

PROGRAMMATIC RESEARCH IN THE HUMANITIES

Grant Proposal

July 2005

1. Project data

Title: Dependency in Universal Grammar

Summary: The program seeks to gain a better understanding of dependency in natural language. It tests a novel hypothesis according to which the grammatical process of structure building (merger) automatically yields an asymmetric sister pair consisting of a dependent and a nondependent element. Grammars and constructions differ in the way the dependency relation is realized on (a term of) the dependent element. This dependency theory deviates from standard approaches which define dependency in terms of relations among heads and nonheads in phrase structure. The actual research focuses on empirical substantiation/falsification of the central hypothesis, which involves the construction of a typological database. Two graduate projects study the realization of morphosyntactic dependency in complementary domains: the clause and the noun phrase. A postdoc project charts the fundamental properties of pairs of elements created by merger.

2. Principal investigator

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3. Medeaanvragers

Does not apply.

4. Previous and future submissions

VICI 2004 (Vernieuwingsimpuls Geesteswetenschappen), dossiernr. 13305.
Judged 'subsidiabel'.

5. Institutional setting

Center for Language and Cognition Groningen, Faculty of Arts, University of Groningen (<http://www.rug.nl/let/onderzoek/onderzoeksinstituten/clcg/>).

6. Period of funding

2006-2009 (with one year extension for the two graduate projects)
To start September 1, 2006.

7. Composition of the research team

- a) main applicant: dr. C.J.W. Zwart
- b) co-applicants: d.n.a.
- c) research team: two graduate researchers and one postdoc to be hired
- d) affiliated members and advisors: Prof. dr J. Koster, prof. dr. J. Hoeksema, prof. dr. L.L-S. Cheng, prof. dr. G. Cinque, dr. H. de Hoop, dr. P. Svenonius, dr. R.-M. Déchaine, dr. N. Richards, dr. M. Cysouw
- e)

NAME	INITIALS	TITLE	AFFILIATION	PROMOTOR
Zwart	C.J.W.	dr	UGroningen	
(postdoc) NN				
(graduate) NN				J. Koster, C.J.W. Zwart
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Koster	J.	prof. dr	UGroningen	
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Cheng	L.L-S.	prof. dr	ULeiden	
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Déchaine	R.-M.	dr	UBC Vancouver, Canada	
Richards	N.	dr	MIT, USA	
Cysouw	M.	dr	MPI Leipzig, Germany	

8. Structure of the proposed research

Subproject 1: Morphosyntactic dependency within the clause (dissertation project)

Subproject 2: Morphosyntactic dependency within the noun phrase (dissertation project)

Subproject 3: Properties of syntactic nuclei (postdoc project)

All projects carried out at the Faculty of Arts, University of Groningen.

9. Description of the proposed research

1. Synopsis

The project concerns the relation between syntactic structure and morphosyntactic dependency. The central idea is that dependency involves two steps: first, the creation of a structural relation between two syntactically combined elements (yielding a *dependent* and a *nondependent*), and second, the morphological expression of the dependency on a term of the dependent. The project hopes to establish the following results: a) languages differ not in the way structural dependency is created (this is an *automatic* result of the structure building process), but in the way dependency is morphologically realized on the dependent; b) the range of elements on which a dependency relation may be realized is constrained by the syntactic configuration of the dependent and the nondependent. The project attempts to *falsify* these hypotheses by investigating morphosyntactic realization of dependency in circumscribed domains (the clause and the noun phrase) in a maximally wide range of languages. In the course of this research, a typological database of dependency realization is created and made available. This research is complemented by a study of the fundamental properties of pairs of syntactically combined ('merged') elements, focusing on primitive syntactic constructions (juxtapositions, coordinations) where we are confident that the structure has not been disturbed by movement operations. The ultimate goal of the project is to increase our understanding of how the diversity in morphosyntactic expression (agreement, case, reflexivity, tense/mood/aspect marking, negation, etc.) can be related to the simple and universal structure building operation argued to be a defining property of the human faculty of language.

2. Background

The project is situated in the tradition of generative grammar where language is studied with a view to understanding human cognition. This implies that explanation of the properties of linguistic expressions be sought in terms of the computational system generating them. What we now know about this computational system is that it features the simple but very powerful property of being able to recursively apply a rule that creates pairs of elements and combines them into hierarchical structures.

An extensive comparative ethological study (Hauser, Chomsky, and Fitch 2002) suggests that this property identifies the crucial distinction between human and non-human animal cognition. Ideally, then, description of linguistic

phenomena should make reference to this (maximally simple) operation, referred to as Merge.

Our current understanding is that crucial properties of syntactic structure can indeed be explained as a function of the operation Merge. However, (as pointed out by Pinker & Jackendoff 2005), human language displays many properties which seem to defy description in terms of Merge. Among the properties listed by Pinker & Jackendoff are case-marking, agreement, tense/mood/aspect-marking, expression of reflexivity and negation, and others. As Pinker & Jackendoff caution, inclusion of these phenomena complicates and potentially undermines the minimalist program of Chomsky (1995) in which essential properties of human language are described as a function of simple operations like Merge.

The current project hopes to establish the sought connection between the structure building operation Merge and the morphosyntactic phenomena cited by Pinker & Jackendoff. It does so by describing the morphosyntactic phenomena as (potentially diverse) morphological realizations of a strictly local (and universal) syntactic dependency relation R . The core question is whether it can be maintained that R is automatically established with each operation Merge.

2.1 Illustration

In languages like Dutch and English, a finite verb is dependent on the subject for the value (and hence the morphological realization) of its person/number features (as in *John loves Mary*). But on current understanding, the subject and the verb are not merged directly: the verb *loves* is first combined with the object *Mary* yielding a predicate *loves Mary*, and the subject *John* is only combined with this predicate, not with *loves* itself. Hence the morphology does not appear to be a function of Merge.

However, we know from typological research that agreement with the subject may be expressed in a variety of ways, not all of them involving the verb. Thus, the morpheme expressing the agreement may be found on a single verb, as in English, but also on multiple elements, as in Swahili (1), on the object, as in Udi (2b), or it can be realized as a separate pronoun, as in Khasi (3):

(1) *Swahili, Niger-Congo* (Carstens 2003)

<u>Juma</u>	a-li-kuwa	a-ngali	a-ki-fanya	kazi
Juma _{CLASS1}	AGR.CL1-PAST-be	AGR.CL1-still	AGR.CL1-PROG-do	work

'Juma was still working.'

(2) *Udi, North Caucasian* (Schulze 2004)

<u>xinär-en</u>	lavaš-ne	uk-sa
girl-ERG	bread:ABS-3SG	eat-PRES

'The girl eats *bread*.' (focus on *bread*)

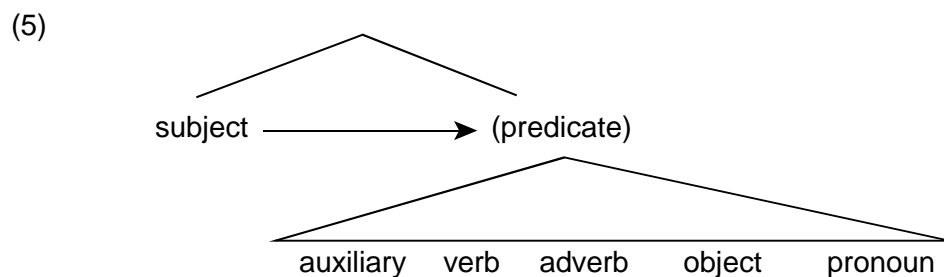
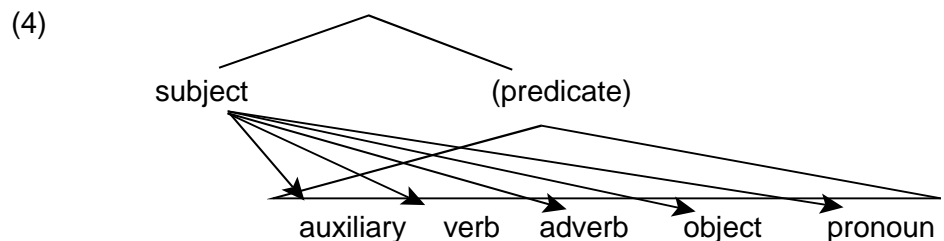
(3) *Khasi, Austroasiatic* (Rabel 1961)

[<u>u bru</u>]	pīn-yap	psəñ	<u>u</u>
the man	cause-die	snake	3SG

'The man killed the snake.'

All of these realizations have one thing in common: the element expressing the agreement must be a term of the sister of the subject. This suggests a unification: instead of describing agreement in terms of a multitude of diverse

dependency relations (illustrated in (4)), we may suppose that there is a single universal dependency relation (illustrated in (5)), with languages varying in the way the relation is morphologically realized on the dependent:



This would imply that seemingly diverse and non-local dependencies are in fact uniform and strictly local, in a way that suggests a close connection with the operation Merge generating hierarchical structures of pairs of sisters.

The project hypothesizes that a reduction as illustrated for subject-verb agreement is feasible for all morphosyntactic dependency relations. It attempts to falsify this hypothesis by investigating the realization of dependency in circumscribed environments in a wide range of languages.

3. *Dependency as a function of Merge*

A further question addressed in the project is whether elements joined by Merge are assigned dependent/nondependent status in a uniform way. If not, we may expect the structure in (5) to give rise to opposite dependency marking patterns: in one language the predicate will be marked for dependency of the subject (as in the languages illustrated), and in another the subject will be marked for dependency of the predicate (for instance by displaying agreement with the temporal/aspectual properties of the predicate). The initial impression is that the latter situation does not occur, suggesting that when a subject combines with a predicate, the subject is invariably the nondependent and the predicate the dependent.

As before, the typological investigations in this project set out to prove the initial impression wrong. But if that fails, there is reason to believe that a stronger hypothesis holds: not only is dependency restricted to pairs of sisters created by Merge, there is also a uniform and automatic assignment of dependent/nondependent status to the members of each pair.

4. *Theoretical implications*

The typological research in the project thus tests two hypotheses:

- (6) a. dependency relations are sisterhood relations
- b. within each pair of sisters, dependency is uniformly asymmetric

These hypotheses, if sustained, suggest that the structure building operation Merge itself is asymmetric: this would entail that as soon as two elements are combined, one is designated as a dependent of the other.

The typological investigations are therefore supplemented by theoretical research into the fundamental nature of the operation Merge. Current conceptions of Merge hold that it is a symmetric operation, and that asymmetric properties of sister pairs are a function of properties of the sisters merged rather than of the merger process itself (Chomsky 2005).

In order to investigate this question, the project (a) studies universal properties of primitive constructions, i.e. constructions created by a single operation Merge, and (b) elaborates a minimalist theory of the structure building operation Merge.

5. *The definition of dependency*

For the purpose of the research program, an element δ is taken to be a dependent of an antecedent α if δ expresses a feature F of α only in conjunction with α . In other words, dependency is understood primarily as a formal, not as a semantic property. The dissertation projects investigate whether δ may be understood as the sister of α at all times. The postdoc project considers the question whether formal dependency and other types of dependency (semantic, prosodic, discourse) are commensurable and explained by the workings of Merge.

[A note of clarification: on another definition, not adopted here, δ is a dependent of α if α selects δ . This then leads to a parametrization in terms of whether the dependency relation is marked on the selecting (*head-marking*) or selected (*dependent-marking*) element. As these considerations start from a different definition of dependency, they are orthogonal to the current research project's concerns.]

6. *Method*

The empirical component of the research program involves a survey of the relevant data in a maximal variety of languages. Apart from informed literature study, these data are obtained from a sample of 215 languages constructed and tested in accordance with current standards within typological linguistics. The sample is a variety sample, aiming at maximal coverage of linguistic variation, not at estimation of the probability of certain features (co-)occurring. The sample is stratified along the conservative partitioning in 97 language families of Gordon (2005), of which 71 are represented (the missing 26 families comprising 1.4% of the world's languages). The data are taken from excellent published reference grammars.

In evaluating the data, we bear in mind that grammatical processes (notably movement and cliticization) may disturb the original organization of dependency relations. The research undertaken here focuses on the original organization of dependency relations, and the typological investigations need to abstract away from processes like movement and cliticization wherever possible. This methodology presents an aspect of innovation over more traditional, surface

oriented, investigations of dependency relations.

The theoretical component adheres to the guidelines of the minimalist program for linguistic theory (Chomsky 1995), which seeks to state generalizations in terms which are understandable from a general theory of human cognition. Descriptions and explanations therefore need to be maximally economical, and need to lay out clearly what it is that the human faculty of language can and cannot do.

7. Summary of research questions

To summarize, the research project takes the faculty of language to involve a key component which builds up structure by recursively merging (no more than) two elements, yielding a hierarchical structure of pairs of sisters. What needs to be investigated is the nature of each sister pair. The central hypothesis is that all pairs of sisters are automatically created asymmetric, in the sense that when a newly merged element α is applied to (merged with) existing structure β , β is turned into a dependent of α . This dependency can then be realized morphologically in various ways involving terms of the dependent. This predicts strict configurational constraints on morphosyntactic dependency: the element expressing a morphosyntactic dependency w.r.t. α must be a term of the sister of α .

This leads to the following research questions:

- (7) 1. To what extent can morphosyntactic dependency be described in terms of sisterhood (i.e. as a function of Merge)?
2. To what extent can morphosyntactic dependency between sisters be described as an automatic effect of the structure building operation Merge?

The first question informs two typologically oriented subprojects, investigating morphosyntactic dependency in the noun phrase and the clause. The second question is more theoretically oriented, and gives rise to a subproject investigating primitive properties of pairs constructed by Merge.

The program is innovative in the combination of typological and theoretical research, where full-scale data collection is brought to bear on fundamental theoretical questions. This orientation is an expressed interest of the syntax/semantics research group of the Center for Language and Cognition Groningen.

The added value of the programmatic organization lies in the circumstance that all subprojects contribute to the evaluation of a single hypothesis, while covering clearly distinguished empirical and theoretical grounds.

8. Description of subprojects

The program involves two dissertation projects and a postdoc project. The dissertation projects study typological variation in the morphological realization of morphosyntactic dependency in two complementary domains, the clause (8.1) and the noun phrase (8.2). The postdoc project (8.3) studies the fundamental nature of Merge by examining universal properties of elementary pairs of elements created by Merge (henceforth termed 'syntactic nuclei').

8.1 Subproject 1: Morphosyntactic dependency within the clause

The overall aim of this dissertation project is to investigate the extent to which case and agreement phenomena at the level of the clause can be described and explained in terms of the configurational relation of sisterhood. Its key objectives are:

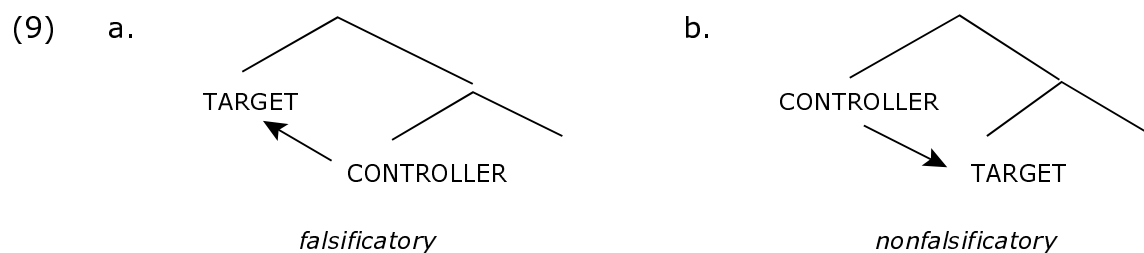
- (8) a. to study the variety of case and agreement realizations
- b. to test the hypothesis that agreement is constrained by the configuration of sisterhood
- c. to develop a theory of structural case in terms of dependency by sisterhood

These objectives are approached by undertaking a typological survey of the realization of case and agreement in a 215 language variety sample. The project leads to a typology of case and agreement systems in terms of a general theory of morphosyntactic dependency.

Case and agreement are singled out in this project because the relations underlying these phenomena are currently taken to be varied and not to require sisterhood.

In the context of this project, *case* is defined as the morphological marking of a noun phrase depending on its grammatical function (subject/object, in other words, *structural case*), and *agreement* is defined as the marking of an element (the target) for a grammatical feature of another element (the controller). The target is by definition the dependent, and the controller the nondependent (see section 5 above).

The agreement data collection and analysis is undertaken with a view to falsifying hypothesis (6a) in the domain of agreement. The intention is to assess to what extent the reduction of agreement relations to sisterhood relations illustrated in section 2.1 is feasible. This assessment involves two main questions: first an inventory must be made of cases where the agreement target and controller are found in configurations with the essential properties of (9a) rather than (9b).

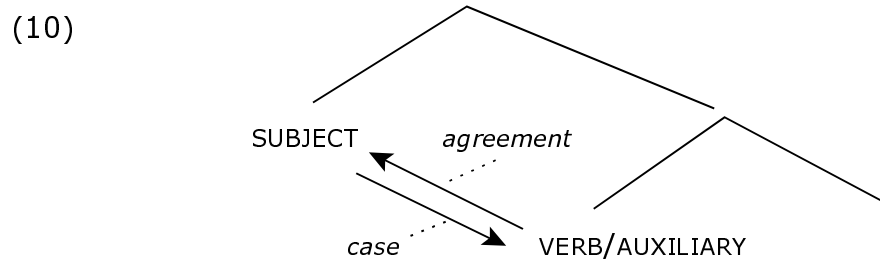


Only the configuration in (9b) allows a reduction of the agreement relation to sisterhood, as illustrated in (4)-(5).

A second question involves the range of agreement target realizations in configurations like (9b): if the controller's sister is the actual dependent element in the agreement relation (as in (5)), how can we explain or predict which term of the dependent realizes the agreement marking? Our current understanding is that agreement realization is subject to strict locality constraints, and that languages may vary (as illustrated in section 2.1) as to whether they realize agreement marking on the head of the dependent or not. Regarding this

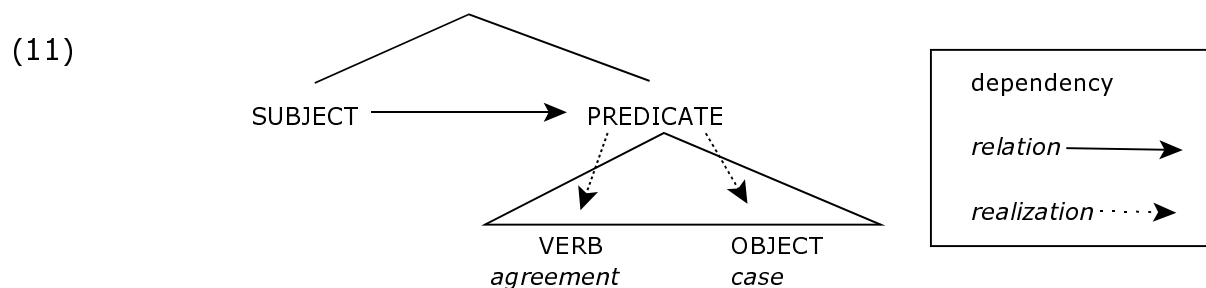
question, the project investigates a possible connection with the head/dependent-marking parameter of Nichols (1986), and with the phenomena described in Baker (1996) in terms of a parameter governing the expression of morphosyntactic relations through polysynthesis or not.

Case and agreement are typically regarded as reciprocal relations: the element agreeing with the subject (the verb or Tense/Agreement complex) conversely assigns a structural case (nominative) to the subject, as illustrated schematically in (10).



However, the nominative case is not dependent on the presence of an agreeing verb, as it also occurs in isolation and in other default contexts (Jakobson 1935, Zwart 1988). The structural case relevant to this subproject, therefore, is the accusative/objective case, which is traditionally regarded as a dependent case governed by a verb or adposition.

However, the approach to dependency envisioned in this research program potentially leads to a new perspective on objective case. The idea would be that objective case is an alternative realization of the subject-predicate dependency, this time expressed on the object instead of the verb:



This view of structural case can be motivated by the observation that the objective also marks objects that are not clearly dependents of any verb (such as scrambled objects, Zwart 2001; in (12), the object *hem* 'him' is not governed by any of the verbs):

- (12) *Dutch, Indo-European*
 ...dat ik **hem** niet hoor-de zing-en
 that I him:ACC not hear-PAST sing-INF
 '..that I did not hear him sing.'

Conversely, this approach to case does not exclude situations where the object is realized with the unmarked case (nominative or absolutive); this situation typically occurs when the subject is marked with a nonstructural ('inherent') case, as in ergative languages. This leads to the hypothesis that the subject-predicate dependency can be realized through objective case only if the language in question organizes noun phrases in a dependent/nondependent case

paradigm. This subproject investigates relevant cases (including those languages which combine an ergative case system with a subject-controlled agreement system; e.g. Hale 1983), again with a view to falsifying the hypothesis. A number of languages and constructions with accusative objects and nonnominative subjects have already been reported on (e.g. Woolford 2004). The range of relevant phenomena will be charted and analyzed in the course of this subproject.

This subproject, then, investigates the typology of case and agreement realizations within the clause in order to investigate the hypothesis that case and agreement are both realizations of a single dependency relation between sisters.

8.2 Subproject 2: Morphosyntactic dependency within the noun phrase

The second dissertation project complements the first by addressing the same questions within the domain of the noun phrase.

The prime focus rests on the expression of possessor-possessum relations, for which we find the two major construction types illustrated in (13), and the three realizations case, agreement, and linker (14):

- (13) a. subject-predicate: John's book
 b. head-complement: the book of John
- (14) a. case: *Russian, Indo-European*
 kniga Ivan-a 'the book of Ivan'
 book Ivan-GEN
- b. agreement: *Hungarian, Uralic* (Nichols 1986)
 az ember haz-a 'the house of the man'
 the man house-3SG
- c. linker: *Persian, Indo-Iranian* (Nichols 1986)
 asb é mard 'the horse of the man'
 horse LINK man

If dependency marking affects only the dependent, and if the predicate and the complement are the dependents in (13a,b), we expect to find the three realizations in (14) to appear only on (a term of) the predicate in possessive constructions of the type (13a), and only on (a term of) the complement in possessive constructions of the type (13b). The second subproject collects and analyzes data from a 215 language sample relevant to these typological expectations.

Though typological studies of possession have been carried out before, the connection with the structure building process Merge has not been investigated so far. In addition, the current survey aims to correct the typological record in view of the methodological remarks of section 6 regarding the effects of cliticization and movement. Thus, the linker in (14c), which is cliticized onto the head noun *asb*, is generally taken to also mark dependency on the head noun (a case of nondependent marking or 'head marking' in Nichols' 1986 typology). However, a comparison with similar structures in other (related and unrelated) languages such as Kurdish and Swahili, indicates that the linker may express agreement with the head noun, suggesting it originally belongs to the dependent

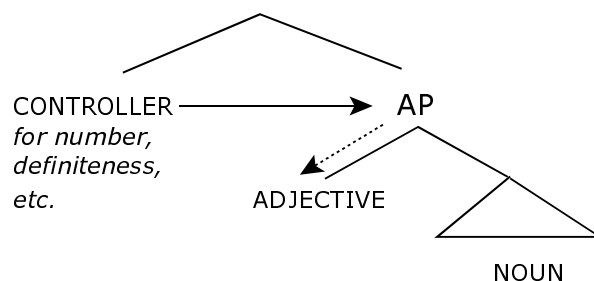
constituent *maid* (not unlike the linker *z'n* in Colloquial Dutch *Jan z'n boek* [John his book]):

(15) *Swahili, Narrow Bantu* (Ashton 1959)

- | | | | | |
|----|-------------|-----------|------|---------------------|
| a. | ki-tabu | ch-a | Juma | 'the book of Juma' |
| | CLASS7-book | AGR7-LINK | Juma | |
| b. | vi-tabu | vy-a | Juma | 'the books of Juma' |
| | CLASS8-book | AGR8-LINK | Juma | |

A second topic to be investigated as part of this subproject concerns the inflection of attributive adjectives. In inflecting languages, the adjective may express features like case, number, definiteness, and gender. Assuming a version of the DP-hypothesis of Abney (1987), the features case, number and definiteness are not inherent on the head noun (just like tense is not inherent on the verb), and their realization on the adjective suggests the presence of a dependency between the adjective-noun complex (AP) and a controller outside the AP:

(16)



But gender is standardly taken to be an inherent property of the noun, suggesting a dependency relation of the type in (9a), where the dependent is not a sister of the nondependent (the adjective is not a sister in case the noun has a complement, as in *the new [students of linguistics]*). This presents a problem to the generalization tested in the research program according to which dependency relations are a function of Merge. The subproject investigates the extent and nature of the problem, and evaluates its bearing on the general hypotheses informing the research program.

8.3 Subproject 3: Properties of syntactic nuclei

The structure building operation Merge yields pairs of sisters. What generalizations (across languages and structures) can we make about the properties of such pairs? Moreover, a pair of sisters may be disrupted by movement processes. Technically, movement involves extraction and re-merger of one of the members of a sister pair. How does the movement process affect the properties of the elements involved?

These are the rather fundamental questions to be addressed in the postdoc research project. Its significance lies in the identification of properties of 'primitive' syntactic objects: pairs created by a single operation Merge, without the complicating effects of movement ('syntactic nuclei').

Every language exhibits a wide range of syntactic nuclei, including:

- (17) a. *juxtapositions*
 reduplications (*soso*), time expressions (*two thirty*), amount expressions (*two ninety-nine*), sports results (*fifteen love*), titles (*sergeant major*), acronyms (*NSF*), phone numbers (*nine one one*), compound names (*Smit-Tak*), asyndetic predications (*me Tarzan*), etc.
- b. *concatenations*
 coordinations (*A and B*), linker constructions (*city of Boston*), 'distinctives' (*money schmoney*), copulative constructions (*I am Tarzan*)

These constructions are compared with a) syntactically atomic objects (simple lexical items and noncompositional names, cf. Zwart 2003) and b) syntactic objects derived by movement.

The hypothesis under scrutiny in this subproject is that syntactic nuclei consist of two members (α, β), which are universally organized as in (18):

- (18) a. semantics: β is the predicate or complement of α
 b. syntax: β is preceded by α
 c. morphology: β is marked for its relation with α
 d. phonology: β is prosodically marked in comparison to α
 e. discourse: β is the unmarked focus element, α the unmarked ground

What needs to be established is to what extent syntactic nuclei universally and consistently show the properties in (18), so that every deviation from the pattern may be taken to involve movement.

There are a number of reasons to believe that syntactic nuclei are realized consistently and identically across languages. To mention a few: (a) the second member of juxtapositions and concatenations appears to be universally stressed, not only in English but also in unrelated languages; (b) primitive predication (*me Tarzan*) invariably appears to involve subject-predicate order, with stress on the predicate, as does unmarked constituent order in up to 90% of the world's languages (Tomlin 1986); (c) in coordination, it seems that it is always the second conjunct which is marked by a linking element (barring cliticization), and moreover that the conjunction, taken to be the head of the conjunction phrase, typically precedes its complement, the second conjunct (Zwart 2005).

We have taken (18c) to be definitive of dependency in this project (section 5). If syntactic nuclei consistently show the pattern in (18), we may take each of the properties in (18) to be indicative of dependency. A potential result of this subproject is that when the properties in (18) are not found consistently in a certain construction, we have reason to believe that the derivation of that construction involves movement.

One of the results of the subproject could be to establish a hierarchy of syntactic objects, where each higher object on the scale has an added aspect of syntactic complexity:

- (19) atomic objects < juxtapositions < concatenations < compounds/inversions
no structure *binary structure* *linker/complementation* *movement*

The results of this subproject are instrumental in determining the fundamental

properties of the structure building operation Merge, and hence in gaining an understanding of the way the language faculty of the human cognitive system operates. If there are indications that the product of Merge universally has the same properties, we have reason to believe that structure can be produced in one way only, by asymmetrically merging an element α to an element β . An automatic result of that operation would be that β becomes a dependent of α , which manifests itself in various ways, indicated in (20), and which constrains the expression of morphosyntactic dependency in the way hypothesized and tested in the other two subprojects.

The subproject contributes to the theory of grammar by elaborating a theory of Merge that explains the properties of syntactic nuclei, couched within the minimalist program of Chomsky (1995). It contributes to the minimalist program by settling a question raised in Chomsky (2005), namely whether Merge in its most minimalist conception is symmetric or asymmetric.

8.4 *Principal investigator's activities*

The principal investigator synthesizes the results of the subprojects by (a) assembling the typological findings in a general survey, (b) establishing connections with other typological and theoretical research, and (c) elaborating a theory of asymmetric merger. In addition, the principal investigator watches over the subprojects' progress, and supports the research activities by assisting in sample construction and maintenance.

10. **Work programme**

	YEAR 1	YEAR 2	YEAR 3	YEAR 4
DISSERTATION PROJECT 1	data collection and research	first synthesis; further research and analysis; intermediate reporting	semester abroad; second synthesis; international presentation	dissertation writing stage
DISSERTATION PROJECT 2	data collection and research	first synthesis; further research and analysis; intermediate reporting	semester abroad; second synthesis; international presentation	dissertation writing stage
POSTDOC PROJECT		data collection and research	reporting and international presentation	
APPLICANT	project supervision, sample maintenance, theoretical underpinning		preparation and writing of the final monograph; project supervision	
ACTIVITIES			workshop	

11. **Word count**

4153

12. Planned deliverables and knowledge dissemination

The project yields two dissertations, a series of articles in international peer-reviewed journals, and a synthesizing monograph to be published with a major international publisher, presumably Oxford University Press (series *Oxford Studies in Comparative Linguistics*). The group will be actively participating in international conferences, and will also organize a workshop on the cross-fertilization of theoretical and typological research. Selected contributions from the workshop will be published in a proceedings volume. The typological data collections will be made publicly available upon completion of the project.

13. Short Curriculum Vitae Principal Applicant

Cornelius Jan-Wouter Zwart, born September 20, 1960 in Oss, The Netherlands.

Studied Greek and Latin in Nijmegen (candidate's exam November 25, 1983), and Linguistics in Nijmegen and Groningen (master's exam Groningen, July 29, 1988, *cum laude*). Dissertation defense and promotion at the Groningen Faculty of Arts, November 29, 1993 (*cum laude*).

Dissertation *Dutch Syntax: a minimalist approach*, awarded with the AVT (Netherlands Linguistic Society) dissertation award 1994 and the SNS Bank/University of Groningen dissertation award 1994.

Positions held: (Groningen) research assistant Dept of Linguistics 1989-1993, assistant professor Dept of Linguistics 1994-1995, assistant professor Depts of Linguistics and Dutch 2001-present, postdoctoral researcher funded by NWO 1995-2001; (elsewhere) visiting scientist MIT 1991, visiting professor of English linguistics University of Geneva 2002, faculty member international graduate schools in Olomouc 1995, 1996, Amsterdam 1996, Bloomington Indiana 2004, Leiden 2005.

Positions offered: Full professor of Dutch linguistics, University of Leipzig (1998).

Research grants obtained: PhD project *Case, control and the nominative* (Faculty of Arts, University of Groningen, 1989-1993), Postdoctoral research project *Asymmetric verb movement* (NWO, 1995-1998), Postdoctoral research project *The empirical content of the Multiple Specifier Hypothesis* (NWO, 1998-2001).

Proposals judged SUBSIDIAL: PIONIER project *Microparametric variation in Netherlandic dialects* (NWO, 1997), VICI project *Dependency in Universal Grammar* (NWO, 2004).

Professional service: member of the editorial board of *Linguistik Aktuell* (John Benjamins book series, since 1996), member of the editorial board of *Syntax: a journal of theoretical, experimental and interdisciplinary research* (Blackwell, since 1998), member of the editorial board of *The Journal of Comparative Germanic Linguistics* (Kluwer, 1997-2002), member of the editorial board of *Glott International* (Blackwell, from 1995), editor of the *Germanic Generative Syntax*

Newsletter (from 1996), editor of *Groninger Arbeiten zur germanistischen Linguistik* (from 2002), member of the associate board of the *Syntactic Atlas of Netherlandic Dialects research project* (Meertens Institute, 1999-2004), chair of the Netherlands Linguistic Society dissertation award jury 2001, member of the National Linguistics Graduate School (LOT) education committee (from 2004).

Summary of research activity from September 1989: 87 publications, 123 presentations, 27 research trips to international research centers, 23 invitations for participation in international workshops, 2 keynote lectures in international conferences.

Ample experience in supervising dissertation and postdoc research.

Selection of core publications:

[international monograph]

Morphosyntax of verb movement: a minimalist approach to the syntax of Dutch. 1997. Dordrecht: Kluwer Academic Publishers.

[international peer-reviewed journal article]

Clues from Dialect Syntax: Complementizer Agreement. 1993. *Linguistische Berichte*, Sonderheft 5, 246-270.

[international peer-reviewed journal article]

Dutch is head-initial. 1994. *The Linguistic Review* 11.3/4, 377-406.

[international peer-reviewed journal article]

Syntactic and phonological verb movement. 2001. *Syntax* 4.1, 34-62.

[international peer-reviewed journal article]

Object shift with raising verbs. 2001. *Linguistic Inquiry* 32.3, 547-554.

[international peer-reviewed journal article]

A comparative approach to syntactic change in the history of English. 2005. *English Language and Linguistics* 9.1, 157-179.

[international peer-reviewed journal review article]

The Minimalist Program. Review Article of *The Minimalist Program*, by N. Chomsky, MIT Press, Cambridge, 1995. 1998. *Journal of Linguistics* 34, 213-226.

[international invited reference work contribution]

Continental West-Germanic languages. 2005. In *The Oxford Handbook of Comparative Syntax*, G. Cinque and R. Kayne, eds., 903-946. New York: Oxford University Press.

[international peer-reviewed edited volume contribution]

Local agreement. In press. In *Agreement systems*, C. Boeckx, ed. New York: Oxford University Press.

[international peer-reviewed edited volume contribution]

Some notes on coordination in head-final languages. In press. In *Linguistics in*

The Netherlands 2005, J. Doetjes and J. Van de Weijer, eds. Amsterdam: John Benjamins.

[selective international conference proceedings volume]

Dutch Expletives and Small Clause Predicate Raising. 1992. In K. Broderick, ed., *Proceedings of the North East Linguistic Society 22*, 477-491.

14. Summary for non-specialists

De universele uitdrukking van afhankelijkheid in menselijke talen.

In ons hoofd zit een systeem dat woorden aaneenrijgt tot zinnen. In dit project analyseren de onderzoekers de kleinste stapjes in dat proces. Hoe bepalen die de vorm en betekenis van zinnen? Daartoe analyseren ze de relevante verschijnselen in zoveel mogelijk verschillende talen.

We weten dat het taalsysteem een zin opbouwt door telkens twee (en niet meer) elementen te combineren. Elke stap levert dus een elementaire verbinding van twee elementen op. Dit project onderzoekt de fundamentele eigenschappen van zulke verbindingen. De belangrijkste hypothese die getoetst wordt, is dat elementaire verbindingen altijd asymmetrisch zijn: één element is van het andere afhankelijk, en niet andersom.

Dat elementaire verbindingen asymmetrisch zijn kunnen we zien aan primitieve uitdrukkingen die nauwelijks zinnen mogen heten, maar die voortgebracht worden door hetzelfde systeem dat zinnen produceert. Zo'n primitieve uitdrukking is bijvoorbeeld een sportuitslag als *één-nul*. Opvallend is dat *één* en *nul* heel anders klinken: *nul* krijgt de nadruk en *één* niet. Er is dus sprake van asymmetrie. Deze asymmetrie is in alle elementaire verbindingen aanwijsbaar. Denk bijvoorbeeld aan reeksen (*één-twee-DRIE*), bedragen (*twee-VIJFTIG*), verdubbelingen (*zo-ZO*), en samengestelde namen (*smit-KROES*). Bovendien lijkt die asymmetrie universeel te zijn: in Nederlandse namen valt de nadruk op de achternaam (*jan-BOS*); talen die de familienaam voorop zetten leggen juist de nadruk op de persoonsnaam (zoals in het Hongaarse *nagy-IMRE*). Blijkbaar zijn universele verbindingen altijd, en altijd op dezelfde manier, asymmetrisch.

Wat kunnen we uit deze asymmetrie afleiden? Sinds een halve eeuw wordt de taalkunde gezien als een onderdeel van de wetenschap die menselijke cognitie bestudeert. Taal is immers een product (een functie) van het menselijk brein. We weten dat het cognitieve systeem een computationele component bevat, die ook verantwoordelijk is voor taken als rekenen. Op basis van taalstudie is geconcludeerd dat de computationele component 'simpel' is: hij doet niets anders dan twee elementen combineren tot grotere gehelen, die zelf ook weer met andere elementen gecombineerd kunnen worden. Het feit dat elementaire verbindingen in taal asymmetrisch zijn suggereert dat het computationele systeem zelf asymmetrisch opereert: de twee elementen worden niet op voet van gelijkheid samengevoegd, maar het ene element wordt aan het andere toegevoegd. Daarmee ontstaat onmiddellijk een ongelijkheid, die gebruikt kan worden voor het overbrengen van informatie.

Als we in meer detail naar taaluitingen kijken dan valt op dat er vaak sprake is van *afhankelijkheid*: in het Nederlands bijvoorbeeld is het werkwoord

afhankelijk van het onderwerp. Het werkwoord verandert namelijk telkens van vorm, afhankelijk van de aard van het onderwerp: het is *de hond blaf-t*, maar *de honden blaf-fen*. De uitgangen *-t/-en* betekenen niets, ze drukken alleen de afhankelijkheid van het werkwoord ten opzichte van het onderwerp uit.

Nu zijn er veel verschillende afhankelijkheidsrelaties, en veel verschillende manieren om die relaties uit te drukken. Dat is een van de redenen dat talen zoveel van elkaar lijken te verschillen. Het computationele systeem van de taalgebruiker moet ook deze afhankelijkheidsrelaties snel en eenvoudig kunnen produceren en interpreteren. Hoe gaat dat in z'n werk?

De centrale hypothese in dit onderzoeksprogramma is dat afhankelijkheid altijd en uitsluitend uitgedrukt wordt via de asymmetrie die ontstaat wanneer twee elementen gecombineerd worden. Het idee is dat afhankelijkheid dus een functie is van de elementaire verbindingen, en dat de vele verschillende afhankelijkheidsrelaties moeten worden beschreven in termen van een eenvoudig universeel format.

Wat we weten van de structuur van zinnen vertelt ons dat in *de man leest de krant* (waar *leest* afhankelijk is van *de man*) *de man* en *leest* geen elementaire verbinding vormen: eerst worden namelijk *leest* en *de krant* gecombineerd, en *de man* wordt pas met dat geheel (het 'predikaat') gecombineerd. Hoe kan *leest* dan toch in een afhankelijkheidsrelatie met *de man* staan?

Het antwoord is dat we onderscheid moeten maken tussen enerzijds de afhankelijkheidsrelatie, en anderzijds de wijze waarop die relatie wordt uitgedrukt. In ons voorbeeld bestaat er een afhankelijkheidsrelatie tussen *de man* en het predikaat *leest de krant*, en het Nederlands kiest ervoor deze relatie uit te drukken op het werkwoord *leest*. Andere talen kiezen een andere realisatie: het Khasi gebruikt een apart voornaamwoord, het Udi kan het object vervormen, het Swahili gebruikt een veelheid van elementen. Dit zijn allemaal realisaties van één en dezelfde afhankelijkheidsrelatie, namelijk die tussen het subject en het predikaat.

De onderzoekers gaan nu na of deze redenering opgaat voor de belangrijkste afhankelijkheidsrelaties in de zin en in de zelfstandignaamwoordsgroep. Voorspeld wordt dat een element dat gebruikt wordt om de afhankelijkheid t.o.v. een element α uit te drukken altijd een onderdeel zal zijn van een groter geheel dat een elementaire verbinding vormt met α . Daartoe wordt gebruik gemaakt van een sample van 215 talen dat een representatieve doorsnede geeft van de variëteit van de talen van de wereld.

15. Research Budget

The project requires salary costs for 2 promovendi (4 year, 0.9 fte) and 1 postdoc (2 years), as well as replacement salary costs at 0.2 fte per annum (scale 11.5). Material costs include travel grants, sufficient for an extended trip abroad for the promovendi, elementary equipment, and costs for organizing a workshop. (Promovendi employed at 0.9 fte by current Groningen policy; appointment at 1.0 fte possible with slight adaptation of the workshop and remaining costs budget.)

	fte	2006	2007	2008	2009	totaal
staff						
replacement	0.2	11954	12561	13163		37678
postdoc	1.0		65632	68960		134592
promov. 1	0.9	32097	33627	39570	42116	147410
promov. 2	0.9	32097	33627	39570	42116	147410
material						
equipment		1362	1362	1362	1362	5448
travel		4000	4000	4000	4000	16000
workshop				6500		
remaining		1250	1250	1250	1250	5000
total		148393	155388	105415	90843	500039

Appendix

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