTN is far from being a universal Tibetan feature, but still found in several languages. Chintang is one of them where one morpheme, in this case a clitic element, marks nominalization, relativization and genitive relationship.

The relationship between these functions and their origin from a former nominalizer has been discussed by DeLancey (1986) and Noonan (1997). They say “*relativization in Tibetan is a subspecies of clausal nominalization. The modifying clause is nominalized, and then stands in either a genitive or an appositive relation to the head noun*” (DeLancey 1986). Therefore relativization is simply a specialized function of nominalization, which is chronologically and systematically the prior function. Noonan further suggests that the genitive use of nominalizers may be an extension of the attributive sense which is associated with nominalizers in relative clauses.

This somehow contradicts the hypothesis of LaPolla (2008). In his opinion the syncretism is due to a development of nominalizers out of relative clauses, and their subsequent use in apposition to another noun. He

.....

suggests a shift in the type of structure, from [*relative clause + noun*] to [*nominalized clause + noun*], which actually is [*nominal + nominal*]. This results from the fact that Sino-Tibetan languages tend to have double nominal constructions where the first nominal modifies the second. As the nominalized form is a nominal itself, it mostly follows the head in an appositional structure. He further assumes that this nominal-nominal structure is also the original structure for genitive constructions in Sino-Tibetan languages. Thus, according to LaPolla, the relative clause is the prior structure and the two other functions develop from this.

Either way, the nominalized modifier used in many Sino-Tibetan languages is not a true relative clause in the traditional sense since it serves other functions as well and can be seen as a general appositive or attributive construction.

4.4 Relative clauses in Chintang

Syntactically, relative clauses in Chintang are appositional nominalized and most frequently used in post-head position. This means, common are nominalized clauses acting as modifier of the head and the head noun generally precedes the relative clause if it is overt. There are no relative pronouns; the relative clause simply appears immediately after (and sometimes before) the head noun, with no other marking than the nominalizer.

Semantically, at least based on my current data, there are no such relative structures like for example English non-restrictive relatives giving additional non-defining information.

The categories based on the accessibility hierarchy that can be relativized are diverse in Chintang. The head noun can adopt different roles: subject, direct object, indirect object. The following examples are taken from the analyzed corpus:

(23) [*S-relative / intransitive subject relative*]

thuli khaʔ-no=go
 sibling go-NPST=NMLZ
 ‘thuli (sister) who goes’
 (CLLDCh4R06S03.401)

(24) [*A-relative / transitive subject relative*]

kemara huĩ khic-e numd-o-ko=go
 camera DEM record-NTVZ do-3P-NPST=NMLZ
 ‘That is the camera which records it.’
 (CLLDCh2R11S01.654)

(25) [*P-relative / direct object relative*]

bodi let-u-η=go lis-a-ηs-e
 bean plant-3P-1sA=NMLZ appear-PST-PRF-PST
 ‘The bean which I planted appeared/has grown.’
 (CLLDCh4R11S06.454)

(26) [*P-relative / indirect object relative*]

lekhali-ηa sa khutt-o=go kancha-ηa nad-eʔ
 Lekhali-ERG meat bring-3P=NMLZ sibling-ERG refuse-PST
 ‘Kancha (brother) denied the meat that Lekhali brought him.’
 (CLLDCh1R03S01.0790)

A further example which is structured in the same way is the ‘fact-S’ construction. I did not find any such sentence in the analyzed data, so I present an example from Bickel (in press):

(27) [*‘fact-S’ sentence*]

Kathmandu khad-a-η=go khabara a-khems-e ?
 Kathmandu go-PST-1sS=NMLZ news 2sA-hear-PST
 ‘Did you hear the news that I went to Kathmandu?’

Counting all relative clauses in the available data, the following form can be seen as prototypical structure of Chintang relative clauses:

(n2) - (head noun) - verb=*ko* - (v2).

The smallest unit forming an acceptable relative clause is a verb attached with the clitic =*ko* that marks nominalization and genitive as well. An example taken from the CPDP-corpus demonstrates this structure:

(28) *neg-ma=go*
bite-INF=NMLZ
 'the one which bites'
 (CLLDCh1R04S06b.1837)

If the head noun is expressed overtly, it most frequently occurs before the relative clause verb. Like mentioned in the previous section 4.3, the verb becomes a nominal itself with the help the NMLZ-marker and the whole construction is a nominal-nominal structure. Then, the nominalized element mostly follows the head in an appositional structure (LaPolla (2008):

(29) **cedar** *tha?-no=ko* *ni*
tin be.visible-NPST=NMLZ PTCL
 'The tin that is visible.'
 (CLLDCh3R08S05.0187)

Optionally, a second noun that is not the head noun (the object of the relative clause for example) can precede the relative clause verb, as here:

(30) **u-hawa** *ti-ma=go* *elo*
3sPOSS-air put-INF=NMLZ PTCL
 'A tool for filling (the ball) with air.' (lit.: 'Something to put its air.')

(CLLDCh1R13S05.165a)

Finally, the verb of the main clause, if there is any, in most cases occurs after the relative clause, as shown in the following example:

- (31) ama-ŋa thapt-u-ce=go **siy-a-ŋs-e**
 mother-ERG bring-3P-3nsP=NMLZ die-PST-PRF-PST
 ‘The ones (flowers) which were brought by mummy have died.’
 (CLLDCh3R07S05.055)

There are exceptions to this suggested prototypical structure: Sometimes the head noun or the object as well follows the relative clause rather than preceding it and in some cases the main clause verb occurs before the relative clause rather than after it. The proposed generalization about word order in such complex sentences is based on their occurrence frequency. Thus, the given prototypical structure is not a fixed statement, but rather describes the most frequently arrangement in relative clauses within my analyzed data.

4.5 The Chintang marker =ko

In Chintang, the aforesaid marker that combines the functions of genitive, nominalization and relative clause marking is the clitic =ko. A clitic is a morpheme that is syntactically free, but phonologically bound to words. It functions at the phrase or clause level rather than on the lexical level; so in contrast to affixes that are attached to roots, clitics are attached to phrases outside of derivational and inflectional affixes. The meaning is more grammatical than lexical. =ko is an enclitic, it occurs at the end of a phrase. The marker has several alternatives, the most frequently used forms are =go or =ge.

According to the features of clitics, =ko attaches to words of different syntactic categories. Host of this clitic is always a modifier of a NP, no matter what kind of modifier. The general structure is $[_{NP} [x=ko]]$. $[x=ko]$ is the modification of the NP and x can be a noun, a pronoun, a verb or a clause. This clitic occurs on several elements and dependent on the host it marks different functions.

=ko on nouns

The most frequently function of =ko on nouns is what we understand as the marking of possession. The comprehension of possession is certainly somehow different in Chintang than the concept what people of Western cultures have. To avoid the specific meaning of possession we could say that =ko on nouns generally describes things “belonging to x”, “of x”, “from x” and even “made of x”.

=ko attaches to all kinds of nouns: person names, kinship terms, objects, places and animals. The following examples are taken from my data, uttered by children:

- (32) Kamal=**ko** mala
 Kamal=GEN necklace
 ‘**Kamal**’s necklace.’
 (CLLDCh2R12S03 157)
- (33) sakpha=**ko** akka chak-na-bi-na akka
 bamboo-GEN 1s carve-1s>2-BEN-1s>2 1s
 ‘I make one for you **out of bamboo**.’
 (CLLDCh3R10S04.605)
- (34) ani-teĩ-be=**ko** sure naŋ
 1piPOSS-village-LOC-GEN Sure PTCL
 ‘Sure is of/**from our village**.’
 (CLLDCh4R06S05. 186)

Here it can be seen that the marker is not restricted to a certain group of nouns, but rather attaches to person names (32), as well as to objects (33) or places (34). The meaning varies, but can in all cases be abstracted as somewhat genitive or possessive.

=ko on pronouns

The two largest groups of pronouns on which =ko occurs are personal pronouns and demonstratives. Like in the groups of nouns, personal

pronouns are marked with the clitic to denote a relation of possession. The most common meaning is “my/your/his.. x”, to generalize this function we could say that ‘x=ko’ means “belonging to x” or “of x” in a broader sense. The meaning of demonstratives plus =ko is related to that of nouns and pronouns, with a semantic extension. This can be abstracted with “from/of x”, “near x” or just “x”, mostly connected with a pointing gesture. A smaller group of pronouns that occur with =ko are interrogative pronouns. The meaning is again genitive/possessive or nominalizing. The examples from the corpus show the different pronouns that occur with the marker:

(35) a-ma ba ak=**ko** choyop
 1sPOSS-mother DEM.PROX 1s-GEN sugarcane
 ‘Mother, this here is **my** sugarcane!’
 (CLLDCh2R09S02.503)

(36) hana=ko huŋ=**ge**-iʔ-ta khim aŋ
 2s-GEN DEM-GEN-LOC-FOC house PTCL
 ‘Your home is **there**, right?’
 (CLLDCh4R06S05. 1024)

(37) ba sa-i=**ko**-kha
 DEM.PROX who-LOC-GEN-PTCL
 ‘**Whose** is this?’
 (CLLDCh1R04S06.0483)

In all three samples the meaning is possession in a broader sense. On personal pronouns like in (35) or on interrogative pronouns like in (37) a somehow “classical” possession is expressed, similar to constructions with person names. On demonstrative pronouns like in (36), the clitic as well marks something like possession, but in general it forms a complex deictic expression that can be translated as “here/ there/ over there”. The specification of the meaning results mostly from the uttered expression plus pointing to the direction.

=ko on verbs

The clitic =ko on verbs marks a structure that can be classified as relative clause. Therefore, the group of utterances in which verbs occur with the marker =ko is the most interesting for my work. Therefore, some words should be said about the general structure of verbs in Chintang. Concerning this I refer to Bickel (2007), who describes the verb structure in this language in his paper.

Chintang verbs, whose stems consist of a monosyllabic root, inflect for tense, aspect, polarity and mood; and they agree with their different arguments. A (agent, actor of an event) as well as P (patient, affected by an event) are implemented as prefixes or suffixes on verbs. Both, verbal stems and affixes cannot occur in isolation. There are some dependencies between prefixes and suffixes. When they occur in combination, they either behave like circumfixes structurally or they complement one another semantically.

Verbs can be attached with up to two prefixes. More than two are possible, but rare. The order of the prefixes is not constrained by any rule, neither semantically nor morphosyntactically. They are freely transposable; the chosen order depends amongst others on priming, copying or personal habits. According to Bickel Chintang grammatical words consist of several phonological words and prefixes can choose any of them as their hosts, so the order is not fixed.

The suffix chain on Chintang verbs can be longer than the prefix string. Up to four or five suffixes are frequently used. The order is not free, different slots allow certain suffixes, so they are not permutable.

A common verb structure is for example

maiapitonse

mai- a- pit -th -u -ŋs -e

NEG- 2S/A- give -NEG -3P -PRF -PST

‘You have not given it.’

This example shows that the negation circumfix of past tense or imperative verb forms consists of the prefix *mai-* and the suffix *-th*, they

only occur together. The agent of the act is marked by the prefix *a-* (2S/A), the patient is marked by the suffix *-u* (3P). The suffixes *-ŋs -e* indicate the tense of the verb (perfect).

At the end, after the whole string of affixes, every verb can be nominalized with the clitic *=ko*, that turns the clause into a relative clause.

The example would change into the utterance

maiapitonŋsego

mai- a- pit -th -u -ŋs -e **=ko**

NEG- 2S/A- give -NEG -3P -PRF -PST -NMLZ

'The thing that you have not given.'

=ko, now with the meaning "nominalizer" rather than "genitive" (although that would not be incorrect as well), attaches to the verb. So the modifying clause of the head noun is nominalized, albeit the head noun of the matrix clause may be omitted in Chintang, the sentence is grammatical without an overt NP. This is called pro-drop (abbreviation of pronoun-dropping); who or what is being referred to can be deduced from the context and can be deleted in the sentence itself.

Generally, the clitic attaches to any kind of verb and is compatible with all inflectional morphemes a verb can have. The complexity of the verbs ranges from quite simple expressions like (38) to very complex and convoluted structures like in (40).

- (38) ta-no=**go**
 come-NPST-NMLZ
 '(The person) **who comes.**'
 (CLLDCh1R11S07. 501)

- (39) akka let-u-ŋ=**go**
 1s plant-3P-1sA-NMLZ
 '(The bean) **that I planted.**'
 (CLLDCh4R11S06.443)

- (40) tumpasa-ŋa mai-c-o-t-o=**go** anaŋa ca-m-hě
 wildcat-ERG NEG-eat-3P-NEG-3P-NMLZ 1ns eat-1nsA-PST
 ‘We ate **which was not eaten** by the wildcat.’
 (CLLDCh1R13S02.1158)

Relations among the functions of =ko

In Chintang, the explanation for the use of the genitive and nominalizing marker on a relative clause is that the modifying clause is in fact syntactically an NP. Therefore it is marked with the same clitic as any other dependent NP; the clause is subordinated to the head. Just like a simple NP is marked with =ko to show a genitive relationship to another NP, a verb is marked with =ko to show a subordination to a head noun or a main clause.

The direction of change obviously goes from nominalization to the relative clause function, and not vice versa. This development is quite common in Sino-Tibetan languages, always with the nominalizing function being prior to the relative clause function. The genitive, on the other hand, constitutes a link between these two functions.

The clitic =ko fulfills different grammatical functions, but it can be seen as one grammatical entity. Despite its diverse uses it actually always marks the same thing, namely nominalization. These different uses are simply contextual interpretations of one and the same device.

In the next section, I will present the findings concerning the usage and distribution of this clitic. Subsequently I try to summarize the formal, semantic and functional prototype features of relative clauses that occur in social interactions in Chintang language.

5 Results

5.1 The usage of =ko

Using the R-program for statistical computing I automatically extracted all structures that include =ko where it is not a variation of the Chintang indicative nonpast marker -kV (with V meaning any vowel). The output of the search was checked for mistakes. All target structures with nouns, pronouns and verbs including =ko were incorporated in the analysis.

I enumerated the utterances according to the speakers and separated utterances produced by the target children from all other utterances. To draw comparisons and to make out possible developments I looked at the adults' utterances as well. The utterances of other children in child-child conversations I left out to avoid a bias in the numbers. So there are two big sets of data, the utterances of target children and the utterances of adults. I arranged the data in chronological order and according to the part of speech on which the clitic =ko occurs. I explored the numbers and proportions of the different parts of speech, looked at the concrete structure of the items and then at the end of course, analyzed in particular the verbs with the enclitic =ko which form relative clauses.

First of all, I figured out the total number of =ko-occurrences and relative clauses in relation to the total number of utterances (table 2).

age of children	target children			adults		
	total utterances	=ko-occurrences	relative clauses	total utterances	=ko-occurrences	relative clauses
2;0-2;5	8105	279 (3,44%)	4 (0,05%)	13.623	708 (5,20%)	54 (0,4%)
2;6-2;11	6224	276 (4,43%)	2 (0,03%)	8074	373 (4,62%)	33 (0,41%)
3;0-3;5	7130	590 (8,27%)	19 (0,27%)	9185	635 (6,91%)	80 (0,87%)
3;6-3;11	5272	430 (8,16%)	19 (0,36%)	4200	274 (6,52%)	23 (0,55%)
4;0-4;4	2132	107 (5,02%)	6 (0,28%)	2040	106 (5,20%)	17 (0,83%)
<i>total</i>	28.863	1682 (5,83%)	50 (0,17%)	37.122	2096 (5,65%)	207 (0,56%)

Table 2. Total number of utterances, =ko-occurrences and relative clauses of children and adults (ordered in age groups of 6 months interval)

The general number of =ko-occurrences in relation to the total number of children's utterances is relatively constant. It ranges between 3,44% and 8,27%, but no obvious development can be recognized. The proportions of adults' total =ko-occurrences likewise vary a little bit and at an average the proportions of both groups are similar.

The proportion of relative clauses on the other hand increases with rising age of the children. Overall, there are 50 relative clauses produced by children in the transcripts. Between the ages of two and three only 0,04% of the children's utterances include a relative clause. In the following months the proportion increases up to around 0,32% between three and four years. It is not a continuous development, but a clear step is visible: The children at the age of two rarely use relative constructions; this changes in the time around their third birthday. At the age of three the proportion of relative clauses increases to the ninefold (from 0,03% to 0,27%). From this age onwards, the proportion of relative clauses lies at an average of 0,3%.

To emphasize the huge step between two-year- and three-year-olds and to avoid an imprecise generalization, I further divided the age groups and gave a closer look at these ages (table 3). It is the same data as in table 2, but with a smaller 3 months interval instead of a 6 months interval.

age of children	target children		
	total utterances	=ko-occurrences	relative clauses
2;0-2;2	2360	42 (1,78%)	1 (0,04%)
2;3-2;5	5745	237 (4,13%)	3 (0,05%)
2;6-2;8	3496	141 (4,03%)	1 (0,03%)
2;9-2;11	2728	135 (4,95%)	1 (0,04%)
3;0-3;2	2921	250 (8,56%)	9 (0,31%)
3;3-3;5	3629	243 (6,70%)	10 (0,28%)
3;6-3;8	3497	304 (8,69%)	8 (0,23%)
3;9-3;11	2355	223 (9,47%)	11 (0,47%)

Table 3. Total number of utterances, =ko-occurrences and relative clauses of the two- and three year old target children (ordered in age groups of 3 months interval)

The red numbers show the data of all target children at the age of two, the blue numbers describe the children at the age of three. The proportion of relative clauses increases from a 0,04%-level to a circa 0,3%-level; the raise of more than a sevenfold is clear visible. A similar, but smaller raise can be seen in the total proportion of all =ko-occurrences. At the turn from two years to three years there is an increase from 4,95% (2;9-2;11) to 8,56% (3;0-3;2), what is at least nearly a doubling. In contrast, there is no such big step in the numbers of the adults. Their proportions of all =ko-occurrences are largely constant around 5-6 %. In the adults' utterances 207 relative clauses can be found. Their proportion of relative clauses in relation to the total of utterances ranges between 0,4% and 0,87%.

For better comparison of children's and adult's usage of the marker =ko, figure 8 demonstrates the relation between them, again with regard to the total =ko (8a) and the relative clauses (8b). Therefore the division is a good remedy, so I divided the proportions of the children into the proportions of the adults. The value 1 means that the proportions of both speaker groups are identical, values above 1 show that the adults' proportions are higher, values under 1 show higher proportions of the children. Each extent of the columns illustrates the factor of the distance between the two values.

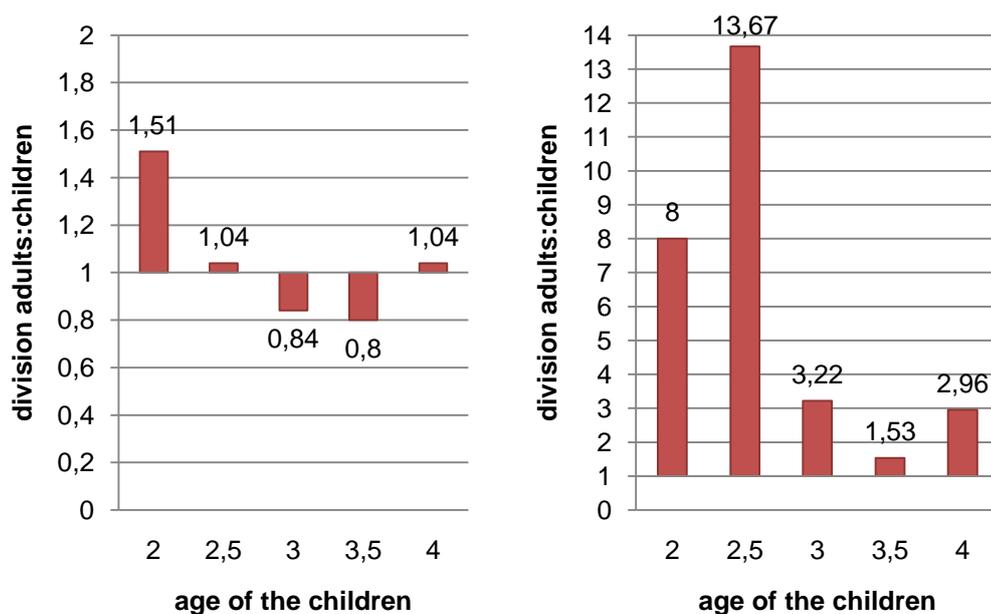


Figure 8a+b. Division of adults' proportions and children's proportions (taken from table 2). a: =ko-occurrences, b: relative clauses

Figure 8a demonstrates the total proportions of =ko-occurrences, children into adults. The values range around 1, there are no huge deflections from it. In the first period, with the children being between 2;0 and 2;5 old, the adults produce one and a half times more =ko marker than the children. The children of three years utter more =ko than the adults, approximately 0,8 times more. But in average (the mean value is 1,05) the proportions of children and adults are alike.

It is different with the proportions of relative clauses (8b). Adults produce more of them than the children throughout the data, so there is no value beneath 1. Rather, the values, in particular the first two where the children are younger than three years old, are quite high. According to the data, adults use up to more than 13 times more relative clauses than young children. The factor gets smaller with increasing age of the children; from the age of three onwards, the distance between the two groups reduces clearly. The mean value of the division after the third birthday is 2,57. So again, there is a turn at the edge between two- and three-year-olds.

5.2 The distribution of =ko (quantitative analysis)

The first counting presented so far only allude to the total appearance of the clitic =ko and relative clauses in general. If there are obviously much more =ko-occurrences than relative clauses, the question is what are the other utterances which are marked with =ko. Therefore, the second interesting object of investigation is the distribution of all =ko-occurrences on the different parts of speech.

In consideration of the relatively high proportion of the total =ko one might suggest that the great majority of the =ko-occurrences are nouns or pronouns, the two other categories presented in the previous chapter.

Thus, I inspected all utterances that contain the clitic – and the relative construction is actually the rarest form, in children's utterances (table 4a) as well as in adults' utterances (table 4b).

age	total =ko	pronouns	nouns	verbs
2;0-2;2	42	39 (92,86%)	2 (4,76%)	1 (2,38%)
2;3-2;5	237	226 (95,36%)	8 (3,38%)	3 (1,26%)
2;6-2;8	141	137(97,16%)	3 (2,13%)	1 (0,71%)
2;9-2;11	135	123 (91,11%)	11 (8,15%)	1 (0,74%)
3;0-3;2	250	212 (84,80%)	29 (11,60%)	9 (3,60%)
3;3-3;5	243	175 (72,02%)	58 (23,87%)	10 (4,11%)
3;6-3;8	304	252 (82,89%)	44 (14,47%)	8 (2,64%)
3;9-3;11	223	166 (74,44%)	46 (20,63%)	11 (4,93%)
4;0-4;2	64	43 (67,19%)	18 (28,13%)	3 (4,68%)
4;3-4;4	43	23 (53,49%)	17 (39,53%)	3 (6,98%)
total	1682	1396 (83,00%)	236 (14,03%)	50 (2,97%)

Table 4a. Distribution of =ko-occurrences on the parts of speech in children's utterances (ordered in age groups of 3 months interval)

age (children)	total =ko	pronouns	nouns	verbs
2;0-2;2	248	193 (77,82%)	36 (14,52%)	19 (7,66%)
2;3-2;5	453	346 (76,38%)	72 (15,89%)	35 (7,73%)
2;6-2;8	188	145 (77,13%)	28 (14,89%)	15 (7,98%)
2;9-2;11	185	119 (64,32%)	48 (25,95%)	18 (9,73%)
3;0-3;2	318	195 (61,32%)	77 (24,21%)	46 (14,47%)
3;3-3;5	303	201 (66,34%)	68 (22,44%)	34 (11,22%)
3;6-3;8	185	118 (63,78%)	58 (31,35%)	9 (4,86%)
3;9-3;11	93	44 (47,32%)	35 (37,63%)	14 (15,05%)
4;0-4;2	65	31 (47,70%)	24 (36,92%)	10 (15,38%)
4;3-4;4	38	22 (57,89%)	9 (23,69%)	7 (18,42%)
total	2076	1414 (68,11%)	455 (21,92%)	207 (9,97%)

Table 4b. Distribution of =ko-occurrences on the parts of speech in adults' utterances (ordered in children's age groups of 3 months interval)

Generally, the category of pronouns is the one that is the most frequent of all three categories that can host the clitic =ko. In all cases, in all age-intervals and in children's and adults' data, pronouns are the largest amount of all =ko-occurrences. They make up around 68,11% of the adults' =ko-occurrences and in average even 83,0% of the children's =ko-occurrences. Secondly, a much smaller quantity is the group of nouns.

The proportion of this category is only a third (21,92%) of the proportions of the adults' pronouns. In the children's data the group of nouns (in average 14,03%) is almost six times smaller than the group of pronouns. The smallest proportion is the one of verbs. With 9,97% of all =ko-occurrences in adults' speech they are only one half of the amount of nouns. In children's utterances verbs attached with =ko make up 2,97% and are therefore only a fourth of the already relatively small group of nouns. To visualize the percentages of the parts of speech, see figure 9.

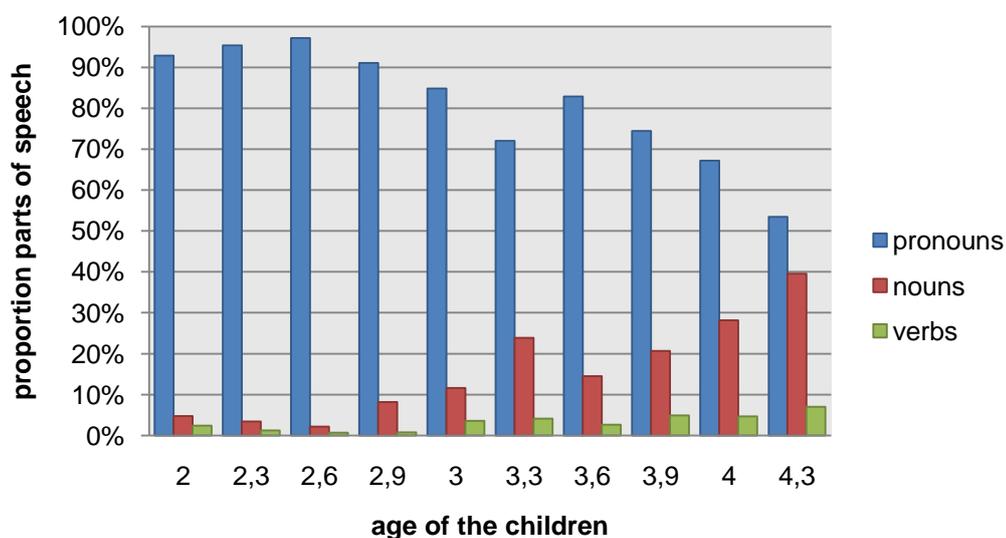


Figure 9a. Distribution of =ko-occurrences on the parts of speech in children's utterances (ordered in age groups of 3 months interval)

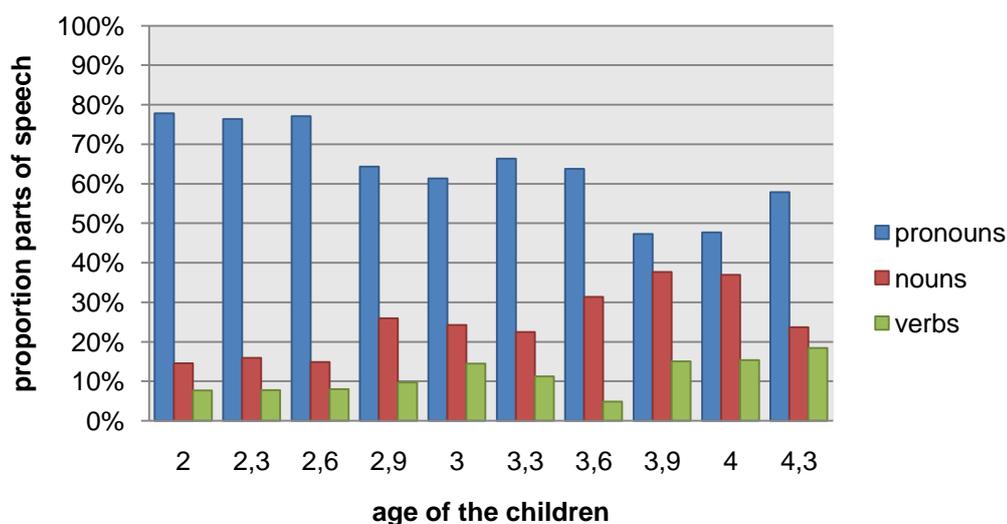


Figure 9b. Distribution of =ko-occurrences on the parts of speech in adults' utterances (ordered in children's age groups of 3 months interval)

As already described, the distribution on the three parts of speech is similar in both of the data sets. What differentiates the two figures is the ratio between the single proportions. In the children's data (figure 9a) the pronouns account for the huge majority, before the age of three they are more than 90% of all =ko-sentences. On the other hand, nouns and verbs are very rare. Again, three seems to be the critical age in which a turn proceeds: the amount of pronouns decreases whereas the proportions of nouns and verbs increase. A development with rising age is noticeable. Especially the percentage of verbs accumulates many times over, but still the proportion stays very small in comparison to the other two parts of speech.

In the adults' utterances (figure 9b) the general amount of verbs is much higher. Still, it is the smallest group, but the total of all =ko-occurrences is a bit more balanced. The number of pronouns is not that high, instead the percentages of nouns and verbs are higher than those of the children's. Here, as assumed, no development is visible.

5.3 The structure of =ko-hosts (qualitative analysis)

A next step in my analysis was to examine the features of the words that are attached with the clitic =ko. It could be possible that the marker is item-specific concerning the morphosyntactic structure or the meaning of the host. So I checked the surroundings of all =ko-occurrences on all parts of speech. The result, which I can anticipate, is that there are no constraints in this context. =ko can attach on any pronoun, noun and verb, no matter which affixes are already marked on the word.

In the group of the pronouns the most frequent form is *[pro=ko]*, without any other affix. That applies to personal pronouns (first, second and third person, singular and plural) as well as to the interrogative pronouns (sa 'who', hokko 'which', them 'what' and hokke 'where'). Also often found are the forms *[pro-i=ko]* or *[pro-peʔ=ko]* / *[pro=ko-peʔ]*, with -i and -peʔ meaning locative.

Demonstratives, which make up a huge proportion of the pronouns used with =ko, occur in various forms. Again, the most frequently used form is simply [DEM=ko], occurring with all demonstratives: ba ‘DEM.PROX’, hun ‘DEM’, yo ‘DEM.ACROSS’, to ‘DEM.UP’ and mo ‘DEM.DOWN’. Further common forms are [DEM-i=ko] / [DEM=ko-i] (-i ‘locative’), [DEM-peʔ=ko] / [DEM=ko-peʔ] (-peʔ ‘locative’), [DEM-ni=ko] / [DEM=ko-ni] (-ni ‘directional’), [DEM-sa=ko] (-sa ‘oblique’) or [DEM-patti=ko] (-patti ‘side’). Demonstratives have no prefixes, so there are only items with suffixes. Sometimes, up to two suffixes attach to the root before the clitic =ko attaches, forms like [DEM-sa-i=ko] or [DEM-i-patti=ko] are not unusual. As can be seen, =ko either follows the suffix or precedes it. Probably there are slightly differences in meaning. For further discussion about Chintang deixis see Dirksmeyer (2008); I just want to show that =ko attaches to all kinds of demonstratives, no matter which affixes are already part of the word, like in these examples:

- (45) ba=**go** bhale [DEM =ko]
 DEM.PROX=GEN cock
 ‘**This** cock.’
 (CLLDCh1R02S03b.172)
- (46) huŋ=**ge-i** ta yuw-a nunu [DEM=ko-i]
 DEM=GEN-LOC PTCL stay-IMP baby
 ‘Baby, **stay there!**’
 (CLLDCh1R02S02.093)
- (47) to-**patti=go** [DEM-patti=ko]
 DEM.UP-side=GEN
 ‘(The thing) **from the upper side.**’
 (CLLDCh3R02S04.1030)
- (48) huĩ moʔ-**ni=go** a-rod-u-ce [DEM-ni=ko]
 DEM DEM.DOWN-DIR=GEN 2S/A-carry-3P-3nsP
 ‘You carry these things **downwards.**’
 (CLLDCh4R11S11.116)

Concerning the nouns, again all possible items can be attached with the clitic =ko. Semantically, the hosts can be person names, kinship terms, animals, objects and places. Formally, also the construction [*noun=ko*] is the most frequently used one in the corpus. Optionally, the noun can be a plural, marked with the suffix -ce, which occurs either before or behind the clitic =ko. Possible prefixes can be possessive markers (like a- ‘1sPOSS-’, i- ‘2sPOSS’ or u- ‘3sPOSS’). Suffixes can be diminutive or restrictive (-le / -e ‘-DIM’), locative (-i / -pe? ‘-LOC’) or comitative (-niŋ ‘-COM’) for example. In all possible combinations =ko attaches to the noun, but generally the diminutive and comitative are rare. Like on personal pronouns and demonstratives the clitic either occurs at the right end of a word preceded by suffixes or it occurs on the root followed by suffixes. But in most cases the =ko is the rightmost element of the word, like the examples demonstrate:

- (49) hun na **a-nna=ko** jurab [*a-noun=ko*]
 DEM PTCL 1sPOSS-sister=GEN socks
 ‘Those are my sister’s socks.’
 (CLLDCh4R06S04.400)
- (50) kanchi-ŋa **kham-be=ko** [*noun-pe?=ko*]
 sibling-ERG floor-LOC=GEN
 ‘Kanchi (sister) (eats it) from the floor.’
 (CLLDCh4R11S11.253)
- (51) **ma?mi-ce=ko** kocuwa [*noun-ce=ko*]
 man-ns=GEN dog
 ‘The men’s dog.’
 (CLLDCh4R08S05.0174)
- (52) **i-nisa=ko-le** [*i-noun=ko-le*]
 2sPOSS-younger.brother=GEN-RESTR
 ‘It’s just your younger brother’s.’
 (CLLDCh4R11S10.295)

5.4 Features of Chintang relative clauses

All found target constructions were coded for the following features: (1) the existence of an overt head noun, (2) the semantic role of the head noun, (3) the animacy of the head noun, (4) the transitivity of the verb, and (5) the meaning of the verb. Thus, there are five parameters that characterize the structure of relative clauses.

As the rightmost column of table 4a (section 5.2) shows, the four target children produced a total of 50 relative clauses in the analyzed data. A closer inspection proves that five of them are repetitions. That means the child repeats its own utterance once again. That is the case either when somebody did not understand and asks the child to replicate the utterance or when the addressee does not react and the child says the sentence again to gain attention. These repeated relative clauses I left out of the closer analysis to avoid a bias. Thus, there are overall 45 relative clauses produced by the target children. They do not contain any one-to-one repetition of adults' sentences. So the spoken relative clauses are free spontaneous utterances.

The 45 children's relative clauses I coded for the named features to get an overview how the sentences are structured with respect to the head noun and the verb. Concerning the head noun I divided two groups: clauses with an overt head noun and clauses without a head noun (pro-drop). Within both groups I determined the semantic roles of the heads according to Fox' interpretation of the Noun Phrase Accessibility Hierarchy (1987) using the categories A (agent of a transitive verb), P (patient of a transitive verb) and S (single argument of an intransitive verb). Additionally I listed the animacy of the head noun, in headed as well as in headless constructions.

Looking at the verb in the relative clause I determined the transitivity that of course correlates with the semantic roles of the head nouns (S in intransitive clauses, A and P in transitive clauses). Semantically, I distinguished between three verb types, according to Diessel (2009): verbs denoting a physical activity (e.g. *eat*, *plant*, *run*), verbs denoting

cognition, perception or communication (e.g. *know, hear, say*) and thirdly, verbs denoting a state or possession (e.g. *be, have*).

The results of the coding of the 45 children's relative clauses are illustrated in table 5.

age	θ -role	animacy	transitivity	verb meaning
2;0-2;5 (4 RC)	head noun: 1			
	P 1	animate	t	activity
	no head noun: 3			
	P 1	inanimate	t	cognition
	S 2	animate	i	activity
2;6-2;11 (2 RC)	head noun: 0			
	no head noun: 2			
	P 1	inanimate	t	activity
	S 1	animate	i	activity
3;0-3;5 (16 RC) (+3 rep.)	head noun: 4			
	P 4	inanimate	t	activity
	no head noun: 12			
	P 4	inanimate	t	activity
	S 6	1 ani / 5 inani	i	act/cogn/state
	A 2	1 ani / 1 inani	t	activity
3;6-3;11 (17 RC) (+ 2 rep.)	head noun: 8			
	P 4	inanimate	t	activity
	S 4	inanimate	i	act/cogn/state
	no head noun: 9			
	P 6	inanimate	t	activity
	S 3	inanimate	i	act/cogn/state
4;0-4;4 (6 RC)	head noun: 2			
	P 2	inanimate	t	activity
	no head noun: 4			
	P 3	inanimate	t	activity
	S 1	inanimate	i	activity

Table 5. Features of the children's relative clauses

With the help of these five parameters the following facts about children's relative clauses result from the table:

-
1. Most of the sentences containing a relative clause have no overt head noun. 30 of 45 utterances (= 66,67%) are headless constructions.
 2. Most of the head nouns, no regard if they are overtly marked in the clause or not, are inanimate (39 of 45 = 86,67%).
 3. The majority of the relativized head nouns, expressed or not, bear the role of P (26 of 45 = 57,78%). Also often relativized is the semantic role S (17 of 45 = 37,78%). The rarest relativized role is A (2 of 45 = 4,44%); others do not occur in the corpus.
 4. In most cases the verbs are transitive (28 of 45 = 62,22%).
 5. The verbs mostly (38 of 45 = 84,44%) denote a physical activity.

The same analysis I accomplished with the relative clauses produced by the adults. In the evaluated corpus I found 207 relative clauses (cf. the rightmost column of table 4b), drawn from many hours of conversation. These data less the repetitions that I found result in 201 expedient relative clauses. I coded them for the same features as the children's relative constructions. The results can be summed up as follows:

1. Most of the sentences containing a relative clause have no overt head noun. 161 of 201 utterances (= 80,1%) are headless constructions.
2. Most of the head nouns, overtly expressed in the clause or not, are inanimate (122 of 201 = 60,7%).
3. The majority of the relativized head nouns are S (93 of 201 = 46,27%). In similar frequency relativized is P (88 of 201 = 43,78%). The rarest relativized thematic role is A (20 of 201 = 9,95%).
4. Slightly more verbs are transitive (108 of 201 = 53,73%).
5. The verbs mostly (161 of 201 = 80,1%) denote a physical activity.

Comparing the facts, the data sets of children and adults are quite the same. The numbers and proportions differ a little, but in general the tendencies are alike. Summing it up, we could say the prototypical Chintang relative clause (according to frequency only) is headless,

relativizes an inanimate P- or S-element and includes a verb denoting a physical activity.

As already stated in section 4.4 according to all relative clauses in the available data, the prototypical word order of Chintang relative clauses is *(n2) - (head noun) - verb=ko - (v2)*. In the data I found all possible combinations of this schema: only *[verb=ko]*, *[head noun + verb=ko]*, *[second NP + head noun + verb=ko]*, *[verb=ko + main clause verb]* or *[head noun + verb=ko + main clause verb]* for example. There are sentences with a different word order (e.g. *[verb=ko + head noun]*), but the majority of the relative clauses in the data go along with this generalization, which is again drawn from frequency only.

5.5 Cross-linguistic comparison

The analysis of Chintang relative clauses allows deriving correlations between particular features. For example, there are correlations between the semantic role and the animacy of the head noun. Moreover, there may be a connection between transitivity of the verbs and the age of the children. Those and other findings, comparing to studies about other languages, I will present now.

The first thing I want to look at is the general and well-known thesis that animate referents are likely to function as agents and inanimate referents are often used as patients. Fox and Thompson (1990) for example analyzed more than 400 adults' relative clauses in spoken English discourse and found that A-relatives are mostly used to provide information about animate entities; P-relatives on the other hand are used to describe inanimate entities. This corresponds to Diessel (2009), who detected that also English-speaking children almost exclusively use A-relatives with animate head nouns, and that the vast majority of P-relatives are used with inanimate head nouns. Thus, the same general linguistic patterns seem to apply in adults' and children's relative clause production in spontaneous speech. Additionally, this is not only the case

in English, but in other languages as well. Brandt (2008), who analyzed the utterances of a German-speaking child, found the same pattern. Within a sample of 150 P-relatives, 78% are attached to inanimate heads. Since there are only two A-relatives in the Chintang children's data, I can give no clear statement about these sentences, but the several A-relatives produced by the adults approve the thesis. The number of P-relatives is much higher in both data sets and their head nouns being in almost all cases inanimate affirm the thesis as well. Animate head nouns account for 75% in the adults' A-relatives like (56) (e.g. the one that beats/puts/plants/gives something), only in 25% they are inanimate like in example (57).

(56) *[animate A-relative]*

mai-o-no=ko salo-kha
 1nsiP-hit-NPST=NMLZ who-PTCL
 'Who is the one (person) who hits us?'
 (CLLDCh2R02S04.537)

(57) *[inanimate A-relative]*

kemara huĩ khic-e numd-o-ko=go
 camera DEM record-NTVZ do-3P-NPST=NMLZ
 'That camera which is recording.'
 (CLLDCh2R11S01.654)

Head nouns functioning as patient are in 96,15% of the children's and 88,64% of the adults' P-relatives inanimate like in (58) (e.g. the one that is brought/eaten/cleaned/taken by someone), only 3,85% (children) and 11,36% respectively (adults) are animate like in (59).

(58) *[inanimate P-relative]*

waphuruk-ko u-gedo putt-o-ŋs-e=go
 cucumber-GEN 3sPOSS-seed pluck-3P-PRF-PST=NMLZ
 'The seed of cucumber that has been plucked.'
 (CLLDCh4R06S03. 649)

- (59) [*animate P-relative*]
 wa-ce chu=go
 chicken-ns tie=NMLZ
 'The chicken which are tied.'
 (CLLDCh1R03S03 0985)

As well as A-relatives, P-relatives mostly contain activity verbs. S-relatives are, as we might suggest and as previously mentioned studies confirm, animate and inanimate. There is no huge numeral difference between the animacy categories. In coherence with the verb S-relatives have animate head nouns (e.g. in combination with *go, cry, come, sit*) or inanimate head nouns (e.g. with *fall down, roll, be, be visible*). Again, the meaning of the verbs expresses most frequently an activity, but verbs in S-relatives also often denote cognition/perception/communication or state. In fact, a state is only described in intransitive S-relatives. State verbs do not occur in transitive constructions.

A second thesis which can be supported with the available data is the assumption that P- and S-relatives are the great majority, while A-relatives account only for a small percentage of all produced relative clauses (Brandt et al. 2008). That applies to the children's as well to the adults' data of my study. As already stated above, the hierarchy of relativized elements is as follows for the children:

P	S	A
26 of 45 (= 57,78%)	17 of 45 (= 37,78%)	2 of 45 (= 4,44%)
	>	>

For the adults it looks like this:

S	P	A
93 of 201 (= 46,27%)	88 of 201 (= 43,78%)	20 of 201 (= 9,95%)
	>	>

In the children's data there are only two utterances with A as relativized element, so I cannot draw conclusion to the age in which the number of A-relatives increases. Nevertheless, the proportion of them obviously rises with age, since the number in the adults' data is higher. But still it remains the element that is relativized the least. S and P account for the biggest share of the relative clauses in the corpus. This finding matches with the reviewed version of the Noun Phrase Accessibility Hierarchy (Lehmann 1986, Fox 1987) in which S and P are placed on the leftmost position of the hierarchy. By the way, there is no distinction between sentences with overt head noun and sentences without naming the head. In both constructions the order of the relativized elements is the same. Thus, there is no preferred semantic role that is expressed with a head noun and on the other side, there is no preferred role that is dropped in the utterance. The split hierarchy for the children's relative clauses is:

headless	P (15/30 = 50%)	>	S (13/30 = 43,33%)	>	A (2/30 = 6,67%)
headed	P (11/15 = 73,33%)	>	S (4/15 = 26,67%)	>	A (0)

For the adults' relative clauses the subdivided hierarchy is:

headless	S (78/161=48,45%)	>	P (65/161=40,37%)	>	A (18/161=11,18%)
headed	P (23/40 = 57,5%)	>	S (15/40 = 37,5%)	>	A (2/40 = 5%)

A-relatives seem to be rarely headed, but a general statement is difficult considering the relatively small amount of data. What we can see is that at least the proportions of the three roles are similar in both conditions.

Thirdly, it has been shown for English and German that young children produce more subject relatives, whereas adults tend to produce more object relatives (Brandt et al. 2008, Diessel and Tomasello 2000). This is most probably due to the fact that in these languages subject relatives are

very similar to simple sentences (Bever 1970, Diessel and Tomasello 2005). It has also been suggested that subject relatives are acquired before object relatives because they are structurally less complex (e.g. Goodluck, Guilfoyle and Harrington 2006). In connection to that thesis can be seen the discovery of previous studies that early relative clauses produced by young children tend to be intransitive and with rising age the number of transitive relatives increases (e.g. Diessel 2005, Brandt et al. 2008). Analogously, in the mentioned studies English- and German-speaking children's early relative clauses relativize mainly on head noun function as S, only later on they begin to relativize on P and A as well. These findings I tested in my data proving no such development in the corpus. The distribution of transitive and intransitive clauses according to the age of the Chintang-speaking children is shown in table 6.

age	total RC	intransitive relatives	transitive relatives
2;0-2;5	4	2 (50%)	2 (50%)
2;6-2;11	2	1 (50%)	1 (50%)
3;0-3;5	16	6 (37,5%)	10 (62,5%)
3;6-3;11	17	7 (41,18%)	10 (58,82%)
4;0-4;4	6	1 (16,67%)	5 (83,33%)

Table 6. Intransitive vs. transitive relative clauses in the children's utterances

There is a slight increase from a 50%-50%-level at the age of two years to a majority on the side of the transitive relatives at the ages of three and four. Therefore, the proportion of transitive relative clauses increases, but since there are only six relative clauses in the data produced by children before three no really reliable statement can be given about this age. Secondly, if we look at the percentages of transitive relatives produced by adults that range between around 51%-58%, we can see that the proportions of the children's relative clauses are not that far away from these values. One exception is the proportion of the children at the age of four, but I can give no explanation at which age this high percentage adjusts, because I have no further data about the target children after the

age of 4;4. What I can say about the given data is that in the children's as well as in the adults' relative clauses the number of intransitive and transitive clauses is almost equally distributed, with a slight majority on the side of the transitives. Therefore, it is probably not the case that in early produced Chintang relative clauses S is the main relativized element while later produced relatives occur with transitive verbs and A and P (or rather P as the data show) as head nouns.

This contradicts the studies by Brandt and Diessel who report that the earliest relative clauses of their target children are almost exclusively intransitive. While the number of transitive relative clauses increases in their data, intransitive relatives remain dominant throughout the studies.

One reason that this has been proven for English- and German-speaking children is that S- and A-relatives are very similar to simple sentences: The sentence expresses one single proposition and the head noun is the actor. In P-relatives that account for the great majority of transitive relative clauses the structure is different from simple sentences and therefore the children acquire them later. This conforms to the NVN schema analysis of Bever (1970) and Diessel's modification of it (2005), presented in section 3.2. Children prefer relative clauses in which the actor is expressed by the sentence-initial NP, just like it is the case in the majority of simple sentences in English and German. In Chintang there is no such correlation. S-, P- and A-relatives do not differ in their structure. The clitic =ko is attached to the verb what turns the whole sentence into a relative clause, so there is also no big structural difference between simple sentences and relative clauses. Thus, the chronological order of acquired relative constructions depends *inter alia* on the similarity to simple sentences and because there is no structural difference between intransitive and transitive relatives in Chintang, no such huge effect is found like in English and German where the transitivity of relative clauses determines the similarity to simple sentences.

A last thesis I want to examine in my data is the assertion that the early produced relative clauses in German and English are mostly attached to an isolated head noun instead of being attached to a full-fledged main

clause (Diessel and Tomasello 2000, Brandt et al. 2008). Finally, this is again a thesis I can confirm with my Chintang data. Overall, 31 of 45 relative clauses produced by the four target children (= 68,89%) are appended to isolated head nouns like in example (60). This head noun, as said before several times, can be left so that a Chintang relative clause at least consists of the main verb attached with the clitic =ko like in (61).

(60) cedar thaʔ-no=ko
 tin be.visible-NPST=NMLZ
 'The tin which can be seen.'
 (CLLDCh3R08S05.0187)

(61) yuŋ-no=go
 sit-NPST=NMLZ
 'The one (person) who is sitting.'
 (CLLDCh1R04S06.1620)

All other arguments are optionally, so as a second verb which is an essential part of a full-fledged main clause. Regardless of whether the head noun is uttered or not, only 31,11% of the children's relative clauses are attached to a full main clause containing a verb, like in (62).

(62) bajε ak-ko bodi let-u-ŋ=go lis-a-ŋs-e
 grandpa 1s-GEN bean plant-3P-1sA=NMLZ appear-PST-PRF-PST
 'Grandpa, my bean which I planted has appeared/grown.'
 (CLLDCh4R11S06.454)

Sentences like (62) only occur after the third birthday. Before three the Chintang target children exclusively produce relative clauses that are attached to an isolated head noun – that, as we know from table 5, is in five of six sentences even deleted.

In comparison to the proportions in the children's data, the adults use more relative clauses in connection with full-fledged main clauses. 89 of the 201 relative clauses produced by adults (= 44,28%) are attached to

complete main clause containing a verb and an own proposition. 112 sentences (= 55,72%) consist of only a head noun (overtly expressed or not) and a relative clause. This means that even in adults' speech the majority of the relative clauses are appended to isolated head nouns. But again, in children's speech the proportion of such clauses is higher since they are much easier to produce and understand because of their single proposition. And again, there is a step from the two-year-olds who use exclusively the structure [*head noun + relative clause*] to the three-year-olds who begin to produce the structure [*main clause + relative clause*] whose percentage increases with rising age, as the numbers of the adults suggest. In general, the structure with an isolated head noun remains the dominant in spoken spontaneous and natural Chintang speech.

5.6 Discourse functions of relative clauses

Relative clauses can serve various communicative functions. Depending on their function, they show certain properties and occur in specific linguistic contexts. Children acquire language in social interactions, so it is important to consider the context in which children hear and use constructions like relative clauses (Brandt, in press).

As already announced in section 2.5 about the reviewed Accessibility Hierarchy, Fox (1987) published a study of English conversations in which object relatives are very frequent. Connected with the grammatical role of object is the semantic role of Patient (P), the recipient of the action of a verb. As shown in the previous section 5.5 there is also a clear predominance of S- and P-relatives (95,56% in sum) over A-relatives (4,44%) in children's spontaneous speech in Chintang. It is the same with adult's speech, where S- and P-relatives make up a total of 90,05% and A-relatives only account for 9,95% of all uttered relative clauses. This conforms to the findings in Fox' study and her assumption of an Absolutive Hypothesis. One reason why especially P is the most

frequently relativized element is that P-relatives serve important discourse functions.

Fox and Thompson (1990) found that P-relatives are often used as grounding devices and therefore serve an anchoring function. That means, they make a new referent relevant by linking it to an old referent of the discourse. De Vries (2001) also describes the function of anchoring: The head noun is linked by an additional NP, the "anchor", to another discourse entity. The NP serving as anchor is never a new information. Rather, it shows the contextual relevance of the new head noun. An example is shown in conversation (63).

- (63) child: apa akko tei thanda?na
 "Daddy, take out my cloth."
 adult: them ?
 "What?"
 child: amaŋa paĩ taducego thanda?na
 "Take it out which was brought by mummy."
 adult: them nakhu?tago ?
 "What was brought for you?"
 child: **sat pharak amaŋa khu?taŋsango**
"Shirt and skirt which were brought by mummy."
 (CLLDCh3R12S10.013)

P-relatives like this show how the new referent (in the example '*shirt and skirt*' (=P)) is related to what has been said before or what is already known or familiar to the interlocutors (in the example '*mummy*'). So the relative clause situates the introduced referent into the on-going discourse by linking it to an old referent. This old referent does not necessarily have to be a subject that is talked about, but it is often one of the conversational partners expressed by a first or second person pronoun, as shown in example (64).

- (64) Indra: juna chitona
 "Juna, be quick!"

Juna: hanaʔko asuk
 "How many do you have?"
 child: **ba akkataʔ cattukunʒo**
"This (target) is which I hit."
 Indra: catte aŋ akkhai
 "You hit very much."
 (CLLDCh4R10S11.016)

In this playing situation the anchor is the speaking person herself. Thus, the link is given by the conversational context.

In contrast, many S- and also A-relatives (this means subject relatives in general) seem to have descriptive function; they give information about the head noun. For this reason, they are often stative. Looking at the S-relatives produced by the Chintang children, we can see that nearly 30% of them occur with *'be'* as the main verb. Therefore, with 5 of 17 clauses *'be'* is the most frequently used verb in intransitive S-relatives, followed by *'go'* or *'come'* (4 of 17 S-relatives = 23,53%). With this construction often a new referent is introduced and characterized, like the extract from a conversation between target child 4 and a parent during mealtime in (65) demonstrates.

(65) adult: miʔmuŋ conena o
 "Let her eat a little bit, ok."
 adult: miʔmuŋ coha kina akka cakkunʒ miʔmuŋ yuŋno mo ludana
 "Say 'You eat a little bit and I eat a little bit.'"
 child: ne saĩli miʔmuŋ coha
 "Take it, Saili, eat a little bit."
 child: **hana ghawa lisago cama yaŋsokonijaŋ**
"Because your wound which is there you can't eat."
 child: hancile cama yaŋsoko
 "Only you two can eat."
 child: ghawata ghawa lise
 "It's a wound, a wound."
 (CLLDCh4R11S11.276)

In the example a new referent is introduced into the conversation (*'your wound'*), the relative clause is stative because of the verb *'be'*. Fox (1987) showed that S- and A-relatives are mostly used with semantically light verbs, such as *'be'*, *'have'*, *'do'* and *'go'*. Previous studies with German, English, French, Spanish and Hebrew children also show that they start to produce S- and A-relatives mainly to make an assertion about head nouns that are part of an existential (e.g. *'There is a x'*) or presentational construction (e.g. *'I have a x'*) in the main clause (Brandt et al. 2008, Dasinger and Toupin 1994, Diessel and Tomasello 2000, Hudelot 1980). In example (65) it is the other way round: The relative clause is existential and the main clause provides the only real proposition of the sentence. Either way, the existential or presentational constructions often do not give new information; they just introduce a new referent into the discourse. The information is then provided by the other subclause alone (Silke Brandt, submitted).

The so far described anchoring function of object relatives and the stative description function of subject relatives which accompany with the distinction between the semantic roles in a sentence are not the only way to determine possible discourse functions of relative clauses. Furthermore, not every P-relative serves the anchoring function and not every S- or A-relative is purely descriptive. Thus, there are more discourse functions a relative clause can serve. Both of the named functions imply that a new referent is introduced into the discourse, but this purpose, which is often thought to be the central function of relative clauses, does in fact not account for the great majority of relative clauses. Dasinger and Toupin (1994) propose an overview of general discourse functions of relative clauses which I will use as basis for the classification of the Chintang data. They present four main functions:

1. *Naming referents.* The simplest way to refer to something is by naming the term. But in some cases there is no lexical item for a particular referent or the speaker does not know or cannot access the item. Then people use alternatives to refer to such an object. Relative clauses are one option which serves this function. The head noun that mostly denotes

a general category, often expressed by an indefinite pronoun (*something, someone*), is further specified by a relative clause and together this utterance composes a name or a label for the referent. An example, in which the concept *'air pump'* is paraphrased by a relative clause and which perfectly demonstrates this naming function, is taken from the Chintang data:

- (66) adult: kancha igol anj lise ?
 "Kancha, what happened to your ball?"
 child: **uhawa timago elo ?**
"(Do you have a) tool for filling (the ball with) air?"
 adult: eʔni
 "Yes."
 child: ba golo
 "Now, this is round."
 (CLLDCh1R13S05.165a)

The function of naming referents is more frequently used by children. Where adults mostly use a specific lexical item, children may still do not know this item or are unable to access it in the discourse situation. In contrast, adults use this function of relative clauses to name referents when they are not certain about the correct specification of an object or if there is really no single word for it in the language. So they use a relative clause to describe the concept of something that does not exist as label in the lexicon.

2. *Situating new referents.* A second function of relative clauses is to introduce a new referent into the discourse. In general, new referents tend to be expressed by full noun phrases, i.e. not by pronominal elements. The new referent is mentioned in the main clause as head noun and the relative clause gives further information about it, for example how it looks like, what it is doing or how it is related to the conversation. The three conversations in (63) - (65) are examples for this function.

The speaker has to attach to the shared background knowledge to identify a new referent that is unknown to the listener. Therefore, often an anchor is used to build a bridge to something aforesaid or to an entity that is part of the discourse. Or, in other cases, an existential construction is used to introduce a referent and afterwards information is provided about this referent.

3. *Situating old referents.* "Old" referents that were mentioned before in the discourse and are already familiar to all conversational partners can be situated in the current context by relative clauses. That means the referent is old, but the information is new and relates to the current context.

- (67) adult: phak atogi chi ?
 "Do you have a pig or not?"
 child: togikīya
 "Yes, we have."
 child: thitta uchaunuṅ yuṅno
 "There is one with a child (piglet)."
 adult: batadha aseība ulisa kha hani phakcilek chace nahaṅ ?
 "Where is the piglet which was born some days ago?"
 child: **huī tiyade aseī ulisago**
"That one which was born some days ago died."
 adult: aṅ lise lo ni ?
 "What happened?"
 child: cholusede
 "It miscarried."
 (CLLDCh1R12S03544)

As can be seen in this excerpt, an already known or old referent (*the piglet which was born some days ago*) is taken up and new information is given to it (*it died*). This function can also be used for contrastive reference, in which one entity is singled out of several previously

mentioned referents by naming a distinctive attribute, as the little conversation in (68) demonstrates:

- (68) child: annenja
 "Elder sister!"
 Khel: hokkogo anne ?
 "Which elder sister?"
 child: **yujnogo**
"The one who is sitting."
 (CLLDCh1R04S06.1620)

Again, an old referent is repeated and additional information is given. In such contrastive usages relative clauses have an identificational function to specify one referent out of several possible referents.

4. Reidentifying old referents. Relative clauses also can have a reminding function by providing old information about old referents. This is the case after a topic shift or an interruption when the speaker wants to make sure that a referent is still important for the discourse and the listener can follow the action. Therefore, the referent is "reactivated" in the discourse.

- (69) Asu: akka wahumettukun
 "I take a bath."
 child: phul sabuna yoktanumhana
 "Use the scented soap."
 Asu: namno kha na
 "It smells."

[Asu is taking a bath, the target child goes somewhere else talking to an adult; after coming back to the bathing child, he takes up the conversation]

- child: **namnoko yoktanumha na**
"Use the one that smells good."
 (CLLDCh3R11S10.314)

To sum it up, according to Dasinger and Toupin (1994) there are basically four major functions relative clauses can have: Naming referents (when there is no term available), introducing new referents (often with existential constructions or in combination with an anchor), situating old referents (by giving new information about it) and reidentifying old referents (reminding of an old referent with old information).

In the analyzed Chintang data the distribution of discourse functions in the children's utterances is summarized in table 7.

function	total number	overt head noun		semant. role		
		head	no head	S	P	A
name	4 (8,89%)	0	4	2	1	1
new referent	11 (24,45%)	6	5	6	5	0
old referent	28 (62,22%)	8	20	8	19	1
reidentification	2 (4,44%)	1	1	1	1	0
total	45	15	30	17	26	2

Table 7. Discourse functions of the Chintang children's utterances

The majority of the children's relative clauses situates old referents into the context giving new information about them. So, 62,22% of all relatives modify a noun phrase that is already topic of the conversation by providing additional information about that head noun. Less frequent, but still important, is the function of introducing new referents into the discourse. 24,45% of all children's relative clauses serve this function. Naming referents where no specific term is available and reminding of old referents are two functions which occur not that often in Chintang spontaneous speech of children. According to Dasinger and Toupin (1994) children's earliest and most frequently relative clauses serve the naming function. One reason, as already mentioned, is the lack of knowledge or the lacking access to the lexicon in the current situation where a specific item is needed. This thesis I cannot confirm with the current data. There are only four relative clauses out of 45 serving this naming function and they occur widespread around the age from 2;9 to 3;5. So they are not especially used by the youngest children and decrease later on.

Additionally, I looked at the existence of head nouns in the relative clauses and at the semantic roles in connection with the different discourse functions. I cannot say if the correlations occur by chance since in some cases there are only few occurrences, but at least one can detect some correlations. The most obvious one is that in relative clauses situating old referents mostly there is no overt head noun. Sentences in which the head noun is realized are often used to introduce new referents. In clauses that paraphrase a name of a referent never occurs a head noun. These facts make sense: Referents that are topic of a conversation and therefore are mentioned before do not need to be named again when giving new information about them. When somebody makes a statement about an old referent, the interlocutor knows what is talked about, so the explicit name of the referent can be dropped. On the other hand, when a new referent is introduced it is more likely that the head noun is overtly expressed within the sentence to make clear what is talked about. Thirdly, when something is referred to with a relative clause because the speaker does not know the specific term, it is understandable that no particular head noun is named. As already stated above, the head noun in such constructions mostly denotes a general category, often expressed by an indefinite pronoun (*something, someone*). Since there are no such pronouns in Chintang and the referent is somehow expressed in affixes of the verb, the explicit noun phrase can be dropped. Only two sentences in the children's data match to the the fourth category, the reintroduced old referents, one of them with an overt head noun and one without an overt head noun. It would be a bold claim to say that both types are used in equal proportions, so I rather leave these two occurrences uninterpreted. Concerning the semantic roles no clear correlation is noticeable. We cannot say that a particular discourse function is bound to a certain semantic role. The distribution of semantic roles on different discourse functions, as can be seen in table 7, coincides with the general proportions of the roles: In all four functions S- and P-relatives are the dominant types. In the group of P-relatives the most frequent function is the embedding of old referents.

Conclusion

6 Conclusions

6.1 Summary of the findings

The four children in the Chintang data start to produce relative clauses around the age of 2;3-3;0, although the early relative clauses differ from the later ones in quantity and quality. The proportion of relative clauses in relation to the total utterances increases with rising age of the children, the clearest step is visible at the age of three. From all three parts of speech which can host the clitic =ko, pronouns are the largest amount, especially in the speech of young children. Nouns, on which =ko has a genitive or possessive functions, account for a much smaller proportion. The smallest share of all =ko-occurrences is the combination with verbs, so relative clauses are quite rare in children's spontaneous speech. At the age of three the amount of pronouns decreases whereas the proportions of nouns and especially verbs increase. Qualitatively, the early produced relative clauses are attached to isolated head noun instead of being appended to a full-fledged main clause. Again, the age of change is three years. Even older children and adults use most frequently relative clauses attached to isolated head nouns, but in younger children's speech the proportion of such clauses is higher, only at the age of three they begin to produce biclausal structures containing a main clause and a relative clause.

The great majority of all relative clauses in children's and adult's utterances are P- and S-relatives, A-relatives are in fact rare. Regardless of whether the head noun is overtly marked in the sentence or not, S and P are the most frequently relativized elements, what confirms the absolutive view of Fox (1987).

As suggested and shown in many other languages, agent referents are in most cases animate and patient referents mostly inanimate. Summarizing the most frequent features of the relative clauses in the data, the prototypical Chintang relative clause is headless, relativizes an inanimate P- or S-element and includes a verb denoting a physical activity.

Concerning the discourse function of Chintang relative clauses, the majority of the children's relatives situates old referents into the context. Thus, the most frequently used function of relative clauses is modifying an old, previously mentioned head noun by providing additional information. Less frequent, but still important, is the function of introducing new referents into the discourse. The function of naming referents where no specific term is available, which might be suggested as frequent in children's speech, was not found very often. Relative clauses that remind of old referents are infrequent as well.

Summing it up, Chintang relative clauses have the following features:

1. Head nouns mostly function as S and P.
2. In the most cases relative clauses are headless.
3. The verbs in relative clauses often denote a physical activity.

Early produced Chintang relative clauses, in contrast to the relatives in adult's speech, can be characterized as follows:

1. The number of relative clauses is quite rare.
2. They are attached to an isolated head noun.
3. They usually assert new information about an old referent.

6.2 The acquisition of Chintang relative clauses

Language acquisition is a progress in which every unit is learned bit by bit starting with simple structures before complex syntactic and semantic constructions are acquired. Thus, it is the same with relative clauses; children start with simple constructions that serve as a bridge between simple sentences and relative clauses. It seems to be a cross-linguistic pattern that children use their knowledge of simple main clauses in the acquisition of relative clauses before they learn more complex constructions. The earliest relative constructions produced by children consist of two finite clauses or only of a head noun and a relative clause and express one single proposition. With increasing age children

gradually learn more complex relative clauses that modify nouns of a full-fledged main clause.

An important factor, independent of the examined language, that can explain most of the variance observed in different studies and the variance in children's and adults' processing and production of relative clauses is the linguistic experience (Brandt and Kidd, forthcoming). All previous studies have shown that children are best at comprehending or producing constructions which contain the same lexical items as most frequently used in the input. At the same time, children start to build up more item-general and abstract representations of linguistic constructions (cf. Gertner et al. 2006). Additionally, the acquisition of relative clauses is influenced by the similarity to the form and function of other, more frequent linguistic constructions. In the early development these underlying constructions are simple clauses (Brandt, submitted). Thus, the ease of acquisition is in general very much affected by frequency and similarity.

Further factors that influence the acquisition of relative clauses are of course the individual development of each child and the social interaction with reference persons and other children for example.

What we can say concluding is that the relative clause acquisition, as probably the acquisition of any other complex structure, is a process from propositionally simple structures to semantically and structurally complex constructions. As the presented studies demonstrate, this seems to be a cross-linguistic phenomenon.

6.3 Perspective for further research

What I have to say first is that my conclusions of the analysis are limited by the fact that I only examined production data. The production of grammatical constructions depends on communication factors and if a certain relative clause structure is tied to a specific communicative situation that never or seldom occurs in parent-child or child-child

interaction, the particular construction may never be uttered. Another reason might be that certain structures have alternative constructions that are easier to produce. That means, presumably there are certain relative constructions that are never used by children for communicative reasons although they have no difficulties in comprehending it. Therefore, an experimental study with Chintang children examining the comprehension of relative clauses would be interesting. Besides this, arranged tests could catch enough examples of infrequent relative regardless to a specific context. It could be experimented with highly frequent lexically specific patterns, and with more varied input to see whether children develop an even more abstract representation of a general relative clause structure. Future studies could also systematically control for effects of context and function. But as already stated in section 4.1, a corpus analyses provides findings about spontaneous utterances in natural settings. Therefore, both of the methods have assets and drawbacks.

Secondly, I want to repeat that this thesis is not and cannot be very comprehensive; it should be seen as introduction to this topic. Future research will have to show whether the analysis and presented results about spontaneous Chintang relative clauses are replicable. I only tested a small amount of the available files in the corpus, namely the records that are finished with transcribing, glossing and tagging at the beginning of my work. Meanwhile, more child language files are available and in several months it will be even more. Since the work on the recorded data of the CPDP is not finished yet, by and by more data can be taken into account and probably the increase of the analyzed corpus delivers more reliable conclusions concerning this topic.

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List of abbreviations

1	first person
2	second person
3	third person
A	agent; doer of an action in transitive clauses
acc	accusative
ani	animate referent
BEN	benefactive
CAUS	causative
CPDP	Chintang and Puma Documentation Project
DEM	demonstrative
DIR	directive
ERG	ergative
f	female
FOC	focus
GEN	genitive
i	inclusive (in connection with person and number)
i	intransitive
IMP	imperative
inani	inanimate referent
INF	infinitive
IPF	imperfective
LOC	locative
m	male
n	noun
NEG	negation
NMLZ	nominalizer
NP	nominal phrase
NPST	nonpast (present or future tense)
ns	nonsingular (dual or plural)
NTVZ	nativizer (to adapt loanwords)
O	object

P	patient; recipient of an action in transitive clauses
p	plural
POSS	possessive
PP	prepositional phrase
PRF	perfect
pro	pronoun (in particular personal pronoun)
PROX	proximal
PST	past
PTCL	particle
RC	relative clause
rel	relative marker
RESTR	restrictive
S	single argument in intransitive clauses (=U)
s	singular
S	subject
SSTN	Standard Sino-Tibetan Nominalization
t	transitive
TEL	telic
U	unique argument in intransitive clauses (=S)
v	verb
VDC	Village Development Committee

All the interlinear glosses are taken from the respective corpora.

Examples extracted from the CPDP-corpus are referenced in the format ChxRyySzz.nnn, with x representing the target child (1-4), yy representing the number of the round (01-14) which corresponds to the month of recording, zz representing the session within the round (01-13) and nnn representing the utterance number within the session.

German summary

Diese Magisterarbeit betrachtet den Erwerb von Relativsätzen in der Kirantisprache Chintang. Grundlage der Untersuchung ist der Korpus dieser nepalesischen Sprache, der im Rahmen des Chintang and Puma Documentation Project (CPDP) zusammengetragen wurde und noch immer in Bearbeitung ist. Die verfügbaren Daten wurden auf spontan geäußerte Relativsätze von Kindern untersucht, um im Vergleich zu Erwachsenensprache eine Charakterisierung vorzunehmen und eventuell eine quantitative und/oder qualitative Entwicklung auszumachen.

Der erste Teil der Arbeit gibt einen Überblick zu den zwei Schlagworten des Themas: Relativsätze und deren Erwerb. Der Begriff des Relativsatzes wird geklärt, die Merkmale dieses Satztyps beschrieben und verschiedene Klassifikationen anhand syntaktischer und semantischer Struktur vorgestellt. Im zweiten Abschnitt dieses Teils werden mehrere Ansätze und frühere Studien zum Thema Relativsaterwerb zusammengetragen. Dieser Umriss zeigt bisherige Annahmen und Studienergebnisse zum Verstehen und zur Produktion von Relativsätzen.

Die zweite Hälfte dieser Arbeit widmet sich dann der Korpusanalyse, in der überprüft wird, ob die besagten Hypothesen auch auf eine Sprache wie Chintang zutreffen. Der Beschreibung methodischer Grundlagen und der vorliegenden Daten folgt die Darstellung der Strategie, mit der Relativsätze in Sino-Tibetischen Sprachen, und insbesondere im Chintang gebildet werden. Anschließend werden die Ergebnisse der Datenanalyse präsentiert. Thematisiert werden unter anderem die konkreten Merkmale der von Kindern produzierten Relativsätze im Gegensatz zu den von Erwachsenen geäußerten; außerdem wird ein Blick auf die Diskursfunktionen von Relativsätzen geworfen.

Abschließend folgt eine Zusammenfassung über die möglichen Faktoren, die den Erwerb von Relativsätzen bei Kindern beeinflussen.

References

- Bever, T. G. (1970). The cognitive basis for linguistic structures. In: Hayes, J. R. (ed.). *Cognition and development of language*, 279–362. New York: Wiley.
- Bickel, B. (1999). Nominalization and focus constructions in some Kiranti languages. In: Yadava, Y. P., W. W. Glover (eds.). *Topics in Nepalese linguistics*, 271 – 296. Kathmandu: Royal Nepal Academy.
- Bickel, B., G. Banjade, M. Gaenszle, E. Lieven, N. Paudyal, I. P. Rai, M. Rai, N. K. Rai, S. Stoll (2007). Free prefix ordering in Chintang. In: *Language* 83, 43-73. Linguistic Society of America.
- Bickel, B., M. Rai, N. Paudyal, G. Banjade, T. N. Bhatta, M. Gaenszle, E. Lieven, I. P. Rai, N. K. Rai, S. Stoll (in press). The syntax of three-argument verbs in Chintang and Belhare (Southeastern Kiranti). In: Malchukov, A., M. Haspelmath, B. Comrie (eds.). *Studies in ditransitive constructions*. Berlin: Mouton de Gruyter.
- Brandt, S. (submitted). Learning from social interaction: The form and function of relative clauses in discourse and experimental studies with children. In: Kidd, E. (ed.). *The acquisition of relative clauses: function, processing, and typology*. Amsterdam: John Benjamins.
- Brandt, S., E. Kidd (forthcoming). Relative clause acquisition and representation: Evidence from spontaneous speech, sentence repetition, and comprehension. In: Schönefeld, D. (ed.). *Converging evidence – discussing and extending the methodological tool-kit of the linguist*. London: Equinox.
- Brandt, S., H. Diessel, M. Tomasello (2008). The acquisition of German relative clauses: A case study. In: *Journal of Child Language* 35 (2), 325-348. Cambridge University Press.

- Comrie, B. (1998). Rethinking the typology of relative clauses. In: *Language Design 1*, 59-86. Granada Linvistica.
- Dasinger, L., C. Toupin (1994). The development of relative clause functions in narratives. In: Berman, R. A., D. I. Slobin (eds.). *Relating Events in Narrative: A Crosslinguistic Developmental Study*, 457-514. Hillsdale, NJ: Lawrence Erlbaum.
- de Villiers, J., H. B. Tager-Flusberg, K. Hakuta, M. Cohen (1979). Children's comprehension of relative clauses. In: *Journal of Psycholinguistic Research 8*, 499-518. Springer Science+Business Media.
- de Vries, M. (2001). Patterns of relative clauses. In: Wouden, T.v.d., H. Broekhuis (eds.). *Linguistics in the Netherlands 2001*, 231-243. Amsterdam: John Benjamins
- de Vries, M. (2005). The fall and rise of universals on relativization. In: *Journal of Universal Language 6*, 125-157.
- DeLancey, S. (1986). Relativization as nominalization in Tibetan and Newari. presented at the 19th International Conference on Sino-Tibetan Languages and Linguistics.
- Diessel, H. (2009). On the role of frequency and similarity in the acquisition of subject and non-subject relative clauses. In: Givón, T., S. Masayoshi (eds.). *Syntactic Complexity*, 251-276. Amsterdam: John Benjamins.
- Diessel, H., M. Tomasello (2000). The development of relative clauses in spontaneous child speech. In: *Cognitive Linguistics 11*, 131-151. Mouton de Gruyter.
- Diessel, H., M. Tomasello (2005). A new look at the acquisition of relative clauses. In: *Language 81*, 1-25. Linguistic Society of America.
- Dirksmeyer, T. (2008). Spatial deixis in Chintang – Aspects of a grammar of space. Unpublished master's thesis. University of Leipzig.

- Dryer, M. S. (2005). Order of relative clause and noun. In: Haspelmath, M., M. S. Dryer, D. Gil, B. Comrie (eds.). *The World Atlas of Language Structures*. Oxford University Press.
- Fox, B. (1987). The Noun Phrase Accessibility Hierarchy revisited: Subject Primacy or the Absolutive Hypothesis. In: *Language* 63, 856-870. Linguistic Society of America.
- Fox, B., S. Thompson (1990). A discourse explanation of the grammar of relative clauses in English conversation. In: *Language* 66, 51-64. Linguistic Society of America.
- Gaenszle, M., B. Bickel, G. Banjade, E. Lieven, N. Paudyal, A. Rai, I. P. Rai, M. Rai, N. K. Rai, V. S. Rai, N. P. Gautam (Sharma), S. Stoll (2005). Research report: the Chintang and Puma Documentation Project (CPDP). In: *European Bulletin of Himalayan Research* 28, 95-103.
- Gentner, D. (1983). Structure-mapping: A theoretical framework for analogy. In: *Cognitive Science* 7 (2), 155-170. Cognitive Science Society.
- Gertner, Y., C. Fisher, J. Eisengart (2006). Learning words and rules: Abstract knowledge of word order in early sentence comprehension. In: *Psychological Science* 17, 684-691. Sage.
- Goodluck, H., E. Guilfoyle, S. Harrington (2006). Merge and binding in child relative clauses: The case of Irish. In: *Journal of Linguistics*, 629-661. Cambridge University Press.
- Hamburger, H., S. Crain (1982). Relative acquisition. In: Kuczaj, S. A. (ed.). *Language development: Syntax and semantics*, 245-274. Hillsdale, NJ: Lawrence Erlbaum.
- Hermon, G. (2004). The acquisition of Indonesian relative clauses. Paper presented at the Workshop on *Typology, Acquisition and Processing of Relative Clauses*, Max Planck Institute for Evolutionary Anthropology, Leipzig.

- Hudelot, C. (1980). Qu'est-ce que la complexité syntaxique? L'exemple de la relative. In: *La Linguistique* 16, 5-41. Presses Universitaires de France.
- Keenan, E. L., B. Comrie (1977). Noun Phrase Accessibility and Universal Grammar. In: *Linguistic Inquiry Volume 8*, 63-99. MIT Press.
- LaPolla, R. J. (2008). Relative Clause Structures in the Rawang Language. In: *Language and Linguistics* 9, 797-812.
- Lehmann, C. (1986). On the typology of relative clauses. In: *Linguistics* 24, 663-680. Mouton de Gruyter.
- MacWhinney, B., C. Pléh (1988). The processing of restrictive relative clauses in Hungarian. In: *Cognition* 29, 95-141. Amsterdam: Elsevier.
- Noonan, M. (1997). Versatile Nominalizations. In: Bybee, J., J. Haiman, S. Thompson (eds.). *Essays on Language Function and Language Type*. Amsterdam & Philadelphia: John Benjamins.
- Polkau, C. (2009). Aspekt im Chintang und im Italienischen: Grammatik und Erwerb. Unpublished master's thesis. University of Leipzig.
- Rai, I. P., B. Bickel, E. Lieven, G. Banjade, M. Gaenszle, M. Rai, N. P. Paudyal, N. K. Rai, S. Stoll, T. N. Bhatta (2009). *Mundum: A case study of Chintang ritual language*. In: Mukherjee, R., M. N. Rajesh (eds.). *Locality, history, memory: the making of the citizen in South Asia*, 20-33. Newcastle upon Tyne: Cambridge Scholars Publishing.
- Rai, N. K., B. Bickel, M. Gaenszle, G. Banjade, E. Lieven, N. P. Paudyal, I. P. Rai, M. Rai, S. Stoll (2005). Triplication and ideophones in Chintang. In: Yadava, Y. P. (ed.). *Contemporary issues in Nepalese linguistics*. Kathmandu: Linguistic Society of Nepal.
- Sheldon, A. (1974). The role of parallel function in the acquisition of relative clauses in English. In: *Journal of Verbal Learning and Verbal Behavior* 13, 272-281. New York: Academic Press.

-
- Slobin, D. I. (1973). Cognitive prerequisites for the development of grammar. In: Ferguson, C. A., D. I. Slobin (eds.). *Studies of Child Language*, 175-208. New York: Holt, Rinehart and Winston.
- Tavakolian, S. (1981). The conjoined clause analysis of relative clauses. In: Tavakolian, S. (ed.). *Language Acquisition and Linguistic Theory*, 167-187. Cambridge: MIT Press.
- Tomasello, M., D. Stahl (2004). Sampling children's spontaneous speech: How much is enough? In: *Journal of Child Language* 31, 101-121. Cambridge University Press.
- Wanner, E., M. Maratsos (1978). An ATN approach to comprehension. In: Morris, H., J. Bresnan, G. Miller (eds.). *Linguistic theory and psychological reality*, 119-161. Cambridge University Press.

Internet sources

- Geographic Guide, Nepal map. URL: <http://www.geographicguide.net/asia/maps/nepal-map.jpg> [November 2010]
- The Chintang and Puma Documentation Project (CPDP). URL: <http://www.uni-leipzig.de/~ff/cpdp/> [November 2010]
- Max Planck Institute for Evolutionary Anthropology, Department of Linguistics. Comparison of the communicative environment of young language-learning children in two cultures. URL: <http://www.eva.mpg.de/lingua/research/chintang.php> [November 2010]
- The Government of Nepal, Ministry of Local Development. URL: <http://www.mld.gov.np/> [November 2010]

Erklärungen

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