

Preface

One of the main challenges in language research is to bring the enormous structural and categorial diversity found in the languages of the world together with the instrumental character of language and language usage. The description of the complex relationship between form and function within a language and cross-linguistically as well as the functional explanation of general patterns and asymmetries that appear in this complex relationship are the aim and goal of linguistic typology and language theory.

This book is dedicated to Christian Lehmann who turned sixty in November 2008. Christian Lehmann is one of the leading linguists of our times and was enormously influential in many areas of linguistic research, in particular in linguistic typology and language theory. His ideas on syntactic categories and relations, agreement, relative clauses, clause linkage, lexical typology, predicate classes, adpositions, possession, semantic roles, and many other issues more all left their traces in the nineteen articles of this volume.

The contributions were collected from authors, who are all well-known and acknowledged experts in language typology. All articles represent original research in various grammatical domains. They deal with theoretical issues such as the nature of linguistic categories, the structure of morphological paradigms, and the interaction of semantic and pragmatic categories in various constructions. Among the specific structures dealt with are person forms, imperatives, adpositional phrases, possessive constructions, reciprocal constructions, serial verb constructions, partitive constructions, focus constructions, topic constructions and clause linkage. The variety of topics found in this volume reflects the vast range of scientific topics Christian Lehmann has covered in his more than 35 years of research in linguistic typology and language theory. One area of his research, namely grammaticalization theory, plays such an important role in current linguistics and linguistic typology that there is a separate volume dedicated to this area (cf. Verhoeven et al. 2008).

We would like to thank all contributors to the present volume for their participation and cooperation with us. In addition, we are grateful to Anke Beck, Birgit Sievert, and Monika Wendland from Mouton de Gruyter, who

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The editors.

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Glosses

1	first person	DECL	declarative
2	second person	DEF	definite
3	third person	DEM	demonstrative
A	actor	DEP	dependent verb form
ABL	ablative	DET	determiner
ABS	absolutive	DIR	directive
ACAUS	anticausative	DIST	distant
ACC	accusative	DO	direct object
ACT	active	DU	dual
ADV	adverbial	DYN	dynamic
ADVR	adverbializer	ELAT	elative
AF	actor focus	EMPH	emphasizer
AN	animate	ERG	ergative
ANML	animal	EXCL	exclusive
AOR	aorist	EXHORT	exhortative
APASS	antipassive	EXIST	existential
APPL	applicative	EXP	experiencer
APUD	generalized locative	F	feminine
ART	article	FOC	focus
ASP	aspect	FUT	future
ATR	marker of attribution	GEN	genitive
AUX	auxiliary	GIV	gerundive
CAUS	causative	H	human
CAUSE	cause	HAB	habitual
CLF	classifier	HON	honorific
CMP	completive	IMM	immediate past
CNJ	conjunction	IMP	imperative
COLL	collective	IMPF	imperfective
COM	comitative	IN	inanimate
CON	converb	INC	incompletive
COND	conditional	INCH	inchoative
CONS	consecutive	INCL	inclusive
CONT	continuative	IND	indicative
COORD	coordinative	INDEF	indefinite
COP	copula	INDEP	independent pronoun
D2	indexical (distal)	INES	inessive
D3	indexical (anaphoric)	INF	infinitive
DAT	dative	INST	instrumental

INT	interrogative	PRED	predicative marker
INTER	localisation 'inter'	PREF	prefix
IRR	irrealis	PREP	generic preposition
LF	location focus	PROG	progressive
LK	linker	PROH	prohibitive
LOC	locative	PRS	present
LOG	logophoric	PRSV	presentative
M	masculine	PRT	preterite
MID	middle voice	PST	past
MOD	manner	PTCP	participle
N	neuter	PTF	patient focus
NEC	necessitative	PUM	possessum
NEG	negation	Q	question particle
NF	non-feminine	REAL	realis
NFIN	non-finite	REC	recipient
NHUM	non-human	RED	reduplication
NM	nominalizer	REL	relationalizer
NOM	nominative	RES	resultative
NONSG	non-singular	RFC	refactive
OBG	obligative	S/A	intransitive subject and transitive agent
OBJ	object	SBJ	subject
OPT	optative	SG	singular
PART	partitive	SIM	simultaneous
PASS	passive	SR	subordinator
PAUC	paucal	SUBJ	subjunctive
PCL	particle	SUF	suffix
PF	perfect	SUPNAT	supernatural
PFV	perfective	TEMP	temporal
PL	plural	TOP	topic marker
POL	polarity element	TR	transitivizer
POR	possessor	TRI	trial
POSS	possessive		
POT	potential		

Introduction

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1. Preliminaries

The nineteen articles collected in this volume are presented to Christian Lehmann on the occasion of his 60th birthday. They cover a broad range of topics within the field of functional-typological linguistics and language theory. All articles reflect explicitly or implicitly the remarkable influence of the scientific work and ideas Christian Lehmann presented in around 200 publications up to now. Instead of reproducing the complete bibliography of Christian Lehmann's oeuvre, which can be found on his award winning personal website (cf. references section below), we will give a brief overview of some of the focal topics of his linguistic research during the last 35 years with some hints how the individual contributions in this volume relate to them.

2. Form and function in language and linguistics

One of the main research interests in much of Christian Lehmann's work like a *leitmotif* was and still is the improvement of the theory of language. Starting from a functional approach to language, one of the leading questions was how to bring together in a systematic way the enormous structural and categorical diversity of the languages of the world with the instrumental character of language and language usage. The description and the explanation of the complex and manifold relationship between form and function in language(s) is the central goal of language theory and typology. Christian Lehmann's studies on specific questions in language typology as well as his descriptive studies on individual languages always served as means to find answers to questions belonging to this central research interest of general linguistics and linguistic typology. A number of Christian Lehmann's publications deal with fundamental issues in language theory itself, namely the nature of the linguistic sign such as the isomorphism in the linguistic sign, the relation of semantic and formal

complexity in the linguistic sign, the arbitrariness and motivation of the linguistic sign.

During Christian Lehmann's membership as a researcher in the project on 'Linguistic universals' and the research group of the UNITYP project – both led by Hansjakob Seiler – he worked on a number of topics in syntactic typology and general syntactic theory, most notably on the structure, function and diachrony of the relative clause. Further highly noticed publications in other areas of syntactic typology and general linguistics of this period of his career deal with nominalization, universal and typological aspects of agreement, and syntactic relations. In addition, Christian Lehmann published quite a few reflections on the state of the art of this young and rapidly progressing discipline of linguistics, i.e. linguistic typology and language universals.

It was also in this phase of his scientific career that he wrote the later on so important theoretical study on grammaticalization "Thoughts on grammaticalization – a programmatic sketch" (published in the series of working papers of the UNITYP project as *akup* 48) which was one of the founding and meanwhile classical contributions to this new field of research in linguistics. Christian Lehmann quickly became one of the leading figures in grammaticalization theory, which is reflected in the numerous follow up publications on various theoretical aspects associated with grammaticalization. Since this subject played such a prominent role in Christian Lehmann's research and in linguistics in general until now, a separate volume also containing contributions dedicated to Christian Lehmann is devoted to grammaticalization research (see Verhoeven et al. 2008).

The years to come as professor at the University of Bielefeld (1984-1999) and at the University of Erfurt (beginning with the year 1999), the range of topics in linguistic typology proper (and hence publications) grew enormously. We would like to mention the studies on the typology of clause linkage, on lexical typology, on predicate classes, on the unfolding of situation perspectives, on various semantic roles and their coding properties within the functional domain of participation, on possession, on noun incorporation, on applicatives, and on numeral classifiers.

3. Typology of individual languages: Latin and Yucatec Maya

Throughout his linguistic career Christian Lehmann paid special attention to two individual languages, which are quite different in typological view,

namely Latin and Yucatec Maya. He started out with a master thesis and a PhD dissertation on the syntax of Latin transcending the limits of traditional Latin philology towards an investigation of Latin in terms of modern linguistics. During the following decades, he published descriptive and typological studies on various aspects of the system of the Latin language.

Starting around the second half of the eighties, Christian Lehmann began to study Yucatec Maya intensely. Similar to his Latin studies, this research was always double-sided combining a descriptive and a typological perspective. It culminated in a large DFG (German Research Society) project on the typology of Yucatec Maya, which he directed from 1995 through 2002. Important publications on descriptive and typological aspects of Yucatec Maya followed.

The linguistic studies on Latin and Yucatec Maya demonstrate convincingly that descriptive linguistics and typology are closely interrelated. Descriptive linguistics needs to be typologically informed in order to identify efficiently categories and constructions in a foreign and formerly undocumented language. Conversely, linguistic typology needs high quality descriptions of as many languages as possible from all parts of the world so that typological generalizations can be founded on a reliable data base.

4. Methodology in typology and descriptive linguistics

This brings us to another strong focus of Christian Lehmann's research, namely the methodological requirements for good descriptive and typological research. The former centers on a sub-discipline of linguistics, namely *grammaticography*, the latter centers on the notion of the *tertium comparationis* in language comparison.

As early as 1980, Christian Lehmann began to engage in the study of the relation between the descriptive grammar of a language and language typology and linguistic universals. The essential goal of his research was the elaboration of the nature and the structure of the two fundamental perspectives of a grammatical description, the semasiological perspective and the onomasiological perspective. This line of research was at the center of the large DFG project *Allgemein-vergleichende Grammatik*, which Christian Lehmann directed from 1992 through 1997 at the University of Bielefeld.

Typological comparison needs a *tertium comparationis* as its basis and reference point. Various typological works of Christian Lehmann implicitly or explicitly advocate the view that the *tertium comparationis* is either

a purely functional or semantic notion or a type of constructions which is so frequent in languages that it can be taken as a starting point for cross-linguistic comparison. The former notion belongs to the wide cognitive and communicative space of the functions of language, which are universal and independent of language and its structure. The latter involve semantic and structural aspects which are linguistic in nature and are as such located at an *interlingual* level in typological analysis.

5. Endangered languages and language documentation

Long before the problem of endangerment of the majority of languages of the world had been recognized as an urgent task in mainstream linguistics, Christian Lehmann began to deal with the principles of language documentation and the ways linguistics may react to this problem. Indeed, he belongs to those linguists to whom the discipline owes that language documentation is now on its agenda. The first publications related to this field go back to the early 90ies dealing with the project of a language museum. Later on, Christian Lehmann concentrated on the project and program of language documentation as a priority task for linguists around the world. The reflection on the program and principles of language documentation logically leads to the questions of the value of a language and the nature of linguistic data. He deals with both questions in recent articles. In particular the subject of the nature of linguistic data resumes another long lasting research topic, namely the standardization of the presentation of linguistic data in typological research. In an often cited early work, Christian Lehmann developed rules and principles for the interlinear morphemic glossing of language data, which were improved and expanded later on in a chapter of *Morphologie: Ein internationales Handbuch zur Flexion und Wortbildung* in the Mouton de Gruyter series *Handbooks of linguistics and communication sciences*.

6. Outline of the volume

The articles collected in this volume present original research of linguists who are colleagues from universities all over the world or who were former students over many years in Christian Lehmann's academic career. In one way or other, all these articles touch on topics which were described as

focal ones in Christian Lehmann's work in the previous sections. They are organized according to the two fundamental viewpoints of language description, the onomasiological and the semasiological perspective. Onomasiological contributions start from the function(s) of an utterance and look at their formal expression representing the perspective of the speaker. Semasiological articles start from the formal structure of an expression and proceed to the semantic and pragmatic function(s) taking thus the hearer's perspective. The separation of both perspectives is a methodological one. For a realistic and comprehensive description of linguistic expressions, constructions, and categories in individual languages as well as cross-linguistically, both perspectives have to be taken into account. Those articles that take the onomasiological perspective as a starting point are put together in section A. Contributions that chose a semasiological perspective appear in section B.

The first four papers in section A.1 report on the cross-linguistic variation of the formal marking of various functional concepts. Hansjakob Seiler offers a refinement of and new thoughts on the dimension of APPREHENSION, the linguistic representation of the concept of object or thing, a central topic in the UNITYP research to which Christian Lehmann has contributed intensely. Anna Siewierska and Dik Bakker develop a calculus which allows measuring the number of categorical/semantic distinctions in personal paradigms. Based on a large-scale sample of 447 languages, they provide empirical evidence for the consequences of the grammaticalization of bound personal agreement forms from free or clitic personal pronouns. These consequences predicted by grammaticalization theory concern the phonological reduction of forms and the concomitant reduction of semantic/categorical distinctions in the paradigm. Ekkehard König's and Claire Moyse-Faurie's contribution deals with expressions of reciprocity on the borderline between lexicon and grammar, which have largely gone unnoticed in the growing literature on reciprocity of the last years. This type of reciprocal Noun-Relator-Noun construction (e.g. English *cheek to cheek*) typically involves body part terms and encodes symmetric spatial relations. The authors do not only describe this type of construction and identify its structural and semantic properties referring to examples from a variety of languages, but also examine its relevance for a typology of reciprocity. Christel Stolz and Thomas Stolz contribute with an areal-typological study on the expression of one's age by means of a HAVE – i.e. possessive – predicate. Their article demonstrates that the study of rather peripheral, i.e.

non-prototypical uses of possessive constructions may contribute to the refinement of the prototype itself.

The following two articles in section A.2 describe constraints on the encoding of functional concepts. The article by Johan van der Auwera, Andrej Malchukov, and Ewa Schalley is a study on the relation between positive imperatives (i.e. mood) and the perfective/imperfective distinction (i.e. aspect), which has not been examined from a typological perspective yet. Based on a database of more than 400 languages, the authors identify four marking types regarding the combination of positive imperative with perfective and/or imperfective marking and propose functional explanations for their occurrence. The article by Yong-Min Shin and Elisabeth Verhoeven refers to prominence hierarchies as explanatory means to account for constraints on object topicalization in Korean. In particular, the authors argue that a non-harmonic alignment of the animacy hierarchy and the semanto-syntactic argument hierarchy account for infelicity judgments in cases of topicalization and fronting of a more animate undergoer.

The two articles in section A.3 deal with limits in the formal marking of functional concepts. In particular, they touch on the old question of zero marking in language and the problem of handling these questions theoretically. Robert M.W. Dixon presents a morphological analysis of Jarawara, a language of the small Arawá family of Southern Amazonia, which is intended to serve as role model in demonstrating, which type of evidence is necessary to distinguish zero morphemes/zero allomorphs from nothing or simply gaps in a paradigm. Gerd Jendraschek, on the other hand, offers a descriptive study on clause linkage in Iatmul, a Papuan language of the Ndu family spoken in the East Sepik Province of Papua New Guinea. The typologically rare and amazing fact is that Iatmul has no means to coordinate independent clauses, so that clause combining is either simply a juxtaposition or asymmetrical, but nothing in between. Jendraschek describes the Iatmul way of clause linkage, the so-called adjoined clause including switch-reference, and outlines consequences for the view on types of clause linkage in general.

The contributions in section B focus on the semasiological perspective. They start from certain grammatical categories or constructions and investigate their distribution in individual languages as well as cross-linguistically. The first four articles in section B.1 deal with the question of how to establish categories and relations. Paolo Ramat summarizes his ideas on the nature, i.e. the universality and diversity of syntactic categories, focusing in particular on the noun-verb distinction. Christian Touratier

undertakes a notional and terminological discussion of the term ‘lexie’ introduced by Bernard Pottier in the French structuralist linguistic tradition and demonstrates that this notion is necessary in linguistic analysis and corresponds to some degree to the notion of construction. Lunella Mereu undertakes a critical comparison and evaluation of what has been achieved so far in syntax and syntactic theory in generative and functional-typological approaches. Following from this discussion, she identifies a few basic principles related to the pragmatic organization of sentence constructions, which are argued to be basic in an alternative approach to syntax able to reconcile formal and functional approaches. Jürgen Bohnemeyer presents a detailed study on the principles of argument linking in Yucatec Maya arguing that it is not grammatical relations but either a harmonic alignment of the actor-undergoer hierarchy with semanto-pragmatic prominence hierarchies related to topicality, definiteness, animacy etc. or certain construction specific properties that determine linking and disambiguation of third person arguments in Yucatec Maya.

The papers in section B.2 deal with formal typologies in the sense that formal properties are examined with respect to their typological distribution. Firmin Ahoua reports the results of his research on the quite controversial question of the origin of tones from consonants. He convincingly demonstrates with respect to the Kwa, Kru and Southern Mande languages of Western Africa that certain sources (e.g. implosives) and processes (i.e. the interaction of adjacent vowels and consonants), which led to the development of tones, are areal phenomena. The contribution by Luraghi provides a critical examination of the notion of government in prepositional phrases and its implications for typology. Starting from Christian Lehmann’s taxonomy of syntactic relations (Lehmann 1983), Silvia Luraghi investigates the problematic cases of prepositions that govern more than one case causing meaning differences. Based on this analysis, she argues that government itself can be regarded as a prototypical notion being subject to historical change. Masayoshi Shibatani undertakes a critical examination of the notion of serial verb construction and discusses its defining properties in the recent typological literature. He argues that some of the defining properties cannot be taken as criteria, indicating their contradictory nature and presenting counter-evidence from Formosan languages. In addition, he argues that the differences between converbal constructions and serial verb constructions are not as principled as it has been suggested in the literature. The contribution by Dieter Metzger and Saba Amsalu Teserra offers a description of coordination in Amharic in terms of a Multi-

Modal Combinatory Categorical Grammar, a formal approach to grammar, which is shown to be powerful enough to deal with typologically diverse strategies of clause combination, in particular coordination. Pierluigi Cuzzolin contributes with a theoretical discussion on the relation between the notion of linguistic type and the complexity of a language. Cuzzolin argues for a reappraisal of a holistic concept of linguistic type in particular on the background of the recent research in theory and method of measuring the linguistic complexity of a language.

The volume closes in section B.3 with two articles that demonstrate that similarity or identity of form can be fruitfully exploited for the determination of their respective functions following Haiman's dictum that similarity of form refers to similarity of meaning. Nina Sumbatova's article investigates the hypothesis that constituent questions and argument focus constructions may have structural similarities because of their common functional and semantic properties. She analyses these constructions in some Caucasian languages, notably the languages of the North-West Caucasian group such as Adyghe and Abkhaz contrasting them with data from some East-Caucasian languages, which are typologically quite different. Finally, Maria Koptjevskaja-Tamm discusses central conceptual and structural aspects of a typology of partitive and pseudo-partitive nominal constructions with special reference to European languages. In addition, she outlines the path of grammaticalization of these constructions and the implications and possibilities for a lexical typology referring to Christian Lehmann's ideas of lexical typology (Lehmann 1990).

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(Complete list of Christian Lehmann's publications can be found on the website: <http://www.uni-erfurt.de/sprachwissenschaft/personal/lehmann/index.html>)

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Onomasiological Perspective: From Function to Form

A.1 Functional Typologies

The continuum of pragmaticity: a sketch

Hansjakob Seiler

1. Introduction

The following pages are to be understood as epilegomena to our three volumes publication on APPREHENSION, the linguistic representation of the concept of object or thing.¹ This is a field of research to which Christian Lehmann has contributed vigorously and effectively.² To orient the reader, here are the bare essentials:

- (a) On the conceptual level the *thing* appears to embody both a *such* (i.e. apprehended by defining it via generalize properties) and a *this* (i.e. apprehended by being pointed at).
- (b) On the comparative level we proposed a dimension, an array of the techniques of representing an object ordered in continuous fashion. Two basic principles motivating the ordering in converse fashion were called *predicativity* (i.e. defining via properties) vs. *indicativity* (i.e. pointing), respectively. We claimed that on the continuum an increase in predicativity would be coupled with a decrease in indicativity and vice versa. Maximal predicativity is represented in the technique called ABSTRACTION as constituted by an abstract noun, e.g. *destruction* as a nominalized predicate: *x destroys y* with the argument positions either filled or left empty (more of it see below). Maximal indicativity is represented by the technique NAMEGIVING as constituted by proper names, e.g. *Jerry*, and its appropriate syntax (e.g. lacking an article, etc.).
- (c) On the level of individual languages we find the “object or thing” as represented by an option chosen within a particular technique, e.g. numeral classification. Example from Thai (Kölver 1982: 162):

- (1)

<i>waě</i>	<i>nùŋ</i>	<i>wong</i>
ring	one	CLF:circle
N	(Q	CLF)
‘one ring’		

2. Pragmaticity vs. semanticity

In the present paper we want to further develop our insight into the nature of the two complementary principles hitherto called “indicativity” vs. “predicativity”. Specifically, “indicativity” seems to be too narrow a designation for what is involved. If it is true that “indicativity” materializes as a gradient, it seems difficult to see how “pointing” should appear in scalar fashion. On the other side, “predicativity” also seems to be narrow. The idea is that not only predication but semantic information of all sorts constitutes the true domain.

We thus want to generalize our notion of “indicativity” and replace it by the term pragmaticity, and in likewise fashion we want to replace “predicativity” by semanticity. The revised version of the graphic representation of our dimension of APPREHENSION now looks as follows:

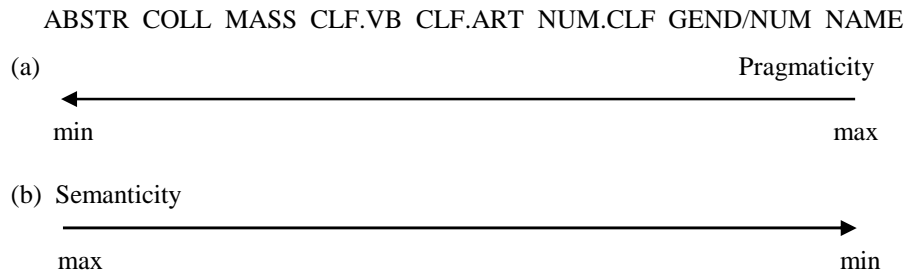


Figure 1. The dimension of APPREHENSION

[Abbreviations: ABSTR = Abstraction, COLL = Collection, MASS = mass and measure, CLF.VB = Classification by verbs, CLF.ART = Classification by articles, NUM.CLF = Numeral classification, GEND/NUM = Agreement in gender and number, NAME = Namegiving]

The arrow of Pragmaticity says that this principle is maximally present in the technique of NAMEGIVING and that it gradually diminishes in the direction of ABSTRACTION. The arrow of Semanticity says that this principle is maximally present in the technique of ABSTRACTION, and that it gradually diminishes in the direction of NAMEGIVING. This has been diagnosed essentially as a process of grammaticalization which ends in lexicalization (Lehmann 1982: 258).

In our earlier publications on the dimension our interest was focused on “Predicativity” – now Semanticity – in essentially showing evidence for this cline from ABSTR to NAME. We now want to highlight “Indicativity”

– now Pragmaticity – by examining its various aspects in the sequence of techniques of APPREHENSION. However, it should be clear, and the graphic representation stresses it, that a true understanding can only be reached by observing the interplay of both principles. In the course of this examination we shall keep asking ourselves the following two questions: A. Does the respective technique constitute the object (the thing) by saying something about it: Semanticity? B. Does the technique treat the object as basically given and dwell on an interaction with its linguistic representation: Pragmaticity? As an example take the technique of NUMERAL CLASSIFICATION. The import of classification is to make the noun countable. This means doing something to the noun, and this is what we mean by “interaction” (+B). It is a metalinguistic activity. Counting in itself is not defining. The object is not being defined but taken as a given (–A). This pragmatic component of the technique may eventually be counterbalanced by a semantic one, according to the language under study. This is the case in so-called temporary classification attested in Middle and South American Indian languages, and especially well in Tzeltal, a Mayan language, where it has been studied in detail (Serzisko 1982: 155ff.). An extreme example would be:

- (2) *ho -b'ehč' laso*
 five -CLF₁ rope
 ‘rope in the state of five sequential wraps around a long non-flexible object’
- (3) *ho -hiht' laso*
 five -CLF₂ rope
 ‘rope in five lash loops around two pieces of a long non-flexible object at 90° angles to one another, as in fence-making’

In these examples CLF₁ and CLF₂ do add a great deal more of information than does the classifier in example (1). In fact, the above classifiers predominantly constitute the object by providing semantic information (+A, –B).

The above exemplification with NUM.CLF shows us that the relationship between +/–A to +/–B may vary within one and the same technique, and this correspondingly holds for all the other techniques of the dimension of APPREHENSION as well.³ We also learn that in all the techniques of our dimension pragmaticity and semanticity are co-present,

though at different ratios; and this is also what can be read off from our graph in Figure 1.

As the following *tour d’horizon* along the techniques of our dimension will further specify, pragmaticity manifests itself in a variety of aspects. We must limit ourselves to informally defining pragmaticity within the confines of the dimension of APPREHENSION. Here, the common denominator of the various aspects seems to be interaction in the sense of B, as indicated above: doing something with or to the linguistic representation of the object. This certainly includes pointing it out (our former ‘indicativity’). It furthermore includes counting (NUM.CLF), handling and placing (CLF.VB), measuring (MASS), and, most importantly, metalinguistic activity (NAME, GEND/NUM). In a metalinguistic expression the signifier refers not to an object of the world but to an object of language (J. Rey-Debove 1978). The distinction between the two is not a categorial one. Instead, a “continuum of metalinguistic density” can be discerned (Rey-Debove 1978: 12) for a given set of expressions – distributed over different techniques – where metalanguage and object language eventually merge.

We are now ready to examine pragmaticity in its interplay with semanticity and their various aspects in the sequence of techniques of APPREHENSION. It must be kept in mind that the techniques in their continuous ordering on the dimensional level (Figure 1) are common denominators of corresponding subcontinua ordered according to the same principles. It is the subcontinua that feature actual language data in their pragmatic and/or semantic aspects. It is, however, not possible within the limits of this paper to present the full array of subcontinua, each one pertaining to its proper technique.⁴ We must content ourselves to either referring to the technique as a whole, or to discussing those data that most patently exhibit their rate of pragmaticity vs. semanticity.

3. From high to low in pragmaticity and from low to high in semanticity

3.1. NAMEGIVING

The conceptual basis of this technique must be conceived of as a process in stages:

- (a) a maker of the name (often unknown);
- (b) a giver of the name;
- (c) an act of attribution of the name (e.g. a rite);
- (d) an individual carrier of the name;
- (e) a user of the name (sometimes = (d));
- (f) an implicit and indefinitely renewable reference by the users to the act of attribution.

Their reflexes in the individual languages exhibit aspects of pragmatics in the above outlined sense. They pertain to metalanguage in various ways. A proper name is given. It is attached to an individualized object, a person, and this object is assumed to be known. This is in sharp contrast to common nouns, which are names of classes. A name for an individual can be changed or substituted for a different name. The individual can carry more than one name. The giving of certain names can be discussed and criticized or tabooed altogether, which is important in certain societies.

The proportional import of pragmatics in this technique must be gauged against the import of semanticity. It is on the background of this proportion that the perennial dispute whether names have meaning or not must be appreciated.

In his pioneering work on shifters R. Jakobson (1957/1971: 30) stated that “the general meaning of a proper name cannot be defined without reference to the code. In the code of English, ‘Jerry’ means a person named Jerry”. The definition seems to consider metalinguistic activity and nothing else. However, we note in the example about *Jerry* that the name refers to a person and not to an animal. A name like *Geraldine* would refer to a female person and not to a male. These are definitely aspects of semanticity, specifically classificatory aspects, the kind we will encounter in the adjacent techniques “to the left”. There are furthermore persistent attempts, especially by laymen, to seek meaning, i.e. semanticity, in proper names, reflected in the dictum *nomen (est) omen*.

To sum up, it is safe to say that in NAMEGIVING, pragmatics surpasses semanticity. The exact ratio can be narrowed down in the comparison with the techniques that come next in line. Note that pragmatics is a necessary, and even a dominant component of proper names.

3.2. AGREEMENT in GENDER/NUMBER

The essentials have been worked out by Ch. Lehmann who stated that agreement is achieved “by an elementary operation whose function is to keep the linguistic object constant and which is part of the dimension of APPREHENSION” (Lehmann 1982: 259). The operation says something about the linguistic object and this is definitely metalinguistic, hence pragmatic. Since gender/number in the languages hardly ever occurs without agreement, it follows that metalanguage occupies a prominent place in the technique. How does it score vis-à-vis the opposite scale of semanticity? This is what we find:

- (a) Gender classification is exhaustive, which means that each noun has to be a member of one particular class.
- (b) Gender classification stands in some correlation with biological sex.
- (c) Only a small percentage of the objects devoted by nouns in a particular language are in fact sexually differentiated. For the majority of nouns semanticity remains doubtful or arbitrary.

The small area of semanticity is a (small) plus of semanticity for our technique as against NAMEGIVING, where no such subdomain exists. And it is a (small) minus of pragmaticity. To this it must be added that the technique encompasses a great amount of structural phenomena distributed over a vast area of language families. Accordingly, the ratio of prominence between semanticity and pragmaticity may vary.

A continuum of gender systems – a subcontinuum of our technique – has been pointed out (Walter 1982: 226) with two polar extremes A and B and gradual transitions in between:

- | | | |
|-----|-----------------|----------------|
| (4) | Type A | Type B |
| | semantic | desemanticized |
| | object language | metalanguage |
| | derivative | inflectional |
| | non-inherent | inherent |
| | movable | fixed |
| | overt | covert |

While A seems to anticipate properties of the technique next in line, B shows affinities with NAMEGIVING, especially with regard to metalanguage. One directly connected feature consists in the perennial

discussions about the appropriateness of a specific gender marking and in the attempts at eventually changing it. The discussions, known since antiquity (Seiler 1986: 122) continue to this day in the preoccupation of certain feminist linguists.

To sum up, metalinguistic-pragmatic density is somewhat attenuated vis-à-vis NAMEGIVING, but still strongly represented against semanticity. Yet, we note, again, that pragmaticity is a necessary component of gender marking.

3.3. The classificatory techniques

The three classificatory techniques constitute an area of transition. As with the preceding techniques it still operates on the premise that the object and its representation are given. Classification gradually shifts in its import from pragmaticity to semanticity. Interaction gradually shifts from metalanguage to object language. As with the preceding techniques and with the subsequent relational techniques, each one exhibits subcontinua ordered according to the same converse principles that hold for the entire dimension. This parallelism strengthens the plausibility of the orderings on both levels.

NUMERAL CLASSIFICATION, of which examples (1)-(3) have been discussed above, is restricted to the context of counting, plus, in some languages, to the contexts of demonstratives and attributive adjectives (pointing). Pragmaticity is thus present, though restricted to a limited context. Typically, the classifier adds semantically little or nothing to what is already inherent in the counted noun. In the example (1) *circle* is already inherent in *ring*. Examples (2) and (3) exhibit a graded increase in semanticity, where (3) seems to occupy a position near the extreme point of a subcontinuum.⁵ It shows that classification need not be exclusively pragmatic. It may refer to a very complex shape of the object and thus add to semanticity.

CLASSIFICATION by ARTICLES as featured in the Siouan languages (Barron and Serzisko 1982: 85 ff.) involves such different structures as verbs of *placement* and classificatory definite articles. Both imply interaction with an individualized object and may thus be said to represent pragmaticity. As an example we take Mandan (Barron and Serzisko 1982: 99 ff.). There are three elements, translated as 'standing', 'sitting', and 'lying' that are sometimes used as verb forms, sometimes as classifiers

within complex noun phrases. As verbs or as auxiliaries they can refer both to position and to the shape of the object: long objects are standing, round objects are sitting, and flat objects are lying. As classifiers, these elements are obligatory with demonstrative pronouns:

- (5) *dε -māk* ‘this one (lying)’
 dε -nak ‘this one (sitting)’
 dε -hāk ‘this one (standing)’

There is a continuum of grammaticalization between the four languages Dakota, Mandan, Yuchi and Ponca (Barron and Serzisko, l.c.: 102). Dakota does not show article function, and a free choice between stative verbs strengthens semanticity. Ponca, on the other hand, shows predominance of the classificatory article function, which strengthens pragmaticity. In the languages in intermediate position, like Mandan, semantic and pragmatic function may coexist or gradually merge.

CLASSIFICATION by VERBS is found primarily on the American (Sub-)Continents. The classificatory verbs refer to *placement*, *handling*, and *counting*. The verb contains two components: a classifying element of pragmatic character, and a predicative element contributing to semanticity. This may be illustrated with examples from Diegueño (Langdon 1970: 78 ff.; Barron 1980: 43 ff.):

- (6) a. *a'mił* ‘to hang (a long object)’
 b. *pamił* ‘to carry (like bucket)’
 c. *tu'mił* ‘to hang (a small round object)’
- (7) a. *a·xi·ł* ‘to drag (a long object)’
 b. *caxi·ł* ‘to drag (a bunch of objects)’
- (8) *a-mar* ‘to cover (a long object), to bury someone’

We may identify: the predications “to HANG” (*-mił*), “to DRAG” (*-xi·ł*), “to COVER” (*-mar*); the classifying elements of *a-* “long object”, *pa-* “bucket-like”, *tu-* “small round object”; and *ca-* “bunch of objects”. A continuum has been found (Barron 1982: 142) reflecting the degree of fusion of both components and ranging from isolability (as in the examples from Diegueño) to complete amalgamation with several intermediate degrees.

3.4. The relational techniques

In the three remaining techniques the representation of the object, instead of being given, has to be construed by means of relational, predicative expressions. There is a starting point, an operation, and a final state. Semanticity is high with a cline from ABSTRACTION to COLLECTION to MASS and MEASURE. Pragmaticity is correspondingly low.

A MASS is a *quale* mentally apprehended by our interaction with it, i.e. by extracting a *quantum*. Our interaction with masses involves various kinds of handling, such as placing, moving, grasping, dividing, etc. Among them is also measuring, and, by way of measuring: counting – the foremost kind of interaction in some civilizations of the world. This aspect relates the technique to the foregoing classificatory ones with partially the same verbs of interaction, and this is surely an aspect of pragmaticity. However, it is by way of this very same kind of interaction that the mass is semantically constituted as such. In languages like English or German almost any noun can appear in a *mass noun* slot and can thus appear as a mass. This has been observed before, even for proper nouns, as in:

- (9) It may be that the National Gallery of England has *many more Rembrandts* than the National Gallery of the United States, but those who are interested in expanse and expense may find out that the latter has *much more Rembrandt* than the former. (Ware 1975: 383).

Note the contrast between *much more Rembrandt* and *many more Rembrandts* (count). We further note that pragmaticity and semanticity are merged in the same operation, but that semanticity takes the upper hand, because this is the aspect that constitutes the notion of a mass.

COLLECTION is based on a relation between individual and group. Relationality is signalled by relational nouns (of the type *group* or *head of*), relational numerals, relational number (dual), verbs, that are relational *ipso facto*. The relation is either associative or dissociative. To understand this, it is necessary to adopt an operational view assuming a starting point, an operation (association or dissociation), and an end state.

In the associative relation the starting point is an individual set (as in *students, shoes, carrots*). Relational nouns (as in *group of, pair of, bunch of*) or other relational elements are the means for performing the operation of union. The end state is a collective expression (as in *group of students, pair of shoes, bunch of carrots*). Typically, the relational noun has

classificatory properties (as in the English examples cited). It is this property that might be interpreted on the one hand as a link to the *preceding* techniques, and on the other hand as a modest vestige of pragmaticity.

In the dissociative relation the starting point is a collection represented by a collective noun (as in *cattle, family, police*). Relational nouns (as in *head of, member of*) or other relational elements are the means for performing the operation of dissociation. The end state is the expression of an individual set (one or more individuals) as plotted against the corresponding collection (as in *head of cattle, member of the family*). Typically again, the relational noun has classificatory properties, but this time it acts as an individualizer. The term ‘singulative’ is used in the grammars of certain languages, e.g. Arabic.

ABSTRACTION, finally, is based on predicates which are nominalized. A predicate is a relational expression. A predicate’s being relational means that it opens places for arguments. The content of a predicate in nominalization is treated like an object.

The places for arguments belonging to a nominalized predicate can be filled with NPs or they can be left empty:

- (10) a. *The destruction of Carthage by the Romans in 146 B.C. had far reaching consequences.*
- b. *The destruction of Carthage had far reaching consequences.*
- c. *Destruction is an activity and at the same time a result.*

There is thus a continuum from maximally filled places to unfilled ones. The scale has its correlate on the meaning side (a) exhibits maximal semanticity by construing the *thing* via a maximum of information. (b) occupies an intermediate position. In (c) semanticity is weakened. This kind of construction is typical for definitions and thus exhibits a metalinguistic component. As for use, (a) and (b) in their semanticity are the normal case, whereas (c) with its metalinguistic component is recessive. We now can find a way of linking up the two poles of the dimension, viz. ABSTRACTION and NAMEGIVING, with one another. In the latter technique the relation between pragmaticity and semanticity is reversed. Pragmaticity is dominant in its metalinguistic appearance, while semanticity is recessive. As each of these two polar techniques has its appropriate subcontinuum, where both pragmaticity and semanticity are represented, though at reversed ratios, it seems tempting to widen the two-

dimensional concept of the dimension into a three-dimensional one by way of the model of a Möbius band.⁶

4. Consequences

1. Within the dimension of APPREHENSION we have encountered pragmaticity as a unified principle based on communicative interaction with the representation of a concept, in our case the concept 'thing', assumed to be given. It includes deixis, handling, placing, and metalinguistic activity. It is only in parts segmental. But it is equipollent with that other principle of semanticity to which it stands in a relation of converseness. A decrease in pragmaticity is coupled with an increase of semanticity, and vice-versa.
2. The techniques as ordered along this twofold system appear as a well established, non-arbitrary array. The suspicion voiced by some of our critics that the techniques of the dimension constitute an ensemble chosen at will (Comrie 1985: 462), and that the "facts of the languages under discussion could not have surfaced but for UNITYP's theoretical framework" (see Song 2003: 149 following Comrie) is therefore unfounded.
3. The above outlined interplay between the two principles of semanticity vs. pragmaticity will shed new light on our appreciation of the Saussurean doctrine of the arbitrariness of the linguistic sign. On this basis of arbitrariness Saussure (1916: 106ff.) denies the possibility of interaction with the linguistic sign in the sense of discussing or even modifying it. This, however, as shown in the above, is exactly what happens in language use and communication. It might well be that arbitrariness holds for those realms where semanticity predominates; and that other theoretical instruments might have to be applied where pragmaticity is a necessary or an optional concomitant of linguistic signs (see also Seiler 2006: 99 ff.).

Notes

1. *Language Universals Series [LUS]*, vol. 1 in three parts: Seiler and Lehmann (1982), Seiler and Stachowiak (1982), Seiler (1986).
2. With particular reference to gender: Lehmann (1982: 201–267).
3. The corresponding details have been presented in my summarizing work (Seiler 1986: 26 ff.).

4. For a complete presentation see my summarizing work (Seiler 1986).
5. The full array of the subcontinuum has been presented by F. Serzisko (1982: 158).
6. This idea has been explored in more detail in Seiler (2008).

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Weighing semantic distinctions in person forms

Dik Bakker and Anna Siewierska

1. Introduction¹

It is generally recognized that person agreement markers typically, though by no means exclusively, develop from independent person forms² (see e.g. Givón 1976; Lehmann 1982b; Corbett 1991; Siewierska 1999; Ariel 2000). This development may be viewed as involving three dimensions: formal, functional and semantic. The formal dimension concerns the change from a word to a clitic to an affix, the degree of fusion of the affix with the stem and finally its disappearance. The functional dimension relates to the change from a referential expression with deictic or anaphoric force and full rhetorical value to a syntactic marker with little or even no referential potential which only redundantly expresses (some) person features. And the semantic dimension pertains to the reduction in the range of semantic distinctions encoded by the person agreement markers as compared to their pronominal source, most notably person but also number, gender, inclusivity, and honorificity. Functionally oriented linguists tend to see the changes operating on these three dimensions as an instantiation of the unidirectional diachronic process of grammaticalization, i.e. the change from lexical item to grammatical marker or from less grammaticalized to more grammaticalized marker.³ Formalists, who generally consider grammaticalization to be an epiphenomenon, on the other hand, see the above developments as a by-product of general processes of language change, in particular phonological reduction and semantic attrition affecting equally lexical and grammatical material. Issues of theoretical orientation and terminology aside, assuming the three dimensions of change involved in the development of person agreement markers, the question that arises is what is the relationship between these changes.

The relationship between the formal and semantic/functional dimensions of the development of grammatical markers has been the subject of much debate by functionalists and more recently also formalists critical of the grammaticalization approach. Proponents of grammaticalization adhere to the Parallel Paths Hypothesis (PPH) which specifies that the various dimensions of grammaticalization should run more or less in parallel (see

e.g. Lehmann 1982a: 236; Bybee et al. 1994: 20; Heine 1994: 109). They are somewhat less united with respect to the existence and nature of a causal link between the evolution of meaning and form. Nonetheless, the dominant position is that formal reduction is a response to increase in frequency of use which itself is the outcome of a shift or change in meaning or rhetorical value (see e.g. Givón 1975: 96; Bybee et al. 1994: 21; Dahl 2001: 126; Haspelmath 1999: 1050). Formalists, and detractors of grammaticalization, by contrast, argue that formal and semantic reductions do not tend to proceed at the same pace (counter to the PPH) and maintain that they are fully independent of each other, i.e. formal reduction may precede, follow or be contemporaneous with semantic/functional change (see e.g. Campbell 2001: 123; Newmeyer 2001: 193).

Irrespective of the theoretical framework that is taken as a point of departure, and the type of questions one wants to answer in relation to diachronic changes in person forms, comparisons have to be made between the respective forms within and across languages. For that purpose, a calculus is needed with which to determine and compare the amount of coding in person forms for the respective semantic dimensions. We are not aware of any proposal for such calculus in the literature, not even in the work of Christian Lehmann. The present contribution will seek to provide one.

Since we are involved with person forms, this semantic dimension will be present by definition. In addition, we will take into account the dimensions most frequently co-occurring with person, i.e. number, gender, and inclusivity. Each of these may be elaborated to a greater or lesser degree within a person paradigm. In developing a weighing system for them, we will consider not only whether a given semantic dimension is present or not but also how exactly it is manifested in a paradigm. In particular, we will take into consideration the number of oppositions expressed within each dimension, their distribution within the paradigm and the major patterns of homophonies displayed by it. On the basis of these parameters we will quantify the degree of elaboration of each of the four dimensions within a paradigm.

The system of quantification that we propose is intended to capture the markedness patterns evinced in person paradigms documented in the typological literature of the last 30 years or so. Accordingly, the degree of elaboration of each semantic dimension in a paradigm is measured somewhat differently. For person we have taken the default situation to be maximal specification of the dimension, i.e. the existence of a distinction between the first, second, and third person. For number, on the other hand,

our default is not the maximal four-way contrast between singular, dual, trial/paucal, and plural but the presence of a two-way opposition between singular and plural. And in the case of gender and inclusivity we have taken the total absence of either dimension as the norm. As the defaults for each semantic dimension are quite different, they have been assigned quite different numerical values. These may be added to, for richer distinctions in number, gender, and inclusivity, or subtracted from, in cases of underspecifications of person and number. Further adjustments are made for homophonies and covert forms. The resulting numerical scales are thus well equipped to capture fine-grained semantic distinctions between paradigms corresponding to the small steps in terms of which grammaticalization is seen to proceed. Further details pertaining to the nature of the semantic distinctions within the four dimensions and our system of quantifying them are explicated in sections 2 to 5, for person, number, inclusivity, and gender respectively. Section 6 gives a brief impression of the different weights we found for the 447 languages in our database on person agreement (cf. Siewierska and Bakker 1996). The example sentences that we will use below also stem from this database.

2. Person

The grammatical category ‘person’ is typically viewed as embracing three persons, the first, second, and third, with the first person corresponding to the discourse role of speaker, the second person to the discourse role of addressee, and the third person to the other, i.e. neither the discourse role of speaker nor addressee. This is also the interpretation of the category person adopted here. Thus counter to Benveniste (1971), we do not consider the third person as falling outside the category of person and unlike in some other grammatical traditions, do not recognize a fourth person, however defined.⁴ Nonetheless, we do acknowledge that the first and second persons are more central to the grammatical category of person than the third. Moreover, in measuring the degree of semantic elaboration of person paradigms we will rank the first person over the second, i.e. we will use the traditional person hierarchy in (1).⁵

$$(1) \quad 1 > 2 > 3$$

Within the three person system, a paradigm fully specified for person is one in which each of the three persons is distinguished from the other by a phonologically distinct form. A potential point of contention is whether all of the forms in question need to be overt or whether one of the forms may be covert, i.e. zero. In the case of independent person paradigms three phonologically distinct overt forms are the cross-linguistic norm. In the case of dependent forms the presence of a zero if not exactly statistically dominant (see Siewierska 2005) is a highly common phenomenon, particularly of the third person singular. Further, the zero forms found in independent person paradigms and person agreement markers tend to be interpreted differently. Zero forms may be indicative of the absence of a person distinction altogether. Or they may be functionally equivalent to overt forms, i.e. they may function as a paradigmatic zero. The latter is the case for the present singular paradigm of the verb in English, where the third person *-s* contrasts with the \emptyset first and second person. The former situation generally obtains in the case of missing independent forms, which may then be functionally replaced by a demonstrative or a lexical NP. But it may also occur in the case of bound forms, as shown by the paradigm for Object suffixes in the Oceanic language Raga in example (2) below. In the plural, the missing forms for the first and second person are not paradigmatic zeroes. In context, 1PL and 2PL are marked by the obligatory presence of the corresponding independent forms. These form the real contrast with the third person plural suffix.

- (2) Raga (Crowley 2002a: 628)
- | | | | |
|-----|---------------|-----|------------|
| 1SG | <i>-u/-au</i> | 1PL | - |
| 2SG | <i>-go</i> | 2PL | - |
| 3SG | <i>-a/-e</i> | 3PL | <i>-ra</i> |

This difference in interpretation of missing forms is attributable to the fact that a paradigmatic zero is much more difficult to detect with independent person forms than with person inflection, since the former, in contrast to the latter, are typically not obligatory and need not occupy a unique syntactic slot in the utterance. Accordingly, if independent person forms are taken as the model for what constitutes a fully elaborated person paradigm, overtness of all three person forms must be taken as the norm. But if dependent person paradigms are taken as the point of departure, the overtness as opposed to covertness of the forms indicating the three persons may be considered to be functionally much less relevant. Since the wider context

of this exercise is to get a better understanding of grammaticalization processes in general, and the development of person agreement markers from (overt) independent ones, the former position is more viable. Thus in sum, we will view a paradigm as fully specified for person if the distinction between the three persons is maintained by phonologically distinct overt forms. Paradigms in which one (or more) of the relevant forms is missing will be seen as lacking the relevant person distinction and will be viewed as *defective*. Paradigms in which one of the relevant forms is zero will be taken to be *underspecified* with respect to the category person. The degree of underspecification is in line with the person hierarchy in (1), a paradigmatic zero for third person being considered as the least severe form of underspecification for person, and a paradigmatic zero for first person as the most severe type of underspecification.

A more radical type of underspecification for person, lack of phonological distinctiveness arises in cases of homophony. In the context of the three person paradigm, homophony may involve any two persons, as in (3a-c) or even all three, as in (3d).

- (3) a. 1 vs. 2=3
 b. 1=3 vs. 2
 c. 1=2 vs. 3
 d. 1=2=3

Pattern (3a), homophony between the second and third person with a distinct form for the first can be observed in the plural of the Subject suffixes in Fore in (4). Pattern (3c), homophony between the first and second person and a distinct form for the third, is illustrated in the Subject prefixal paradigm in the singular of Au in (5). Pattern (3b) where the first and third persons are homophonous and distinguished from the second is illustrated in (6) below on the basis of the singular Subject suffixes of the realis mood in the Papuan language Koiari. This language also provides an example of (3d): in the plural there is complete homophony. INDP is for the independent person form; S/A is for the bound person form that agrees with the intransitive Subject and the transitive Agent.

(4) Fore (Foley 1986: 73f.)

	INDEP	S/A
1SG	<i>náe</i>	<i>-u</i>
2SG	<i>káe</i>	<i>-a:N</i>
3SG	<i>áe</i>	<i>-i-</i>
1DU	<i>tasíge</i>	<i>-us</i>
2DU	<i>tisíge</i>	<i>-a:s</i>
3DU	<i>isige</i>	<i>-a:sko-</i>
1PL	<i>táe</i>	<i>-uN</i>
2PL	<i>tíge</i>	<i>-a:</i>
3PL	<i>íge</i>	<i>-a:</i>

(5) Au (Scorza 1985: 233, 223)

	INDEP	S/A
1SG	<i>hi</i>	<i>h-</i>
2SG	<i>ti</i>	<i>h-</i>
3SG M/N	<i>hirak</i>	<i>k-</i>
3SG F	<i>hire</i>	<i>w-</i>
1DU	<i>hawir</i>	<i>w-</i>
2DU	<i>yi</i>	<i>y-</i>
3DU M	<i>hirakit</i>	<i>t-</i>
3DU F	<i>hir</i>	<i>n-</i>
3DU N	<i>hirem</i>	<i>m-</i>
1PL	<i>haiu</i>	<i>m-</i>
2PL	<i>yi</i>	<i>y-</i>
3PL M/F	<i>hir</i>	<i>n-</i>
3PL N	<i>hirem</i>	<i>m-</i>

(6) Koiari (Dutton 1996: 23)

	PRES	PAST
1SG	<i>-ma</i>	<i>-nu</i>
2SG	<i>-a</i>	<i>-nua</i>
3SG	<i>-ma</i>	<i>-nu</i>
1PL	<i>-a</i>	<i>-nua</i>
2PL	<i>-a</i>	<i>-nua</i>
3PL	<i>-a</i>	<i>-nua</i>

While homophonies involving non-distinctiveness of all three persons obviously constitute a more radical departure from a fully specified person

paradigm than those involving non-distinctiveness of two persons, the latter can be further differentiated with reference to the person hierarchy in (1). Homophonies which obliterate the distinction between the first and second person as in (3c), result in a more drastic underspecification of person than those which do not, and among the latter those which involve the first person (3b) are more damaging than those in which the first person is not involved (3a). Thus the patterns of homophony in (3) define a decrease in the elaboration of the category person with the patterns in (3a) being the least damaging and the one in (3d) the most damaging.

The effect of the respective homophonies on the category person can be further refined if we take into account whether all the forms in question are overt, as in the examples cited above, or whether some are zero forms. The zero form may correspond to the person not involved in a homophony, i.e. to the first person in the case of (3a), to the second person in the case of (3b) and to the third person in the case of (3c). Illustrative paradigms of (3a) and (3c) are presented on the basis of the present tense singular Subject suffixes in Dutch in (7) and on the basis of those in the Caucasian language Hunzib in (8).

- (7) Dutch
- | | | | |
|-----|----|-----|-----|
| 1SG | -Ø | 1PL | -en |
| 2SG | -t | 2PL | -en |
| 3SG | -t | 3PL | -en |
- (8) Hunzib (van den Berg 1995: 83)
- | | | | |
|-----|-------|-----|----|
| 1SG | -č(o) | 1PL | -Ø |
| 2SG | -č(o) | 2PL | -Ø |
| 3SG | -Ø | 3PL | -Ø |

Our database does not hold an example of a paradigm corresponding to (3c) with the second person being zero. Alternatively the homophonies may involve zeroes. Patterns (3a) and (3b) with homophonies involving zero forms are illustrated on the basis of the Subject suffixes in the singular of the Papuan language Wambon (9) and the Australian language Kalkatungu (10), respectively.

(9) Wambon (De Vries 1989: 22)

1SG	-ep	1PL	a
2SG	-Ø	2PL	-e (past)/-na(future)/Ø(present)
3SG	-Ø	3PL	past)/-na(future)/Ø(present)

(10) Kalkatungu (Blake 1977: 36)

1SG	-Ø	1DU	-l	1PL	-r
2SG	-n	2DU	-nu	2PL	-nur
3SG	-Ø	3DU	-(mu)ju	3PL	-na

For examples of patterns (3c) and (3d) involving homophony of zero forms we need not look further than the present Subject inflection of English (11); pattern (3c) occurs in the singular and pattern (3d) in the plural.

(11) English

1SG	-Ø	1PL	-Ø
2SG	-Ø	2PL	-Ø
3SG	-s	3PL	-Ø

Given our condition with respect to the overtiness of the person forms in a paradigm fully specified for person, homophonies in the presence of a zero as in (7) or (8) emerge as more strongly underspecified for person than those where there are no zeroes as in (6). Homophonies involving zeroes such as those in (9) through (11) are even more strongly underspecified than when zeroes are not involved as in (7) and (8).

All the various forms of underspecification for person mentioned above lead to a 14 point scale. This scale subdivided in terms of the number of overt oppositions expressed is presented in (12) where the weight of the person specification decreases from top to bottom and from left to right, indicated by the > sign. Note that on this scale, overtiness takes priority over person. This is in keeping with our view on this scale, and those presented below, are not so much a (static) measure for semantic weight of person forms, but rather a (dynamic) measure for the (reverse of) the cost for the hearer to retrieve that information, or the ease of disambiguating the forms.

- (12) The specification for person scale:
- a. 3 oppositions via 3 overt forms >
 - b. 3 oppositions via 2 overt forms:
no homophonies & a paradigmatic zero in 3rd >
no homophonies & a paradigmatic zero in 2nd >
no-homophonies & a paradigmatic zero in 1st >
 - c. 2 oppositions via 2 overt forms:
with homophony of 2nd & 3rd >
with homophony of 1st & 3rd >
with homophony of 1st & 2nd >
 - d. 2 oppositions via 1 overt form; homophony non-zero:
with homophony of 2nd & 3rd & paradigmatic zero in 1st >
with homophony of 1st & 3rd & paradigmatic zero in 2nd >
with homophony of 1st & 2nd & paradigmatic zero in 3rd >
 - e. 2 oppositions via 1 overt form; homophony zero:
with homophony of 2nd & 3rd involving zero forms >
with homophony of 1st & 3rd involving zero forms >
with homophony of 1st & 2nd involving zero forms >
 - f. no opposition:
homophony of three persons with overt forms >
homophony of three persons with zero forms

The value of each of the 15 above patterns is determined by subtracting from a maximum of 3 points (1 point for each of the three persons) assigned to a fully specified person paradigm 1/14th for each step along the above scale. Thus a three person paradigm where the third person is a paradigmatic zero receives 92.9% of 3 points, i.e. 2.8, and one in which the second person is zero 85.7% of 3 points, i.e. 2.6, *et cetera*.

Since we take the unmarked case to be the maximum, i.e. a three way person distinction in each of the number oppositions that a paradigm displays, in assessing the extent to which a paradigm is specified for person, the scale in (11) needs to be applied to each of the number oppositions present. In doing so, we assign more weight to full person specification in the singular than in the non-singular, with full specification in the plural being assigned more weight than that in the dual or paucal, in accordance with the number hierarchy presented further below in (15). This is achieved by weighing the contribution to the overall person value defined by the scale in (11), giving a weight of 4 to the singular, 3 to the plural, 2 to the dual and 1 to the trial or paucal. The person value for the whole

paradigm is the weighted average of the sum of the person values for each number opposition in the paradigm. This value ranges from a maximum of 3 to a minimum of 0.

Summing up, in terms of the above procedure, any paradigm which has a distinctive overt form for each of the three persons in each of the number oppositions that it displays be it singular vs. plural or singular vs. dual vs. plural or even singular vs. dual vs. paucal vs. plural will receive the maximum value of 3 points for the category of person. Any type of underspecification be it due to the presence of a paradigmatic zero or homophonies or both will result in a value lower than 3 the precise nature of which will depend on the type of underspecification and the number opposition in which it occurs. By way of illustration let us calculate the person value for the Kalkatungu paradigm given earlier in (9). This paradigm has a three way number opposition, singular, dual, and plural. In the dual and plural there are three distinct overt forms for each person. But in the singular there is an overt form only for the second person while the first and third are both zero. Thus the value for person in the singular is very low, only 0.64 (3/14 of 3), in the dual it is 3 and in the plural also 3. Applying the weighting system of 4 for the singular ($4 \times 0.64 = 2.56$), 3 for the plural ($3 \times 3 = 9$), and 2 for the dual ($2 \times 3 = 6$) gives us the figure of 17.56. The weighted average of 17.56 is arrived at by dividing 17.56 by the sum of the weights assigned to each number ($4+3+2=9$), which gives us the overall person value of 1.95. If this paradigm had lacked the dual, the overall person value would have been lower, namely 1.65 and if there had been a paucal with three different overt forms as well, the overall person value would have been slightly higher, namely 2.06.

A word still needs to be said about defective paradigms. Earlier above we mentioned paradigms lacking a particular person distinction, which, in contrast to those featuring a paradigmatic zero, we called defective. In such cases, we simply count the persons which do occur, i.e. paradigms lacking one person have been assigned the value of 2 rather than 3 and those lacking two persons, the value of 1. As our counting system for person is applied to each number opposition separately, if the absence of person is only partial, say in the plural but not in the singular the same procedure is applied with adjustments for the lower weight assigned to person in the plural, as outlined above. In terms of our point system defective paradigms score lower for person than those featuring paradigmatic zeroes or homophonies based on zeroes. That this is indeed so can be illustrated on the basis of our

calculations as applied to the paradigm of Object suffixes in (2) from the Oceanic language Raga, repeated for ease of reference.

(2) Raga (Crowley 2002a: 628)

1SG	-u/-au	1PL	-
2SG	-go	2PL	-
3SG	-a/-e	3PL	-ra

As we have argued above, the absence of first and second person markers in the plural of the Object suffixes in this language does not constitute an instance of homophony, analogous to that of the English singular pattern in (11) since in place of the first and second person plural suffixes independent person forms are used obligatorily. Consequently, the third person plural suffix is not in complementary distribution with a zero form for the first and second person plural but with the corresponding independent person forms. The paradigm in (2) thus qualifies as defective in our terms. Applying our counting system, 3 points would be assigned for person in the singular and 1 point in the plural. The weighted average would then give us the value of $((4 \times 3) + (3 \times 1)) / 7 = 2.14$. Assuming homophony, on the other hand, would give us a person weight for this paradigm of $((4 \times 3) + (3 \times (2/14))) / 7 = 1.78$, which is lower. This is in line with the interpretation of these figures as a measure for disambiguation: the higher the value value of a form the easier it is to process.

3. Number

Although there are person paradigms which do not manifest the semantic dimension of number, the overwhelming majority do: 94.2% of the languages in our database display a number opposition. Most commonly person paradigms display only a two way number opposition, of singular, denoting exactly one first, second or third person and non-singular, denoting more than one individual. There are, however, person paradigms which also feature a dual as in Fore and Au illustrated above in (4) and (5) respectively. Yet higher numbers, namely trial as in the Austronesian language Larike (13) or paucal (several or a few) as in Southeastern Ambrym (14) are also to be found in person paradigms, though so far they have been attested only among the languages of Micronesia.⁶

(13) Larike (Laidig 1993: 321)

	SG	DU	TRI	PL
1 INCL		<i>itua-</i>	<i>itidi-</i>	<i>ite-</i>
EXCL	<i>au</i>	<i>arua-</i>	<i>aridu-</i>	<i>ami-</i>
2	<i>a-/ai-</i>	<i>irua-</i>	<i>iridu-</i>	<i>imi-</i>
3 HUM	<i>mati-</i>	Ø-	Ø-	Ø-
3 NHUM	<i>i-</i>	Ø-	Ø-	<i>iri-</i>

(14) Southeastern Ambrym (Crowley 2002b: 666)

	SG	DU	PAUC	PL
1 INCL		<i>rali-</i>	<i>rati-</i>	<i>ri-</i>
EXCL	<i>ni-</i>	<i>mali-</i>	<i>mati-</i>	<i>mu-</i>
2	<i>ui-</i>	<i>muli-</i>	<i>muti-</i>	<i>mu-</i>
3	<i>i-</i>	<i>lali-</i>	<i>lati-</i>	<i>li-</i>

The cross-linguistic distribution of number oppositions in person paradigms is seen as conforming to the number hierarchy in (15), i.e. in the main the presence of a trial or paucal implies the presence of a dual, that of a dual a plural, and that of a plural, a singular.

(15) singular > plural > dual > trial/paucal

Assuming that the unmarked situation is the presence of the same number oppositions, be it singular vs. non-singular or singular vs. dual vs. plural *et cetera* for all three persons, departures from this norm may be treated as instances of homophony. In order to distinguish homophonies due to the lack of differentiation for number from those arising from lack of differentiation for person, discussed in section 2, we will call the former horizontal, the latter vertical.⁷ The horizontal homophonies may be classified with reference to which person they involve and which number oppositions they embrace. Thus, for example, the paradigm for the independent person form in the Australian language Biri in (16) below displays horizontal homophony in the dual and plural, involving the third person.

(16) Biri (Terrill 1998: 23, 25)

	SG	DU	PL
1	<i>ɲaya</i>	<i>ɲali</i>	<i>ɲana</i>
2	<i>yinda</i>	<i>yibala</i>	<i>yura</i>
3	<i>nhula</i>	<i>dhana</i>	<i>dhana</i>

If we weigh the expression of number in the three persons with reference to the number hierarchy in (15), the loss of distinctiveness due to horizontal homophonies involving third persons may be viewed as less severe than that due to homophonies involving second persons, which in turn is less severe than that due to homophonies involving first persons. Although a horizontal homophony does not directly affect the link with the person involved, we think that more distinctions the overall paradigm would make the identification of person as such easier. This ease of identification is accounted for by weighing horizontal homophonies according to the person hierarchy. Analogous to the weighing of person, we will apply a lower weight to occurring homophonies to the extent that they are found lower on the number hierarchy.

Taking into account the overall number oppositions expressed in a paradigm and the presence of horizontal homophonies leads us to the following system of counting the degree of elaboration of the dimension of number in a paradigm. We take as the default the presence of a singular vs. non-singular opposition. The maximum degree of elaboration for number is 7 and the minimum, for complete absence of number is zero. The value 7 corresponds to a paradigm with a four way number opposition of singular vs. dual vs. trial/paucal vs. plural. A three-way number opposition involving singular vs. dual vs. plural receives the value 6, a two-way number opposition between singular and plural the value 4 and the presence of just the singular the value 1. In other words the presence of the plural is weighted higher than of the dual, and of the dual is weighted higher than of the trial or paucal. From this basic value resulting from the range of number oppositions present in a language subtractions are made for horizontal homophonies calculated relative to both the person and number involved. A percentage is subtracted from the contribution made by the lowest number on hierarchy (15) of the two numbers involved in a horizontal homophony. Thus in case of homophonies involving the singular and dual a percentage is subtracted from the contribution of the dual (i.e. 2), and in the case of homophonies involving the singular and plural a percentage of the contribution of the plural (i.e. 3). The percentage to be subtracted depends on the position of the person involved on the hierarchy in (1). Thus, 16.7% is subtracted from the weight of the number category in the case of horizontal homophonies in the third person, 33.3% in the case of the second person, and 50% in the case of the first person.

To give a concrete example, let us consider the calculations for the paradigms of independent person forms in Au and Biri mentioned above

and presented earlier in (4) and (16) respectively. Recall that both paradigms have a three way number opposition of singular vs. dual vs. plural. In Biri there is a horizontal homophony between the third person dual and plural. Thus from the basic value of 6 (for the three-way number opposition) we subtract 16.7% of the contribution that the dual makes, namely of 2, which is 0.33. This gives us the figure of 5.67. In Au there is a homophony between the second person dual and plural. Thus we subtract 33.7% of 2 from 6 and arrive at the figure of 5.33. If the homophony in Biri had been between the third person singular and plural rather than the dual, we would have subtracted 16.7% of 3 (rather than 2), i.e. 0.5 giving the figure 5.5. And if the homophony in Au would have involved the singular and plural the resulting figure would have been 5.

4. Inclusivity and the first person complex

Inclusivity is associated with the non-singular dimension but is not in itself part of the dimension of number. It relates to some of the possible interpretations of non-singular first persons, namely those that do not involve simply more than one speaker as represented in (17b-d) and illustrated on the basis of examples from English in (18b-d).

- (17) a. 1+1 more than one speaker
 b. 1+2 the speaker and addressee
 c. 1+2+3 the speaker, addressee, and minimally one other
 d. 1+3 the speaker and other
- (18) a. *We solemnly swear.*
 b. *We've got a bond in common, you and I.*
 c. *You, Anne, and I are working ourselves to death.*
 d. *Christian and me, we are linguists.*

Although none of the interpretations of the first person non-singular specified in (18) receives special encoding in English, all but the first (1+1) do so on a cross-linguistic basis. The encoding possibilities of the other three interpretations that have been attested are summarized in (19), taken from Siewierska and Bakker (2005: 157).⁸

- (19)
- | | |
|---------------------|-----------------------------|
| no we | |
| unified we | $1+2=1+2+3=1+3$ |
| only inclusive | $1+2=1+2+3$ |
| minimal inclusive | $1+2$ vs. $1+2+3=1+3$ |
| augmented inclusive | $1+2+3$ vs. $1+2=1+3$ |
| inclusive/exclusive | $1+2=1+2+3$ vs. $1+3$ |
| minimal augmented | $1+2$ vs. $1+2+3$ vs. $1+3$ |

The label ‘no we’ is used for paradigms which have no separate form for non-singular first person, i.e. they have no ‘we’ as distinct from ‘I’. The label ‘unified we’ (abbreviated ‘unifwe’) embraces paradigms which have one form for non-singular first person covering all three interpretations, $1+2$, $1+2+3$, and $1+3$, as is the case in English and most of the person paradigms cited earlier. We will consider this form to belong to plural number in case there is such a paradigm. The third pattern labelled ‘only inclusive’ (abbreviated ‘only incl’) is used for paradigms in which there is a special form for $1+2$ together with $1+2+3$ but not for the exclusive $1+3$. An example of such a paradigm is given in (20) from Chalcatongo Mixtec, a language spoken in south-central Mexico, in which this pattern occurs both in the independent person forms and the corresponding Subject clitics.

- (20) Chalcatongo Mixtec (Macaulay 1996: 139)

1	<i>rúʔí</i>	1+2	<i>žóʔó</i>
2	<i>róʔó</i>	1+2+3	<i>žóʔó</i>
3 M	<i>càà</i>		
3 F	<i>nāʔā</i>		
3 ANML	<i>kʔi</i>		
3 SUPNAT	<i>íʔa, ižʔa</i>		

The fourth pattern called ‘minimal inclusive’ (‘min incl’) denotes paradigms such as the one in (21) from the Austronesian language Uma spoken in Sulawesi. In this language there is a separate form for the speaker-hearer dyad $1+2$ and another form covering both $1+2+3$ and $1+3$.⁹

(21) Uma (Martens 1988: 169)

	SG		NONSG
1	<i>aku'</i>	1+2	<i>kita'</i>
		1+2+3	<i>kai'</i>
		1+3	<i>kai'</i>
2	<i>iko</i>	2	<i>koi</i>
3	<i>hi'a</i>	3	<i>hira'</i>

In the next pattern, called 'augmented inclusive' ('aug incl'), there is a special form for 1+2+3 and another form covering 1+2 and 1+3, as we see in the paradigm in (22) from Bunuba, a language of Western Australia.

(22) Bunuba (Rumsey 1996: 138)

	SG		NONSG
1	<i>ngayini</i>	1+2	<i>ngiyirri</i>
		1+2+3	<i>yaarri</i>
		1+3	<i>ngiyirri</i>
2	<i>nginji</i>	2	<i>yinggirri</i>
3	<i>niy</i>	3	<i>biyirri</i>

The penultimate pattern is the traditional inclusive/exclusive distinction ('incl/excl'), which establishes the separation of groups involving the speaker and addressee (1+2 & 1+2+3) from those that involve the speaker and some other party (1+3). This pattern can be seen in the paradigm of Gapapaiwa, a Western Oceanic language of New Guinea.

(23) Gapapaiwa (McGuckin 2002: 299)

	INDEP	S/A
1SG	<i>taku</i>	<i>a-</i>
2SG	<i>tam</i>	<i>ke-/ku-</i>
3SG	<i>tuna</i>	<i>i-/e-</i>
1EXCL	<i>tokai</i>	<i>ka-</i>
1INCL	<i>tota</i>	<i>ta-</i>
2PL	<i>tami</i>	<i>ko-</i>
3PL	<i>ti</i>	<i>i-/e-</i>

And finally there is the three way split within the first person non-singular which we call the 'minimal augmented' ('min/aug') where there are sepa-

rate forms for the minimal inclusive, augmented inclusive, and exclusive. This pattern is illustrated in (24) from Koh, a language of Cameroon.

- (24) Koh (Glidden 1985: 230)
- | | SG | | NONSG |
|---|-----------|-------|--------------|
| 1 | <i>mì</i> | 1+2 | <i>ná</i> |
| | | 1+2+3 | <i>nári</i> |
| | | 1+3 | <i>bburu</i> |
| 2 | <i>mù</i> | 2 | <i>ì</i> |
| 3 | <i>ka</i> | 3 | <i>i</i> |

The above encodings may be grouped in terms of the number of formal distinctions made within the first person complex, as in (25) or the degree of separation of the speaker-addressee dyad, as in (26).

- (25)
- | 3 | 2 | 1 | 0 |
|-----------|-----------|-------------|-------|
| min/aug > | in/excl > | only incl > | no we |
| | aug incl | unif we | |
| | min incl | | |

- (26) min/aug > in/excl > aug incl > only incl > unif we > no we
min incl

In assessing the degree of elaboration of the first person complex we have used the latter scale since it is more refined. The distribution of points along this scale is as follows. The value of 0 has been assigned to ‘no we’ and ‘unif we’, the value of 1 to ‘only incl’, the value of 2 to ‘min incl’ and ‘aug incl’, the value 3 to ‘incl/excl’, and the value 4 to ‘min/aug’. The presence of more than one instance of a given subdivision of the first person complex within a paradigm has been dealt with by multiplying the relevant value by the number of times it occurs. Thus for example, a paradigm with an inclusive/exclusive distinction in both the dual and plural as evinced by Lavukaleve in (33) further below receives a value of $(2 \times 3) = 6$ and one with an inclusive/exclusive distinction in the dual, trial/paucal, and plural such as the ones from Larike in (13) and Southeastern Ambrym (14) above receive the value of $(3 \times 3) = 9$, which is the maximum score for this semantic dimension for any language in our database. Unequal subdivisions of the first person complex in the non-singular numbers are dealt

with by adding up the respective values of the first person complex in each number opposition.

Horizontal homophonies involving the dimension of inclusivity other than those covered by the scale in (26) are very rare. One celebrated case in point is of the so-called unit augmented pattern found in particular among the non Pama-Nyungan languages of Australia illustrated in (27).

(27) Mangarayi (Merlan 1982: 102)

	SG		DU		PL
		1+2	<i>ŋi</i>	1+2+2	<i>ŋi</i>
		1+2+3	<i>ŋa-r</i>	1+2+3+3	<i>ŋa-ʔa</i>
1	<i>ŋaya</i>	1+3	<i>ŋi-r</i>	1+3+3	<i>ŋi-ʔa</i>
2	<i>ñan̄gi</i>	2+2	<i>nu-r</i>	2+2+3	<i>nu-ʔa</i>

This pattern has been analysed as involving an inclusive/exclusive distinction in the dual and plural and a trial encompassing 1+2+3. Under our analysis, based on that of Cysouw (2003: 233), the Mangarayi paradigm evinces a distinction between the augmented inclusive (1+2+3) and the exclusive (1+3) in the dual and plural and an undifferentiated (homophonous) minimal inclusive (1+2/1+2+2). We have compensated for the homophony by assigning the regular 4 points to the plural but subtracting 1 point from the dual, giving a total of 7 points.

Other horizontal homophonies involving the dimension of inclusivity such as that between the first person singular and the exclusive manifested in the paradigm of the Subject marker in the Austronesian language Yapese shown in (28) have been dealt with under number within the category of first person. Since the homophony is only with half the first person forms of the plural, we will apply a 25% rather than the regular 50% penalty for unitary first person homophonies.

(28) Yapese (Jensen 1977: 132–142)

	SG	PL
1 INCL		<i>da</i>
EXCL	<i>gu</i>	<i>gu</i>
2	<i>mu</i>	<i>mu</i>
3	<i>io</i>	<i>ra</i>

Vertical homophonies among the first person non-singular forms, 1+2, 1+3, and 1+2+3 are directly incorporated in the scale in (26). Vertical ho-

mophonies between any of the first person non-singular forms and the other two persons as, for example, in the Southeastern Ambrym paradigm in (14) for the exclusive and second person forms in the plural are treated as person homophonies within the relevant non-singular category. In this case (2c) applies.

5. Gender

If, as is typically the case, class marking is included within gender, there is no upper limit to the number of gender oppositions encoded in person forms. E.g. Chalcatongo Mixtec in (20) above has a four part distinction in masculine, feminine, animals, and supernatural referents. However, most common is a bi-partite opposition. This may be either a sex-based one, such as masculine vs. feminine, as in the Arawakan paradigm in (29), or masculine vs. non-masculine, or feminine vs. non-feminine, as in the Warekena paradigm in (30).

(29) Arawak (Pet 1987)

	INDEP	S/A
1SG	<i>dei</i>	<i>da-</i>
2SG	<i>bi-</i>	<i>be-</i>
3SG M	<i>lihi</i>	<i>le-</i>
3SG F	<i>toho</i>	<i>the-</i>
1PL	<i>wei</i>	<i>wa-</i>
2PL	<i>hi</i>	<i>he-</i>
3PL	<i>hun naha</i>	<i>na-</i>

(30) Warekena (Aikenvald 1998: 293, 323)

	INDP	S/A
1SG	<i>nu-ya</i>	<i>nu-</i>
2SG	<i>pi-ya</i>	<i>pi-</i>
3SG F	<i>ayu-palu</i>	<i>ayu-</i>
3SG NF	<i>e-palu</i>	\emptyset -/i-
1PL	<i>wa-ya</i>	<i>wa-</i>

Or we find an animate/inanimate opposition, or a human/non-human one, as in the Larike paradigm in (13) above.

Unlike in the case of number, which tends to be distributed uniformly across each of the three persons, gender strongly favours the third person; see the paradigms in (29) and (30) above. Gender in the second person is rather uncommon outside of North Africa, where it occurs in the Semitic, Berber, Cushitic, and Chadic languages. And gender in the first person is quite rare cross-linguistically (cf. Siewierska 2004: 105). A paradigm which quite exceptionally manifests gender in all three persons is given in (31) from Ngala, a Papuan language of the Sko family.

(31) Ngala (Laycock 1965: 133)

	SG		DU		PL
1M	<i>wn</i>	1	<i>ɔyn</i>	1	<i>nan</i>
1F	<i>ñən</i>				
2M	<i>mən</i>	2	<i>bən</i>	2	<i>gwn</i>
2F	<i>yn</i>				
3M	<i>kər</i>	3	<i>(kə)bər</i>	3	<i>rər</i>
3F	<i>yn</i>				

The likelihood of a particular person displaying gender is captured in the hierarchy in (32).

(32) 3 > 2 > 1

Gender is not only typical of the third person as opposed to the second and first but also of the singular rather than the non-singular. Moreover, among the non-singular categories it seems to favour the more restricted ones, i.e. the dual or dual and trial as opposed to the plural, at least in the case of sex-based gender. This is shown in (33) on the basis of the independent person forms of the Papuan language Lavukaleve, in which there is a tripartite gender opposition in both the singular and dual, but no gender at all in the plural.

(33) Lavukaleve¹⁰ (Terrill 2000: 156,159)

	SG	DU	PL
1EXCL	<i>ngai</i>	<i>el</i>	<i>e</i>
1INCL		<i>mel</i>	<i>me</i>
2	<i>inu</i>	<i>imil</i>	<i>imi</i>
3M	<i>fona</i>	<i>fonala</i>	<i>fova</i>
3F	<i>fo</i>	<i>fol</i>	<i>fova</i>
3N	<i>foga</i>	<i>fogala</i>	<i>fova</i>

The preference for sex-based gender distinctions in the singular and restricted number categories as opposed to the non-restricted plural may be seen to follow from the increasing difficulty of establishing the gender of larger groups of individuals as compared to smaller ones. Accordingly, the distribution of gender relative to number is better viewed as favouring the hierarchy in (34) rather than the number hierarchy in (15) given earlier in the section on number.

(34) singular > dual/trial/paucal > plural

Since gender in other than the third person is uncommon and is also typically restricted to the singular, we have not treated the absence of gender say in the second person as opposed to the third or the non-singular as opposed to the singular as involving homophony, i.e. seeing them as two forms rather than just one. Rather in assessing the degree of elaboration of a paradigm for gender we have focused on the person/number combinations that do display a gender distinction. We have assigned gender relative to person on the basis of the hierarchy in (32), weight 3 being assigned to gender in the third person, 2 to gender in the second person and 1 to gender in the first person. The presence of gender relative to number has been weighted in accordance with the hierarchy in (34), gender in the singular being assigned a weighting of 3, in the dual, trial, and paucal a weighting of 2 and in the plural a weighting of 1. We then take the mean of these weights over all relevant numbers in order to determine the global gender weight. Thus, the maximum value for gender is 6, which corresponds to the presence of gender in first, second, and third person in all of the number oppositions that a language displays.

Horizontal homophonies involving gender do occur, as in the paradigm of the Object suffixes in Dahalo in (35) where there is homophony between the masculine forms for the second person singular and plural.

(35) Dahalo (Tosco 1991: 37)

1SG	- <i>ǽ</i>	1PL	- <i>ni</i>
2SG M	- <i>ku</i>	2PL M	- <i>ku</i>
2SG F	- <i>ki</i>	2PL F	- <i>kinná</i>
3SG M	- <i>du</i>	3PL	- <i>ǽpá</i>
3SG F	- <i>di</i>		

They have been dealt with like those involving number, however with a reduced penalty calculated relative to the person in question. So, in the

case of the second person, of 16.7% rather than of 33.3%. And analogously with respect to vertical homophonies involving gender as in the Subject affixes of the Cushitic language Oromo illustrated in (36).

- (36) Oromo (Owens 1985: 65)
- | | | | |
|-------|------------|-----|--------------|
| 1SG | -Ø | 1PL | - <i>n</i> |
| 2SG | - <i>t</i> | 2PL | - <i>ani</i> |
| 3SG M | -Ø | 3PL | - <i>ani</i> |
| 3SG F | - <i>t</i> | | |

6. Applying the factors

In this section we will see what values emerge for the respective weights in a large cross-section of the world's languages. For this exercise we took the data in our database on agreement that we have been referring to. We selected all 447 languages currently contained in it, dropping any claim as to the typological representativeness of the figures to be presented below.¹¹ Table 1 gives a breakdown of the languages in the database per linguistic area.

Table 1. Areal classification of the languages in the agreement database

continent	languages	
	<i>n</i>	%
Africa	89	19.91
Eurasia	89	19.91
SE.Asia	31	6.94
Australia	29	6.49
New Guinea	53	11.86
Oceania	20	4.47
N.America	56	12.53
C.America	14	3.13
S.America	66	14.77
total	447	100.0

In sections 2 through 5 we presented a calculus for determining the weights of the respective semantic dimensions. It may be applied to any person form in a language, both free and bound. In order to compare languages, however, one has to decide which paradigms to select for such comparison.

Different routes may be taken here. For example, in the case of the free person markers, one may take a specific form, such as the nominative, or the mean weight over all different forms. For bound markers on the verb there may be a choice between different tenses, between subject and object agreement markers, or between verb classes. A good criterion may be to take the paradigm in which most distinctions are made, irrespective of whether it is present, past, *et cetera*. For this overview, we opted for the following forms, provided that there is an option in a language in the first place:

- (a) for independent person forms:
 - the NOM/ABS form; if not available
 - the cardinal form
- (b) for bound forms on the verb:
 - past tense; if not available
 - the realis
 - from this paradigm:
the S/A form

Applying these definitions, we found the following values for the four semantic dimensions in our 447 language sample. We have measured the values for the free person forms, for the marker of the intransitive subject (S) and for the marker of the transitive object (P). The values for the transitive subject (A) were virtually always the same as the S-values. P forms do not vary for tense or aspect. We have excluded fused forms, where no distinction can be made between the A and the P, as in example (37) from Guaraní (Gregores and Suárez 1967: 132).

- | | | |
|------|---|--|
| (37) | <i>po-peté</i>
1.2PL-hit
‘I/we hit you’ | <i>pene-peté</i>
3.2PL-hit
‘he/she/it/they hit(s) you’ |
|------|---|--|

For each of the four semantic dimensions, we measured the mean, the minimum and the maximum values for those languages for which the respective markers were relevant. They are given in Table 2 below. In brackets we mention the number of languages to which the respective values apply. E.g. there were 5 languages which had the value of 7.0 for the number weight of their S markers, which is the maximum for this dimension.

Table 2. Distribution of the weights for the four semantic dimensions

		FreePro	(n=447)	S	(n=350)	P	(n=266)
person	mean	2.96		2.15		1.50	
	min	1.81	(1)	0.21	(1)	0.50	(2)
	max	3.00	(415)	3.00	(185)	3.00	(130)
number	mean	5.38		3.81		2.73	
	min	0.00	(23)	0.00	(38)	0.00	(35)
	max	7.00	(9)	7.00	(5)	7.00	(4)
gender	mean	1.16		0.67		0.58	
	min	0.00	(295)	0.00	(269)	0.00	(196)
	max	5.50	(2)	5.50	(1)	5.50	(2)
inclusivity	mean	2.82		1.75		1.23	
	min	0.00	(253)	0.00	(223)	0.00	(174)
	max	9.00	(8)	9.00	(5)	9.00	(4)

We will not analyze these figures here in any depth. We restrict ourselves to the following observations.

For gender and inclusivity, a large amount of languages score value 0.00, which means that the corresponding feature is not present on the corresponding marker. Zuni (Amerindian) scores value 0.0 on virtually all points apart from its free pronouns. For three out of four dimensions, the maximum possible value is reached for all three types of markers. For person, maximum score 3.0, i.e. all three persons represented was observed for a great many languages. Maximum score 7.0 for number and 9.0 for inclusivity were found for only a restricted number of languages, often combined. E.g. Ungarinjin (Australian) scored the maximum value for both on its free pronouns, Tolai (Austrian) for its S-marker, and Tigak (Austrian) for its P-marker. The only dimension where the maximum score (6.0) is never reached is gender. The Khoisan language Nama from Namibia is close with 5.5.¹² Finally, for all semantic dimensions it is the case that the mean scores for the free forms are the highest, followed by the subject markers and then the object markers. This gives us the following hierarchy for the semantic coding on person markers (SCPM):¹³

- (38) SCPM1: Free Pronoun > Bound S-marker > Bound P-marker

The scores for the four semantic dimensions have different ranges, which makes the respective values rather incomparable. Therefore, we standardized them to a scale between 0 (minimum) and 1.0 (maximum). This gave us the mean values in Table 3.

Table 3. Distribution of the means for the standardized weights

	FreePro (n=447)	S (n=350)	P (n=266)
person	0.99	0.73	0.50
number	0.77	0.54	0.39
inclusivity	0.31	0.19	0.14
gender	0.19	0.11	0.10

These figures suggest that there is another hierarchy on the semantic coding on person markers hidden in our data:

(39) SCPM2: Person > Number > Inclusivity > Gender

Note that both SCPM1 and SCPM2 apply in a cross-linguistic sense, not necessarily for individual languages.¹⁴

Finally, we aggregated the four standardized values per language and derived an overall score of semantic coding for person markers. This gives us the following totals for the three markers, where 0.0 means no coding at all and 1.0 means maximum coding on all four dimensions. In the cells we give the percentages of the relevant languages with the respective weights, e.g. 37.7% of the 350 languages with an S-marker have a value of 0.4 on the scale.

There are no languages with the maximum score of 1.0 for the overall weight. The language with the highest score for the free pronoun is Nama. It has scores 1, 0.86, 0.92, and 0.67 for Person, Number, Gender, and Inclusivity, respectively, and overall score 0.86. There are six languages with a score of 0.80 for their S-markers: Fijan, Larike, Tijak, Mohawk, Oneida, and Tolai. The first three have the maximum score for their P-markers as well, just like Anejom. Although the aggregated scores are still the highest for the free forms, followed by the S-forms and then the P-forms, it is striking that the mean values for the standardized scores are much closer to each other than the means measured for the individual dimensions in Table 2, where the values for the free forms are typically double the value for the P-forms, with the S-forms more or less halfway between them.

Table 4. Distribution of the standardized and aggregated weights.

	FreePro (<i>n</i> =447)	S (<i>n</i> =350)	P (<i>n</i> =266)
.0	0.0	0.3	0.0
.1	0.0	1.7	4.1
.2	0.5	6.0	9.8
.3	4.7	12.3	19.2
.4	32.9	37.7	27.8
.5	38.1	26.9	21.8
.6	18.5	12.0	13.2
.7	2.9	1.4	2.6
.8	2.3	1.7	1.5
.9	0.2	0.0	0.0
1.0	0.0	0.0	0.0
mean	0.49	0.43	0.41

7. Concluding remarks

In this contribution we propose a calculus for the weighing of the semantic features most commonly found on person markers. We discussed scales for person, number, gender, and inclusivity. For each of these scales, basic values were determined for what we think are the unmarked cases in the languages of the world. For diversions from these basic values, we added points in the case of extra paradigms and subtracted points for homophones which affect the presence of the semantic dimension under consideration. In a brief exercise, we applied the calculus to the 447 languages in our database on agreement. We could show that the marking for free forms is generally heavier than for bound S forms, and for the latter heavier than for bound P forms in terms of our calculus. In the same vein, there is heavier coding for person than for number, for number than for inclusivity, and for inclusivity than gender on each of these markers cross-linguistically. The differences do not, however, indicate that there are absolute or even statistical universals at hand.

A further point is that in our calculus, we did not make any provision for the amount of difference between forms in a paradigm. Each two forms are different unless there is complete homophony. It could be argued that a more refined measure is called for, which would distinguish between, e.g.

differences in a regular paradigm – the same stem but different affixes – and cases of suppletion. The latter should then be assigned extra points by virtue of their greater differentiation capacity. Another approach would be weighing the differences in phonological terms, as in McMahon and McMahon (2003).

A last and rather important issue, only very briefly touched upon above, is the status of our weightings. On the one hand they may be interpreted statically, as an indication of the *amount of information* the three types of person markers provide with respect to the intended referent. However, we assume that this is a minor function at best, and mainly a remainder of their typical nominal origin. Rather, we would like to interpret the values dynamically, i.e. as a reference tracking device, helping the hearer to identify the relevant discourse referents. In that sense, the respective (accumulated) weights could be a *measure for the ease of processing*. It remains to be seen in what shape and form this is best done. One of the many considerations would be whether an absolute scale should be taken, with the typologically maximum values as a point of departure, as in Table 2, a standardized version, as in Table 3, or whether the values should be weighted only within the closed system of the respective languages themselves. This should then be set off against other reference tracking devices of the language concerned as well as empirical evidence from psycholinguistic experiments. We will leave such explorations for a revised version of this proposal.

Notes

1. The authors are grateful to one of the editors for remarks that led to clarification and improvement of a number of issues raised. Several others points not discussed here we hope will be taken up in some future extension of the proposals made in this contribution.
2. In this paper we will use the terms person form and person marker in preference to pronoun as what constitutes a pronoun is very much theory dependent.
3. This rather narrow view of grammaticalization which focuses on individual items due to Meillet (1912) has more recently been superseded by an approach which includes also the development of and changes within constructions. See in particular Dahl (2001), Haspelmath (1998), Croft (2000).
4. The label 4th person is applied to several quite different kinds of categories: a combination of the speaker and addressee, the first person plural (in the

French tradition), the obviative as opposed to proximate (in Algonquian studies), logophoric forms.

5. This hierarchy has been argued to be applicable to the vast majority of the world's languages (cf. Siewierska 2004). A case has been made for a $2 > 1 > 3$ hierarchy in some language families, in particular Algonquian. However, Macaulay (2005) has shown for the latter group that it is a local hierarchy at best, i.e. that it is valid for a restricted number of paradigms in these languages, and certainly not a global one.
6. Note that a form for 1-INCL in the singular is *logically* absent. Corbett (2000: 21–38) cautions that most trials are in fact paucals and therefore some paradigms traditionally interpreted as having both a trial and paucal or in the case of Sursurunga, a trial and a quadral are better interpreted as displaying a greater and lesser paucal.
7. This terminology reflects the traditional layout of person paradigms where the dimension of person is vertical and that of number horizontal, as for example in the paradigm in (13) from Larike.
8. The typology of the first person complex in (19) is a slight modification of the typology developed by Cysouw (2003).
9. Paradigms with a minimal inclusive pattern are typically treated as manifesting a dual confined to the first person. We, however, recognise the existence of a dual only if it is used in all person categories.
10. In Lavukaleve four degrees of distance are distinguished in the third person forms. Only the proximal forms are given here.
11. The sample contained in the database contains a subsample of around 250 languages which is representative in terms of the sampling technique described in Rijkhof and Bakker (1998).
12. The related language !Ora, which is not in the sample would score 6 for gender.
13. Similar conclusions were drawn in Siewierska and Bakker (2006).
14. In fact, SCPM1 and SCPM2 hold for only between 66% and 69% of the languages, which does not allow them to be interpreted as universals, maybe not even as tendencies.

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Spatial reciprocity: between grammar and lexis

Ekkehard König and Claire Moyse-Faurie

1. Introduction¹

Among the numerous strategies identified in recent typological studies (König and Kokutani 2006; Evans 2008; Nedjalkov 2007) as well as studies of individual languages for the encoding of reciprocity the one exemplified by examples like the following has largely gone unnoticed.

- (1) French
Ils ont lutté corps à corps.
'They fought man against man.'
- (2) Italian
Hanno lavorato spalla a spalla per diversi anni.
'They have worked shoulder to shoulder for several years.'
- (3) English
We were out together dancing cheek to cheek.
- (4) German
Und am Schluss des Dramas sitzen die beiden feindlichen Frauen Rücken an Rücken an zwei Tischen beim Frühstück...
'And at the end of the play the two hostile women are sitting back to back at two tables, having breakfast...'

The strategy in question obviously straddles the line between lexis and grammar. Reduced to its syntactic properties, it is an instance of the pattern NPN. If we look at the lexical fillers of these categories we note that the same noun is used twice. The noun typically denotes a body part² and the overall meaning is basically one of spatial reciprocity, which may assume various metaphorical extensions of meaning.

As pointed out in some recent work by Jackendoff (2007), the construction under description is one subfamily of a more general construction NPN, which also includes all of the following non-reciprocal cases:

(5) English

- a. *Student upon student came into my room.*
- b. *We went through the garden inch by inch.*
- c. *Page for page, this is the best book I have ever bought.*
- d. *We endured the cold day after day.*

Over and above describing the complex mixture between the idiomaticity and productivity of the NPN construction, Jackendoff pursues the more general goal of showing that this construction can only be accounted for in a theory of grammar that takes the periphery of language as seriously as the core and recognizes constructions as theoretical entities. Our goal is a different and more limited one. We will only consider the reciprocal subfamily of the NPN construction, examining both formal and semantic properties of its various instantiations. We will make some observations about its occurrence in the languages of the world and especially discuss its implications for a general typology of reciprocity.

2. A descriptive survey

2.1. Formal properties

Reciprocal NPN constructions are wide-spread among the languages of Europe. As soon as we go beyond Europe and Standard Average European (SAE), our categorial label NPN has to be replaced by the more general one NRN, where R stands for ‘relational element’ or ‘relator’ and is also meant to subsume postpositions, verbs, case affixes, adverbs and possessive elements. Given that we may have two relators preceding or following the relevant nouns we even need a more general cover term such as (R)NRN or mirror image NRN(R). Instantiations of this more general pattern are also found in European languages, as will be shown below. In Mandarin Chinese, where the distinction between verbs and prepositions cannot clearly be drawn anyway (cf. Chao 1968: 749), the relevant pattern is best described as NVN (6) and in Finnish the spatial relationship is expressed by case affixes (cf. note 2).

(6) Mandarin

- a. *shǒu tuī shǒu liànxí shì tàijíquán de yíxiàng*
hand push hand practice be taiji POSS one.CL

jǐběn gōng.
basic skill

‘One basic skill of taiji is to push back the hand of your opponent.’

- b. *liǎng ge rén bèi kào bèi zhàn zhe.*
two CL person back lean back stand PROG
‘The two are standing back to back.’³

The languages we have identified so far as lacking this construction include Amerindian languages, which have very few nouns anyway, or Oceanic languages where reciprocal suffixes or circumfixes can not only combine with verbs but also with nouns.⁴ In East Futunan, the derived form can be used either as verb (7a) or as adverb (7b), and generally has an idiomatic interpretation.

(7) East Futunan (Polynesian)

- a. *e fe-gutu-'aki le sã ta'ineliki.* (gutu ‘mouth’)
TAM PREF-mouth-SUF ART CL girl
‘The two girls are bad-mouthing each other.’
- b. *e momoe fe-'ulu-'aki a toe.* (‘ulu ‘head’)
TAM RED.sleep PREF-head-SUF ABS child
‘The children are sleeping head to head.’
or ‘The children are sharing one pillow.’

Among the formal properties of the construction NRN the following are particularly noteworthy:

2.1.1. *The categorical pattern*

As already mentioned, two identical nouns are typically combined with a preposition, but we also find verbs, see (6), two prepositions (German *von Angesicht zu Angesicht* ‘face to face’) and two adverbs instead of prepositions (8). Note that there are two adverbs but only one noun in (8b) and even that may be omitted:

(8) French

- a. *Ils sont partis bras dessus bras dessous.*
‘They left arm in arm.’

- b. *Il a mis son pull (sens) devant derrière.*
 'He put on his sweater back to front.'

In languages with systems of case marking the second noun is marked with the case usually governed by the preposition, while the head noun may get its case on the basis of its syntactic function (Russian *spina k spin'e* 'back to back'; *licom k licu* 'face to face').⁵ Even though the two nouns are typically tokens of the same noun, we may also find different nouns, see (10), or a number specifying the cardinality of the relevant body parts:

- (9) German
Wir werden das unter vier Augen besprechen.
 we will that among four eyes discuss
 'We will discuss this face to face.'
- (10) a. English
The two horses were standing head to tail.
 b. French
Il était couvert de plumes des pieds à la tête.
 'He was covered with feathers from his head to his feet.'

If the two nouns differ in these constructions they have to be in a relationship of oppositions, i.e. converse or antipodal terms as is shown in (10a-b). Articles are rarely found in such constructions. There are some rare cases in French, such as *(la) main dans la main* 'hand in hand'. Note that it is invariably the first of two articles that can be omitted in such cases. Modifiers other than articles are possible, however, as long as the interpretation is a literal one.

- (11) a. French
Ils se sont fait des confidences, (les) yeux dans les yeux.
 'Looking into each others' eyes, they were sharing secrets.'
 b. English
I see us running down the street, my little hand in yours.

2.1.2. Syntactic functions

The relevant expressions are typically used as adverbials (12a), but may also be used as arguments (12b-c) and attributive modifiers (13).

(12) French

- a. *Des milliers d'étudiants ont manifesté au coude à coude contre le CPE.*
'Thousands of students demonstrated together against the CPE.'
- b. *Le coude à coude attendu entre les deux grands favoris de la compétition n'a pas vraiment eu lieu.*
'The big confrontation between the two great favourites did not really take place.'
- c. *Je déteste chaque face à face avec mon chef.*
'I hate each confrontation with my boss.'

(13) English

These talks may develop into a face-to-face dialogue.

The adverbial use may further develop into a preposition. French *vis-à-vis (de)* 'opposite, concerning', for example, derives from Old French *visage* > *vis* 'face' and can be used as noun, adverb, or preposition in Modern French:

(14) French

- a. *Je n'ai pas de vis-à-vis.*
'I don't have neighbours (on the other side of the street).'
- b. *Nous étions placés vis-à-vis de Lionel Jospin.*
'We were seated opposite Lionel Jospin.'
- c. *Les Français sont devenus méfiants vis-à-vis de la politique.*
'The French have become suspicious with regard to politics.'

2.1.3. Singular subjects

The complex reciprocal NPs do not require dual or plural subjects but may also occur with symmetric predicates (*meet*, *with*, etc.) as so-called "discontinuous reciprocals" (Dimitriadis 2008). Alternatively, we may say that

NRN constructions may form new symmetric predicates in combination with the symmetric preposition *with* (15). Such discontinuous reciprocals are the only possible option whenever the two reciprocants are not of the same type, as in (16).

(15) French

J'ai envie de dîner en tête à tête avec Madonna.
 'I would like to dine alone with Madonna.'

(16) English

I was, however, face to face with difficulty.

2.1.4. Productivity

Like other subfamilies of the NRN construction the reciprocal subcases also differ in their productivity, which mainly depends on the preposition. With some prepositions (German *an*, French *contre*, English *to*, etc.) we find very high productivity, in other cases there are just a few fixed expressions (English *neck and neck*, Russian *bok o bok* 'side by side'). As far as the nouns are concerned, expressions for certain body parts are well-established in specific languages and may manifest several literal and idiomatic interpretations and there are standard collocations between nouns and prepositions (*cheek to cheek*, *hand in hand*, etc.). On the other hand, there is also room for creative extensions for these established patterns as in the following attested German example:

(17) German

In der Rangliste der Fettleibigkeit liegen Briten und deutsche Bauch an Bauch auf dem zweiten Rang hinter den Amerikanern.
 (Die ZEIT, 52/2004)
 'In the ranking of obesity the British and the Germans are placed belly to belly in second position after the Americans.'

Moreover, the choice of preposition is not completely determined by the choice of body part:

(18) French

- a. *Ils se sont promenés (la) main dans la main.*
'They were walking hand in hand.'
- b. *La boîte de chocolat est passée de main en main.*
'The box of chocolates passed from one person to the other.'

2.1.5. Noun classes

As already pointed out the noun in the NRN constructions with reciprocal meanings typically denotes a body part or complete persons (*d'homme à homme* 'entre nous'), but we also find parts of buildings and other expressions that may specify locations (*side by side*, German *Tür an Tür* 'living next door to each other'; French *pare-chocs contre pare-chocs* 'bumper to bumper'). In English the most frequently used expressions for body parts in NRN constructions are *face, eye, arm, hand, back, head, cheek*; in German *Arm, Hand, Auge, Schulter, Rücken, Kopf, Wange, Angesicht, Stirn* are particularly frequent. Locations and paths are specified by distinct (converse or antipodal) nouns in the following cases.

(19) French

- a. *J'ai fait un aller-retour entre Marseille et Paris.*
'I made a round trip between Marseille and Paris.'
- b. *J'ai examiné la maison de haut en bas.*
'I examined the house from top to bottom.'

2.2. Semantic properties

The typical use of the reciprocal NRN construction is to express perfect symmetric location with various metaphorical extensions.

(20) French

- Cézanne et Picasso sont exposés côte à côte au musée d'Orsay.*
'C. and P. are shown side by side at the Orsay Museum.'

(21) French

- Le face à face entre la Juventus et le Milan AC s'est terminé dos à dos pour les deux équipes.*
'The match between Juventus and Milan ended with a draw.'

In addition to these core cases we also find most of the other interpretations identified for the English reciprocal marker *each other* in Dalrymple et al. (1998). Parallel to the English example like (22) we find the French examples (23)-(25) with reciprocal NRN constructions:

(22) English

- a. *The actors followed each other on to the stage.*
- b. *Lyte looked around at us, slowly passing from face to face.*

(23) French

- Les porcs ont été contaminés par contact nez à nez.*
'The pigs were infected through nose-to-nose contact.'

(24) *La nouvelle s'est répandue de bouche à oreille.*

- 'The news spread from mouth to ear.'

(25) *De fil en aiguille, il a fini par tout nous raconter.*

- 'Step by step [lit. from thread to needle] he told us everything in the end.'

Moreover there are cases with a pairwise reciprocal interpretation analogous to '*The people at this party were married to each other*':

(26) *Ils ont combattu corps à corps.*

- 'They were fighting man against man.'

And there are cases which require a dual interpretation for the set of reciprocants:

(27) *Ce fut le premier tête à tête entre Serbes et Albanais du Kosovo.*

- 'This was the first direct contact between Serbs and Albanians from Kosovo.'

Finally, we also find the typical ambiguities characteristic of reciprocal markers across languages, i.e. with iterative, with chaining and with sociative interpretations. Iterative interpretations are found in (20)-(23) and sociative-reciprocal ambiguities can be found in (8a), (12a), (15) and in the following example:

(28) English

But social success and true love do not go hand in hand.

3. Implications for a general typology of reciprocity

After this descriptive survey we are now in a position to examine the properties of reciprocal NRN constructions in the light of what we know about other strategies for encoding reciprocity found across languages and to assess the implications of these constructions for a comprehensive typology of reciprocity.

Reciprocal NRN constructions are half lexical, half grammatical strategies of encoding symmetric spatial relations. They are wide-spread, at least in the languages of Europe and manifest nearly identical properties in these languages, apart from some idiosyncratic properties found in individual languages and individual cases. Two tokens of the same noun are combined with a relator, typically a preposition. Alternatively, we may find two prepositions before the two noun phrases (cf. (22)) or two adverbs following them (cf. (8a)). The nouns typically denote body parts. As far as their syntactic functions are concerned, they typically occur in adjunct positions but their uses in argument positions or as attributive modifiers are also possible.

As far as their formal properties are concerned, they are strikingly similar to three other strategies of encoding reciprocity, viz. to verbal reduplication, to the so-called quantificational strategy exemplified by French *l'un avec l'autre* and to the reduplication of adverbs or prepositions found for local chaining in Bantu and Dravidian languages.

Verbal reduplication as a strategy for marking reciprocity is attested in Austronesian as well as in Creole languages. The following example is a case in point:

(29) Tok Pisin

Tupela i pait-im-pait-im.
 3.DU PRED hit-TR-hit-TR
 'They two were hitting each other.'

In reciprocal NRN constructions it is not the V but the N that is reduplicated as it were, the relator specifying the local position of the reciprocants involved.

The other strategy which reciprocal NRN structures resemble is one of the most frequent strategies found across languages, the quantificational strategy exemplified by such expressions as *l'un avec l'autre* in French or *l'uno a l'altro* in Italian. We have specifically selected examples with an intervening preposition because the parallelism is most striking in these cases⁶, not least because the relevant expressions in Romance languages do not manifest various stages of fusion found in Germanic (*einander*, *elkaar*, *each other*). Quantificational markers of reciprocity are specifically motivated for this function, since they can be analyzed as expressing assignment functions for the variables over the set of the reciprocants. Expressions like *l'un avec l'autre* indicate that the semantic representation of the relevant sentences contains two variables to which different values must be assigned for each assignment of values. The disjoint character of the variables and the possible assignment of values is clearest signaled by such alterity expressions as *other*, *l'autre*, etc. In reciprocal NRN constructions the repetition of the same noun again indicates that disjoint referents are involved, which are characterized as two tokens of the same kind. The intervening preposition specifies the relevant local relation between two or more referents specified in terms of two tokens of the same type of body part:

- (30) French
- a. *Ils comptent l'un sur l'autre.*
'They count on each other.'
 - b. *Ils ont manifesté coude à coude.*
'They demonstrated side by side.'

Finally, the NRN construction manifests some striking similarity of constructions used in Shona and in Kannada to encode spatial reciprocity of more than two entities, as in such examples as 'The five men are sitting next to each other.'

- (31) Shona (Bantu)
- | | | | | |
|----------------|-----------------|----------------|--------------|------------------|
| <i>Va-rume</i> | <i>va-shanu</i> | <i>va-gere</i> | <i>pedyo</i> | <i>ne-pedyo.</i> |
| CL2-man | CL2-five | CL2-sit | next | with-next |
- 'The five men are sitting next to each other.'

As far as their meaning is concerned, reciprocal NRN constructions manifest both the various weak and strong readings pointed out in the rele-

vant literature and the ambiguities (sociative, iterative, etc.) typical of reciprocal markers in the languages of the world. Given that reciprocal markers often also have a reflexive reading (Maslova and Nedjalkov 2005; Heine and Mayashita 2008), it would also be very interesting to find an NRN construction with a reflexive reading. The following examples are best instances of such a case that we have been able to find:

(32) French

- a. *Me voilà nez-à-nez avec moi-même.*
'Here I am, facing myself.'
- b. *Vis-à-vis de moi-même, j'ai beaucoup d'indulgence.*
'Concerning myself, I am very indulgent.'

Notes

1. We would like to thank the editors of this volume for commenting on an earlier version of this paper and for suggesting various improvements. We are also indebted to Wang Lin (Mandarin), S. Naïm (Arabic), A. Takasi (East Futunan) for providing us with the relevant examples of their languages and to Carola Emkow for sharing her data on Shona with us.
2. The body parts which seem to occur most frequently in NRN constructions across languages are 'face', 'side' and 'back'. In Classical Arabic, we find only a few examples of NRN constructions such as *dhahr li dhahr* 'back to back'; there are also very few cases in Sanaa (Yemen), *shigg shigg* 'side by side', or in Oriental Arabic, *'iid b 'iid* 'from hand to hand' (Samia Naïm, p.c.).
3. In English analogous (absolute) constructions are only possible with plural NPs and a few verbs: *He felt my gaze and turned his head, our eyes interlocking.*
4. With the exception of examples from the Bible, which are practically word-to-word translations from the original:

<i>ko</i>	<i>le</i>	<i>mata</i>	<i>ki</i>	<i>le</i>	<i>mata</i> ,	<i>nifo</i>	<i>ki</i>	<i>le</i>	<i>nifo</i>
TOP	ART	eye	PREP	ART	eye	tooth	PREP	ART	tooth

 'an eye for an eye, a tooth for a tooth'
5. In languages with local case like Finnish we find case marking rather than prepositions in the relevant constructions: *Käsi kädessä* (hand hand.INESSIVE) 'hand in hand', *kasvoista kasvoihin* (face.PL.ELATIVE face.PL.ILLATIVE) 'face to face'.
6. The prepositions that appear in the NRN constructions are exactly those used in the quantificational strategy of encoding reciprocity: French *l'un contre l'autre, l'un pour l'autre, l'un sur l'autre, l'un dans l'autre, de l'un à l'autre*, etc.

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A chapter in marginal possession: on being six(ty) in Europe (and beyond)

Christel Stolz and Thomas Stolz

1. Exploring the periphery

In research on possession¹, linguists have a leaning towards working with a certain prototypical constellation according to which the possessor should be (definite and) human whereas the possessum is an indefinite concrete inanimate entity (Heine 1997: 5). All semantic variations on the two nuclear components of the possessive situation (and construction) are conceived of as increasingly peripheral derivations of the prototype. Unsurprisingly, much of what we know about possession in general is extrapolated from our analyses of prototypical patterns and the relations associated with them². The prototype and its immediate neighbours on the semantic map are in focus of many crosslinguistic studies because the authors aim at formulating generalizations and perhaps even at putting forward full-blown universals. The further away we get from the prototype, the less probable it becomes that our hypotheses will cover a large number of languages.

However, Manzelli, Ramat, and Roma (2002) demonstrate that it makes sense (areo-)typologically to look more closely also at what they term marginal possession i.e. at categories that happen to be located at a considerable distance from the prototype on the periphery of the functional dimension. Our Italian colleagues investigate the role of physico-mental states or feelings as possessa and compare them to expressions of prototypical possession and equivalents of English *to be right* (not only but) especially in the languages of the Mediterranean basin. The authors show that the bulk of the Romance languages together with Albanian and Maltese – two heavily Romancised languages – employ the same predicative construction for all of the three possible contexts and thus treat marginal possession and prototypical possession alike whereas other languages of their sample deviate from this pattern. In this contribution, we take up the issue of marginal possession in the languages of Europe by way of checking whether or not telling one's age is expressed by possessive constructions and whether or not the solutions for which the languages opt yield an areally significant

distribution³. We also ask the question to what extent the choice of possessive-based or other strategies is structurally determined in the languages of our sample. For practical reasons, we only look at predicative possessive constructions.

Our data-base consists mainly of the original and the translation of Antoine de Saint-Exupéry's *Le Petit Prince*. We draw examples for 64 European⁴ languages of all phyla from this source (with the occasional addendum from other descriptive materials to fill in some gaps). This "Eurocentric" part of our article is complemented by a section dedicated to similar phenomena attested in non-European languages. A word of caution is in order: we consider languages all those varieties into which the sample text has been translated including regional and dialectal varieties. We do not aim at conducting a parallel-corpus study, nor are we interested in the quantitative side of our topic. What we want to determine is which of the languages have a wide domain of prototypical possessive constructions and which ones have a narrower domain.

2. At the margins of possession

In a language like German, there are hardly any restrictions as to the ontological classes to which the referents of the possessa in the HAVE-construction belong. The Duden dictionary (2001: 694–5) has two columns dedicated to the usages to which the verb *haben* 'to have' is put in contemporary German. The various classes of possessa come in this order: (a) ownership of concrete objects (*ein Auto haben* 'to have a car'), (b) kin and social relations (*Kinder haben* 'to have children'), (c) abstract concepts at one's disposal (*Zeit haben* 'to have time on one's hands'), (d) bodily properties (*lange Beine haben* 'to have long legs/to be longlegged'), (e) physico-mental properties (permanent) (*gute Manieren haben* 'to have good manners'), (f) physico-mental states (temporary) (*Durst haben* 'to be thirsty'), (g) illnesses (*Fieber haben* 'to have a fever'), (h) abstract concepts outside of one's control (*das Recht haben* 'to have the right to'), (i) states-of-affair (*Urlaub haben* 'to be on a holiday'), (j) physical possession (*kann ich mal das Handtuch haben?* 'may I have the towel?'), etc. This list is incomplete as there are many more possibilities to employ *haben* some of which however, lie outside the proper domain of possession. If we disregard some details, the range of uses of German *haben* and the one of English *to have* largely coincide (cf. Webster's [1994: 650]). The sole "ma-

jor” difference is class (f): at least some temporary physico-mental states like *Hunger haben* ‘to be hungry’, *Angst haben* ‘to be afraid’, *Sorgen haben* ‘to be worried’ are treated differently in the two languages. Where German employs the usual *haben* English goes for predicative adjectives. Thus, the functional domains of predicative possessive constructions of German and English overlap considerably. They diverge from one another only on the outskirts of the possessive domain i.e. in an area which is far removed from the prototype. Physico-mental states – be they temporary or permanent – are atypical possessa as they are neither concrete nor under the control of the possessor.

If we extend the comparison to include a Romance language like say, French, the picture is very similar to the above – at least superficially. On closer inspection, we learn from Robert (1979: 145–6) that French sides with German as to the use of the HAVE-verb *avoir* ‘to have’ for class (f) of the above list (*avoir soif* ‘to be thirsty’, *avoir faim* ‘to be hungry’, *avoir peur* ‘to be afraid’, *avoir des soucis* ‘to be worried’). This is nicely in line with the areal bonds between these two languages as major representatives of the *Charlemagne Sprachbund* (van der Auwera 1998). However, French also includes something in the domain of *avoir* which is impossible for German *haben* and English *to have*, namely telling one’s age.

The very first sentence of the narrative text in the original of *Le Petit Prince* contains a temporal clause which is reproduced in (1).

- (1) French [LPP French I, 1]
Lorsque j'avais six ans
 when I-have:IMPF(.1SG) six year(.PL)
 ‘When I was six years old...’

The age (*six ans* ‘six years’) is treated as the direct object of the transitive verb *avoir* ‘to have’ like any other possessum. We could replace the NP *six ans* with NPs such as *une voiture* ‘a car’, *deux amis* ‘two friends’, *peur* ‘fear’, etc. The German and the English translation of the French original do not make use of *haben* and *to have*, respectively, cf. (2)-(3).

- (2) German [LPP German I, 1]
Als ich sechs Jahre alt war
 when I six year:PL old be:PRT.1SG
 ‘When I was six years old...’

- (3) English [LPP English I, 1]
when I was six years old.

The two Germanic languages opt for predicating age as a property in a copula-construction involving their BE-verbs and thus do not treat one's age as a possessum. This is in line with Lehmann's (1998: 4) idea that (not only) possessive relations are ordered according to the empathy hierarchy and the further below on this scale a potential possessum is located, the less probable it becomes that it is treated formally on a par with those categories which rank higher on the scale. One's age is ontologically not a tangible concrete object and thus comes last in line as it does not constitute a proper entity (= one of the two lowest-ranking concepts on Lehmann's [1998: 7–8] hierarchy). Heine (1997: 40) paints a radially organised diagram for the purpose of characterising the possessive prototype. On this diagram, abstract possession is located in the outermost circle i.e. at a distance from the prototype. In Heine's (1997: 34–5) terminology, abstract possession refers to a possessive situation in which at least one of the two participants is an abstract concept. This applies to one's age, of course.

On the other hand, one's age is certainly something that belongs to "the personal sphere of ego" (Lehmann 1998: 6). Independent of the variability of one's age over time, a person always "has an age" to tell, meaning: being X years old is a permanent property of a living human being whereas the exact amount of years is subject to increase during one's life-span. In this way, one's age can be compared to one's name, character, memory, etc. – all of which are potential possessa which may change over time. Some of these would count among Heine's (1997: 10) category of "individual concepts" prone to be treated as inalienable crosslinguistically for which, however, no common semantic ground has been proposed. Perhaps, it is this ambiguous character of one's age (with temporary and permanent aspects) that contributes to its divergent treatment in crosslinguistic perspective: some languages categorise one's age as an individual concept which belongs to the personal sphere of ego and thus as a prime candidate to function as a possessum in prototypical possessive constructions whereas other languages make the most of the abstract nature and thus deny one's age the right of being a possessum at all.

In the subsequent section, we look at the behaviour of our European sample languages. Which of the above solutions yields the larger class – telling one's age by employing a possessive construction or by making use

of something else? Is there a genetic, areal or typological reason for the languages to opt for one or the other of the solutions?

3. The data

3.1. European evidence

The 64 languages of our sample are divided into two major types and a minor “type”. There is a sizable group of languages whose expressions of telling one’s age resemble the French model structurally because the expressions are based on the prototype of HAVE-construction. We baptize these languages “possessive languages”. The great competitor is the type of languages which employ copula constructions similar to the ones reported for German and English. One’s age is a predicate noun or adjective. The languages of this type go by the name of “property languages”. There is a third group of languages which is smaller in size but nevertheless very interesting from the point of view of areal linguistics. In these languages, constructions are employed for the purpose of telling one’s age which neither qualify as properly possessive nor copular in the sense of predicating a property. For this type, we suggest the label “neither-nor languages” (cf. section 3.2 for an elaboration on this type).

Before we look more closely at the characteristics of each of the above groups, we present our data ordered according to construction type and genetic affiliation. The examples in (4)-(6) are all extracted from the first sentence in our sample text i.e. from the translation thereof. We thus need not indicate the sources separately. Proper HAVE-verbs occur in bold print. For reasons of space, we do not transmorphemise these examples. Only where we expect readers to have difficulties in parsing the examples do we add information as to the structures involved in the endnotes.

(4) possessive-languages

a.	Romance	
	Aragonese	<i>Cuan yo teneba seis añadas</i>
	Badiota	<i>Canche i â sis agn</i>
	Catalan	<i>Quan tenia sis anys</i>
	French	<i>Lorsque j'avais six ans</i>
	Galego	<i>Cando eu tiña seis anos</i>
	Gascon	<i>Tanben qu' avèvi sheis ans</i>

	Gherdeina	<i>canche ove sies ani</i>
	Italian	<i>quando avevo sei anni</i>
	Languedocien	<i>Un còp, qu'aviái sièis ans</i>
	Moldavian	<i>Pe când aveam șase ani</i>
	Portuguese	<i>Uma vez, tinha eu seis anos</i>
	Provençal	<i>Quand avièu siéis an</i>
	Rumanian	<i>cînd aveam eu șase ani</i>
	Rumantsch Grischun	<i>Cur ache jau aveva sis onns</i>
	Sardinian	<i>Cando aio ses annos</i>
	Spanish	<i>Cuando yo tenía seis años</i>
b.	Slavic ⁵	
	Belarusian	<i>mne bylo šesc' gadoŭ</i>
	Macedonian	<i>koga imav šest godini</i>
	Polish	<i>Kiedy miałem sześć lat</i>
	Russian	<i>Kogda mne bylo šest' let</i>
	Slovak	<i>Ked' som mal šest' rokov</i>
	Ukrainian	<i>Koli meni bylo šist' rokiv</i>
c.	Other Indo-European	
	Latvian	<i>Kad man bija seši gadi</i>
d.	Non-Indo-European	
	Azeri	<i>altı yaşım olanda⁶</i>
	Basque	<i>Sei urte nituen artean⁷</i>
	Maltese	<i>meta kelli sitt snin</i>
(5)	property-languages	
a.	Germanic	
	Alsatian	<i>Sechs Johr bin i àlt gse</i>
	Danish	<i>Da jeg var seks år</i>
	Dutch	<i>Toen ik een jaar of zes was</i>
	English	<i>When I was six years old</i>
	Faroese	<i>Tá ið eg var seks ára gamal</i>
	Frisian	<i>Doe't ik in jier as seis wie</i>
	German	<i>Als ich sechs Jahre alt war</i>
	Icelandic	<i>Pegar ég var sex ára</i>
	Limburgian	<i>Wie ich zès jaor waas</i>
	Luxemburgian	<i>Wéi ech sechs Joer al war</i>
	Norwegian	<i>Da jeg var seks år</i>
	Swedish	<i>När jag var sex år</i>
	Yiddish	<i>Ven ikh bin geven zeks yor alt</i>

- | | | |
|----|---------------------|---|
| b. | Slavic | |
| | Bulgarian | <i>Kogato bjax na šest godini</i> |
| c. | Other Indo-European | |
| | Albanian | <i>Kur isha gjashtë vjeç</i> |
| | Armenian | <i>Erb es vec' tarekan ēi</i> |
| | Breton | <i>Pa oan c'hwec'h vloaz</i> |
| | Greek | <i>Otan émoun eksaxronos</i> |
| | Irish | <i>Nuair a bhí mé sé bliana d'aois</i> |
| | Kurdish | <i>Gava ez šeš salî bûm</i> |
| | Lovari | <i>Kana shove bershengo somas</i> |
| | Welsh | <i>pan oeddwn i'n chwech oed</i> |
| d. | Non-Indo-European | |
| | Estonian | <i>Kui ma olin kuue aastane</i> |
| | Finnish | <i>Ollessani kuusivuotias⁸</i> |
| | Georgian | <i>ekvsi c'lisa rom viq'avi⁹</i> |
| | Saami | <i>Go mun ledjen guđajahkašas</i> |
| | Turkish | <i>altı yaşındayken¹⁰</i> |
- (6) Neither-nor languages
- | | | |
|----|---------------------|-----------------------------------|
| a. | Slavic | |
| | Croatian | <i>kad mi je bilo šest godina</i> |
| | Czech | <i>Když mi bylo šest let</i> |
| | Serbian | <i>kad mi je bilo šest godina</i> |
| | Slovenian | <i>Ko mi je bilo šest let</i> |
| b. | Other Indo-European | |
| | Lithuanian | <i>Kai man buvo šešeri metai</i> |

The above inventory is incomplete because several of our sample languages do not offer translations which fit our purpose. Several languages give preference to nominal adverbials such as Hungarian *Hatéves koromban* lit. 'in my six-year age', Corsican *À l'età di sei anni* 'at the age of six', Vallader *Cun ses ons* 'with six years', etc. Some Romance languages of the Alpine regions employ verbs meaning 'to live' in this sentence (for instance Surselvan *Cura ch'jeu vevel sis onns* lit. 'when I lived six years'). Therefore, it is necessary to complement the examples in (4)-(6) with other data also taken from the *Le Petit Prince*. We fill the gaps in our list with the translations of sentence [LPP French IV.24] *Quel âge a-t-il?* 'How old is he?'. We only take those languages into account whose data are not conclusive in the case of sentence [LPP French I.1] above.

(7) Additions

- a. possessive languages
- | | |
|----------|---------------------------|
| Asturian | <i>Cuántos años tien?</i> |
| Corsican | <i>Quantu hà?</i> |
| Friulan | <i>Tros agn àjal?</i> |
| Vallader | <i>Quants ons ha'l?</i> |
- b. property languages
- | | |
|-----------|---------------------------------|
| Sursilvan | <i>Cun vegls eis el?</i> |
| Hungarian | <i>Hány éves?</i> ¹¹ |

All additional members of the possessive type belong to the Romance phylum whereas the two property languages are genetically diverse: Sursilvan is the only Romance language which employs a property-construction and Hungarian joins the majority of our non-Indo-European languages which opt for the property-construction. The exact distribution of types over phyla is shown in Table 1.

Table 1. Distribution of types over phyla

phylum	possessive	property	neither-nor	sum
Romance	20	1	0	21
Germanic	0	13	0	13
Slavic	6	1	4	11
other IE	1	8	1	10
non-IE	3	6	0	9
sum	30	29	5	64

With 47% and 45%, respectively, possessive and property languages have almost the same statistical weight in Table 1 whereas the third type is a minority solution by all means as it accounts for slightly more than 7% of the sample languages. The statistical parity of the two major types goes along with a genetically-based divide: Romance languages are characterised by a next to exceptionless leaning towards the possessive type. Of the 21 Romance languages, Vallader is unique as it takes the property-construction (which fits in with other aspects of Germanisation of this Rhaeto-Romance variety!). For the Germanic phylum, the reverse holds because all 13 members of this phylum are property-languages. Thus, it can be expected of a Romance language to employ a possessive construction for the purpose of telling one's age. For Germanic languages, it can be predicted that they take the property-construction.

More interesting than this differential behaviour of the two large phyla is the distribution of types over the other phyla/genetic groupings. The Slavic phylum is divided in such a way that it is represented in each of the three types: In the property-type, Slavic languages are rare (with one single representative, namely Bulgarian), they are more numerous in the competing possessive-type (six languages out of eleven) – on top of that, they form the largest group within the third type. Four out of five languages representing the neither-nor type belong to the Slavic phylum. The fifth member of this class is Lithuanian i.e. a language from the European east and a neighbour of the Slavic languages represented in this class. According to our classification, Lithuanian is one language of the heterogeneous class of “other Indo-European languages”. However, Lithuanian diverges from the bulk of these languages which are property languages. Note that the other singularity in this group is Latvian, Lithuanian’s closest relative, which deviates from both its Baltic sister and the remainder of the class as Latvian is a possessive language. Non-Indo-European languages distribute over the two major types in the following way: one third are possessive languages and two thirds belong to the property type. This makes the property type the only solution that is genetically unrestricted (albeit disfavoured by some of the groups). The possessive type does not include any Germanic language and the neither-nor type is largely a Slavic affair (= 80% of the languages classified as neither-nor). In the property type, Germanic languages account for 45% of the languages. In the possessive type, however, the Romance phylum covers 67%. This means that the possessive type is clearly genetically biased towards Romance and less so towards Slavic. It is a relatively exceptional feature of languages belonging to other phyla. However, especially East-European languages have characteristics which impel us to dwell a little on a well-known fact.

3.2. The neither-nor type

Romance languages and Germanic languages normally have proper HAVE-verbs which they employ in predicative possessive constructions. This is not the case for a variety of other languages such as Celtic, various non-Indo-European languages (except Basque and Georgian), Latvian and East Slavic. In Latvian and Russian, for instance, predicative possession requires a construction in which the possessor is case-marked for an oblique case (= dative/genitive at times governed by a preposition) whereas the

possessum is in the nominative (or a case with partitive reading = genitive). The two participants normally come in the order possessor > possessum and a form of the copula may connect the one to the other, cf. (8)-(9). The sample sentences translate [LPP French II, 53] *Il a des cornes* 'It [= the sheep] has horns'.

- (8) Latvian [LPP Latvian II, 53]
Viņam ir ragi.
 he:DAT be.3 horn:NOM.PL
 'It has horns.'

- (9) Russian [LPP Russian II, 53]
U nego roga.
 at he:GEN horn.NOM.PL
 'It has horns.'

Thus, in spite of the fact that neither Latvian nor Russian have a proper HAVE-verb, their expressions of telling one's age (cf. (4b)-(4c)) are based on the usual construction employed for predicating possession.

Western and southern members of the Slavic phylum make use of a proper HAVE-verb (though to different extents). As the glossonyms in (4b) show, several languages (Macedonian, Polish and Slovak) behave like East Slavic in so far as they use the possessive construction for telling one's age although their constructions are different from the one used in Bielarussian, Russian and Ukrainian. All other Slavic languages belong to other types. Disregarding the sole Slavic language in the property type (Bulgarian), we find four Slavic languages in the neither-nor type. These languages are provided with proper HAVE-verbs – just like Bulgarian, Macedonian, Polish and Slovak, cf. (10) which again translates [LPP French II, 53]. The verb-forms are marked by boldface.

- (10) HAVE-verbs
 Croatian *ima rogove*
 Czech *má rohy*
 Serbian *ima rogove*
 Slovenian *rožičke ima*

However, the languages in (6a) do not use the HAVE-verb in the constructions under scrutiny, nor do they follow the lead of Bulgarian and opt for a

property construction in the above sense. Their solution is one that superficially resembles the obligatory structure employed by East-Slavic languages, cf. (11).

(11) Dative construction (Croatian [LPP I, 1])

	POR		COPULA		PUM	
<i>kad</i>	<i>mi</i>		<i>je</i>	<i> bilo</i>	<i> šest</i>	<i> godina</i>
when	I.DAT		be.3SG	be.PCL.N	six	year:GEN
'when I was six years old'						

In this construction, the possessor is encoded as a pronominal dative. A copula is employed, too. The possessum is represented by the NP inflected for genitive according to the morpho-syntactic rules of numerals common to many Slavic languages (Stolz 2002). The order is possessor > possessum as in East Slavic.

Interestingly, Lithuanian displays similar properties although it has a full-blown HAVE-verb *tureti* 'to have'. The latter is illustrated in (12).

(12) Lithuanian [LPP Lithuanian XV, 68]

<i>Turiu</i>	<i>dar</i>	<i>ir</i>	<i>gėlę.</i>
have:1SG	however	also	flower:ACC
'But I also have a flower.'			

For the purpose of telling one's age, however, Lithuanian makes use of a construction which is identical to the one reported for Latvian in (4c) and (8), namely (13).

(13) Lithuanian [LPP Lithuanian I, 1]

	POR		COPULA		PUM	
<i>kai</i>	<i>man</i>	<i>buvo</i>	<i>šešeri</i>		<i>metai</i>	
when	I:DAT	be.PRT.3	six:COLL:NOM.PL		year:NOM.PL	
'when I was six years old'						

Thus, Lithuanian differs from Latvian in a way similar to the one in which Croatian differs from Russian: Lithuanian and Croatian are equipped with HAVE-verbs. These HAVE-verbs are not made use of for telling one's age. However, no property construction is employed either. What Lithuanian and Croatian do is resort to a construction which elsewhere in their phyla is the primary choice for predicating possession.

A clarification is in order as to the different class membership of the two Turkic languages Azeri and Turkish. Turkish is a property language whereas Azeri is a member of the possessive type. In Azeri, possession is predicated according to the so-called genitive schema (Heine 1997: 47). The existence of the possessum is asserted while the possessor is marked on the possessum and/or by a genitival attribute, cf. (14).

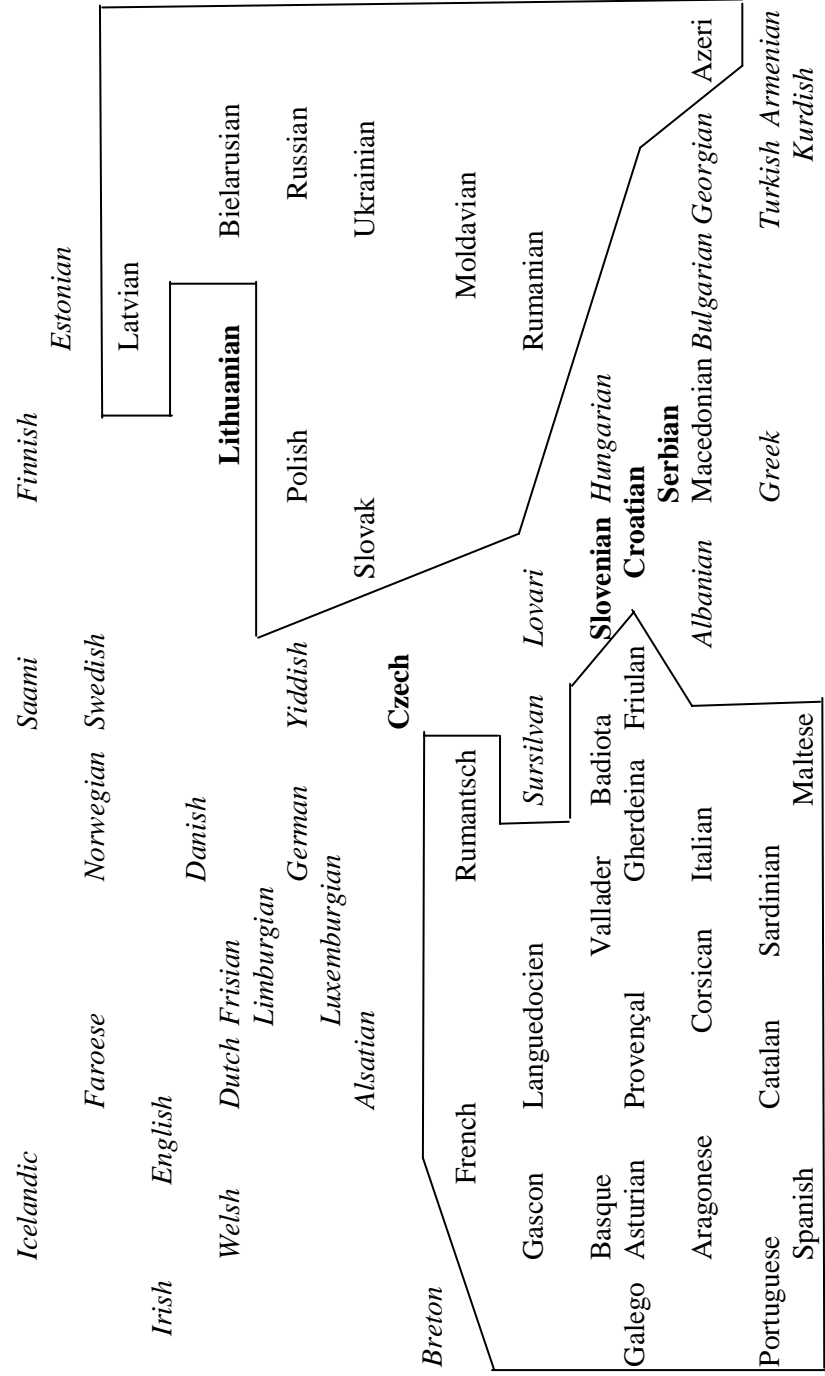
- (14) Azeri [LPP Azeri II, 53]
Onun buynuzlari var.
 it:GEN horn:PL:POR.3 be.3
 'It has horns.'

The same construction is used in Turkish for predicative possession. However, in contrast to Azeri, which employs this kind of construction also for telling one's age, the Turkish solution is to keep predicative possession and telling one's age formally apart (*yaşında* – already means 'be X years old').

3.3. Areality

On the European map (cf. map I)¹², the three types tend to cluster separately in different quadrants. There is an accumulation of possessive languages in the south-west corner of Europe which is counter-balanced by a similarly strong cluster of property languages in the north-west. In the north-east, possessive languages show up again in sizable numbers whereas property languages have another stronghold in the south-east. Where the two large sub-areas meet and intersect, we also find the representatives of the neither-nor type: Czech connects with possessive Slovak in the east and the property language German in the west, Slovenian, Croatian and Serbian are sandwiched between property languages like Hungarian, Lovari and Albanian, on the one side, and Romance possessive languages on the other. Lithuanian is different in the sense that it is surrounded by possessive languages but does not employ its HAVE-verb. Lithuanian takes the East-Slavic and Latvian construction to express what Polish encodes by its HAVE-verb.

Map I: Distribution of language over types in Europe (lines surround possessive languages)



According to Heine (1997: 50) the so-called action schema i.e. the concept underlying the use of transitive HAVE-verbs “[c]ontrary to views expressed in earlier writings on this subject, [...] is not among the most frequently employed sources for predicative possession”. This is tantamount to a certain exoticity of the European area where proper HAVE-verbs abound. However, the wide-spread occurrence of HAVE-verbs in Europe seems to be a relatively recent development which literally led to the marginalisation of other schemata (location schema, companion schema, etc.) – if we follow the general line of argument of Heine and Kuteva (2006). It is very likely that the proper HAVE-verbs in the West Slavic and South Slavic branches are latecomers just like Lithuanian *tureti* ‘to have’. These HAVE-verbs are perhaps copied to some extent from more westerly sources (i.e. Germanic and Romance) and/or Greek. The newly developed HAVE-verbs first occupied the prototypical core area of possession and then began to diffuse from there into other functional territories. Their predecessors – most likely constructions like Latvian (8) or Russian (9) – have been ousted from their erstwhile positions of which today only a small number remain uncontested, among which we find telling one’s age. What this means is that the neither-nor type most probably reflects a residual state. The use of the dative construction (11)-(12) is the relic of a formerly more widely used construction of predicative possession which made do without a proper HAVE-verb.

In a way, the languages of the neither-nor type have developed a specialised construction for the expression of (at least) one type of marginal possession, namely one’s age. This is the result of the successive reduction of the functional domain of an old goal/location schema in predicative possession. In other languages, the HAVE-verbs have extended their domain such that it also covers marginal possession or telling one’s age is the task of a construction which is completely alien to possession. Where HAVE-verbs have not entered the scene yet, the extant constructions of predicative possession also count marginal possession of the above kind among their functions.

The use of possessive constructions for telling one’s age has also spread from Romance into Basque and most probably also into Maltese. It is interesting to see that Basque employs a proper HAVE-verb while Maltese is dependent upon one of its many pseudo-verbs which reflect erstwhile constructions with a spatial preposition (in this case *għand* ‘at’ in the present tense and combinations of the perfect or future copula with *lil* ‘for’ [*kien* + *lil* > *kelli* ‘was to me’ > ‘I had’; *ikun* + *lil* > *ikolli* ‘will be to me’

> ‘I will have’)). Modern Standard Arabic has a completely different way of telling one’s age as can be seen from (15).

- (15) Modern Standard Arabic [LPP Arabic I, 1]
wa-anā fī s-sādisati min ‘umr-ī
 and-I in DEF-sixth.GEN from life-POR.1SG
 ‘when I was six years old’

A phrase like *I am twenty years old* translates into Modern Standard Arabic as *‘umrī ‘iṣrūna* lit. ‘my life (is) twenty’ (Andreas Ammann p.c.). The possessor suffix notwithstanding, there is not a trace of predicating possession in the Arabic version. This supports the idea that Maltese has adapted the distribution profile of its construction of predicative possession to the patterns familiar from Romance.

3.4. Looking beyond

The Arabic example already takes us beyond the confines of the European continent. Without any claim to exhaustiveness, we briefly review some data from languages spoken elsewhere on the globe. For a start, we look at two Creole languages, namely Spanish-based Papiamentu and French-based Seselwa of the Netherlands Antilles (Caribbean) and the Seychelles (Indian Ocean), respectively.

- (16) Creoles
- a. Papiamentu [LPP Papiamentu I, 1]
tempu mi tabatin seis aña
 when I PAST:have six year
 ‘when I was six years old’
 - b. Seselwa [LPP Seselwa I, 1]
kan mon ti annan 6 an
 when I PAST have 6 year
 ‘when I was six years old’

The lexifiers of these two Creoles are Romance languages which use their HAVE-verbs to express one’s age – and the same holds for the Creoles. Note that the Papiamentu HAVE-verb *tin* ‘to have’ is directly derived from its Spanish equivalent *tener* ‘to have’ whereas Seselwa *annan* ‘to have’ has

nothing to do with French *avoir* ‘to have’ but reflects the verb *gagner* ‘to earn’ which has never been employed in this way in French.

Yucatec Maya, a language which has been under strong Spanish pressure for half a millennium, also instantiates the same pattern although in this case, the predication of possession is not expressed by a proper HAVE-verb, cf. (17).

(17) Yucatec Maya

- a. Telling one’s age (Blair and Vermont Salas 1979: 139)
B’eintidòos *’ányos* *yàan* *teen.*
 21 years:PL be to:1SG
 ‘I am 21 years old.’
- b. Predicating possession (Blair and Vermont Salas 1979: 140)
Yàan *tèech* *’iihos* ?
 be to:2SG child:PL
 ‘Do you have children?’

Predicative possession in Yucatec Maya reflects the goal schema (Heine 1997: 59–61). The idea that Yucatec Maya has copied the Spanish pattern is far from conclusive as Mesoamerican languages more generally do not display proper HAVE-verbs or at least did not have such in pre-conquest times. Thus, the Yucatecan construction is presumably of pre-Hispanic origin and this perhaps also includes its employment for marginal possessions such as one’s age.

Tahitian has been subject to increasing influence on the part of French. Nevertheless, the possessive system of this Austronesian language still looks sufficiently non-European, cf. (18).

(18) Tahitian

- a. Telling one’s age (Paia and Vernaudoon 1999: 173)
E *maha àhuru mā ono* *matahiti* *to* *na.*
 PRED 46 year POSS s/he
 ‘S/he is 46 years old.’
- b. Predicating possession (Paia and Vernaudoon 1999: 130)
E *fare* *to* *rāua.*
 PRED house POSS they
 ‘They have a house.’

The general possessive article *to* is used in both constructions to introduce the possessor. The morpho-syntactic patterns are identical – and certainly do not look like French. What Tahiti shares with French however, is the use of the same construction for both telling one's age and predicating possession. In Tahitian too, one's age is treated like a prototypical posses-sum.

Another Austronesian language – though only very distantly related to Tahitian and spoken at the opposite rim of the Pacific – is the North-Philippinian language Chamorro (Mariana Islands). Chamorro is heavily Hispanised which is the result of 230 years of Spanish rule over the islands. The high proportion of Spanish lexical items notwithstanding, Chamorro has retained its own pre-Hispanic system of possession, cf. (19).

(19) Chamorro

- a. Telling one's age (Onederra 1994: 20)
Sais *años* *idât-ña* *i* *patgon*.
 Six year age-POR.3SG DEF child
 'The child is six years old.'
- b. Predicating possession (Topping and Ogo 1980: 36)
Guaha *kareta-hu*.
 EXIST car-POR.1SG
 'I have a car.'

The Spanish HAVE-verb *tener* 'to have' has not made it into the inventory of Hispanisms of Chamorro. Predicating possession is achieved via the so-called genitive schema (cf. above). The indication of one's age follows a similar, yet distinct pattern as no existential verb is used. Note that in (19a), not only the numeral *sais* 'six' (< Spanish *seis*) and the word *años* 'year(s)' (< Spanish *años*) are taken from Spanish but also *idât* 'age' (< *edad*). In spite of the impressive presence of Hispanisms in the constructions, the constructions themselves remain as un-Spanish as can be.

However, even where no European possessive-language has been around do we occasionally find languages which not only treat marginal possession like prototypical possession but also employ expressions which include elements which resemble proper HAVE-verbs. One such language is Greenlandic (Eskimo-Aleut), cf. (20).

(20) Greenlandic

- a. Telling one's age (Berthelsen 1996: 29)
Ilinniartitsisoq Pele Barselajsen
 teacher Pele Barselajsen
25-nik ukio-qar-poq.
 25-PL.INST winter-have-IND:3SG
 'The teacher Pele Barselajsen is 25 years old.'
- b. Predicating possession (Berthelsen 1996: 21)
Atuartut maana aasami
 pupil:PL now summer:LOC
atua-nngi-ffe-qar-put.
 learn-NEG-time-have-IND.3PL
 'The pupils now have summer holidays.'

In Greenlandic, there is a post-base *-qar(-poq)* 'to have' which cannot occur on its own but must host some nominal(ised) element to its left. This post-base combines with all sorts of possessa from concrete object-like down to outright abstract. Among the latter we find such time-related categories such as *ukioq* 'winter' (counted as years) and *atuannngiffik* 'holidays' (lit. 'time of no learning'). This relatively free combinability looks European in a way. However, it does not conform to the distribution profile of the HAVE-verb in Danish, the colonial prestige language in Greenland.

Much the same holds for Swahili (Bantu, Niger-Kordofanian). In Swahili, predicative possession follows the so-called companion schema (Heine 1997: 53–7) which depicts the relation between possessor and possessum as a situation of accompaniment. Again, there is no full-blown HAVE-verb. Simplifying, the construction operates on the basis of a zero-copula and an inflected preposition *na* 'with, and'¹³, cf. (21).

(21) Swahili

- a. Telling one's age (Brauner and Herms 1986: 76)
A-na mi-aka mi-tatu
 CL1.SG-with CL2.PL-year CL2.PL-three
 'He [= the boy] is three years old.'
- b. Predicating possession (Brauner and Herms 1986: 56)
Ni-na wa-toto wa-wili
 1SG-with CL1.PL-child CL1.PL-two
 'I have two children.'

As in the previous cases, telling one's age is one of the functions of the prototypical predicative-possessive construction of the language. The pattern is far too wide-spread in the Bantu phylum to invite a contact-based interpretation. None of the major adstrate languages of Swahili in Kenya and Tanzania – Arabic and English – can be the source of the distributional properties of Swahili *na*. Languages do not need a European pattern to copy from nor is it necessary for them to employ proper HAVE-verbs.

Thus, we learn that the inclusion of cases of marginal possession in the functional domain of the prototypical predicative possessive construction of a language is by no means a European prerogative. There is compelling evidence for the recurrence of the phenomenon outside the European area. Sometimes, Romance languages might be held responsible for the spread of this pattern. However, this contact-based scenario cannot always be invoked as the Greenlandic, Swahili and Chamorro cases suggest.

4. Conclusion

The above discussion of crosslinguistic facts reveals that it is worthwhile to study not only the prototypes of possession but also the peripheral categories which are not always integrated in the functional domain of a given construction of predicative possession. The European data show that the inclusion of a marginal function such as telling one's age in the domain of a prototypical possessive construction is largely independent of the presence/absence of a proper HAVE-verb. This dissociation is corroborated by the extra-European languages surveyed in section 3.4. In some cases, the generalisation of the prototypical predicative construction over all kinds of possessive relations including the marginal ones seems to have spread via language contact. This is certainly true of the Romance-based Creoles – and very likely also of Basque and Maltese. Our neither-nor languages also support the hypothesis that the possessive systems especially in the European east have been experiencing changes which might ultimately go back to contacts with neighbouring languages. Investigating the fringes of possession thus, may offer us interesting insights into the typology and areality of this operational dimension of language (Seiler 1983).

Notes

1. This contribution has grown out of the project on *Alienability relations in Europe* at the University of Bremen (financed by the *Deutsche Forschungsgemeinschaft*). We are grateful to Andreas Ammann, Cornelia Stroh and Aina Urdze for their kind help with technical matters.
2. Already in his seminal monograph, Seiler (1983: 1) lamented about the wealth of publications on possession which makes it “impossible to review them in any detail here”. Almost a quarter of a century later, the situation has become even more uncontrollable and thus we refrain from recapitulating even the most general lines in the recent history of thought within the framework of possession research
3. Our investigation is a pilot-study in the sense that to our knowledge, nobody has ever paid attention crosslinguistically to the expressions used for telling one’s age.
4. For a definition of Europe in linguistic terms, cf. Stolz, Stroh, and Urdze (2003).
5. For the languages which do not employ proper HAVE-verbs, we refer the reader to our discussion in connection with examples (8)-(9) below.
6. The Azeri example is a non-finite converb construction. The construction itself is morpho-syntactically intricate as it is based on the genitive schema employed for predicative possession in this language: the possessum’s existence is asserted by the non-finite form of *olamak* ‘to be’ while the possessum hosts the possessor affix. The cardinal numeral *altı* ‘six’ is an attribute of the possessum noun.
7. The Basque verb-form *nituen* ‘I had them’ is the past of *ukan* ‘to have’. The morpheme *-it-* refers to a patient participant in the plural i.e. to the age *sei urte* ‘six years’ which is formally singular.
8. The Finnish construction is non-finite – however, the initial infinitive *ollessani* lit. ‘in my being’ is not only inflected for the inessive (*-ssa*) but also for possessor (*-ni*). The possessor represents the subject of the associated finite version of the construction.
9. The Georgian construction includes a relative clause introduced by *rom* ‘which’ for purposes of focus. If we drop the relativiser, a normal construction of telling one’s age results.
10. The Turkish example is again non-finite with the converbial affix *-(y)ken*. Schroeder (2003: 69 and 94–5) argues that most of the Turkish converbs do not necessarily display coreferentiality restrictions although there is a tendency for some to pick out the subject of the main clause. This is also the case in our example from *Le Petit Prince*.
11. Literally ‘how many year-ADJ’. The copula may be absent from this kind of construction – as does the subject pronoun.

12. On the map, we use the following conventions: possessive languages occur in normal print, property languages in italics and neither-nor languages in bold face.
13. One could also argue that *na* has developed into a pseudo-verb meaning something like ‘to be with’. According to this solution, the copula is absent from the construction as there is no need for a copular element at all.

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A.2 Constraints on the Encoding of Functional Concepts

Thoughts on (im)perfective imperatives

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1. Introduction¹

This paper is a sketch of some of the issues concerning the relation between aspect and mood, more particularly the interaction of the perfective imperfective distinction and the mood dimension of the positive imperative. As far as we know, this issue has never been dealt from a typological point of view. Section 2 discusses the perfective imperfective distinction, section 3 is about imperatives, section 4 presents data, and section 5 offers explanations. Section 6 is the summary.

Our data come from two databases: a (positive) imperative database of 419 languages in the dissertation Schalley (in progress), constructed along the lines of Rijkhoff et al. (1993), and a partially overlapping prohibitive database compiled by van der Auwera, based on the “restricted sample” of 179 languages found in Miestamo (2005) – this includes one language for each “genus” (in the sense of Dryer 2000) at the ratio of the coverage of the “macro-area” (see again Dryer 2000) that gets the worst coverage (see Miestamo 2005: 27–39 for discussion).

2. Perfective and imperfective

For the purpose of this paper the following “definition” of the notions of perfective and imperfective aspect will have to do: (i) with a perfective aspect one looks at a state of affairs as a totality and events and processes that make up the state of affairs are therefore looked upon as complete, (ii) the imperfective looks at the internal structure of the state of affairs and as a consequence any constitutive events and processes are seen as incomplete. In identifying the categories cross-linguistically, there are many problems. First, for many languages one should distinguish between subtypes of perfective and imperfective, like progressive and habitual. Second, though the terminology suggests a neat two-way distinction, in some languages they may be members of a larger set, sometimes comprising a so-

called “aorist”, for example. Third, it is often difficult to distinguish the categories of perfective and imperfective from other, related categories, e.g., the perfect. Fourth, not all linguists use the terms in the same way. Finally, not all languages have grammaticalized the distinction, and if they have, they may have done it in different ways. One important parameter is the degree of grammaticalization: does aspect have a syntactic, periphrastic exponent or has it reached morphology, and if the latter is the case, what kind of word does it manifest itself on (the auxiliary, the lexical verb, or something other than a verb). Another important parameter is the formal markedness (or degree of overtiness; Haspelmath 2006) of the distinction, in the sense that the perfective or the imperfective may contrast in that only one has an overt morphosyntactic exponent. In Russian (1) the perfective form *napisal* equals the imperfective *pisal*, but it has the additional perfectivizing prefix *na-*. So the forms differ in formal markedness, and the distinction is shown in the morphology.²

- (1) Russian
- | | | | |
|----|-----------------------------------|---------------------|----------------|
| a. | <i>Ja</i> | <i>pisal</i> | <i>pis'mo.</i> |
| | 1SG.NOM | write.IMPF.PST.SG.M | letter.ACC.SG |
| | 'I was writing/wrote the letter.' | | |
| b. | <i>Ja</i> | <i>na-pisal</i> | <i>pis'mo.</i> |
| | 1SG.NOM | PFV-write.PST.SG.M | letter.ACC.SG |
| | 'I wrote (up) the letter.' | | |

In Tondi Songway Kiini (2) the imperfective construction with *kóy* equals the perfective construction, but it has the additional marker *wà*. Here the exponent is syntactic.

- (2) Tondi Songway Kiini (Songhay, Mali, Heath 2005: 221, 163)
- | | | | | | |
|----|-------------------------|----------------------|------------|-----------|-------------|
| a. | <i>ày</i> | <i>káyn-ó:</i> | <i>kóy</i> | ... | |
| | 1SG.POSS | elder.sibling-DEF.SG | go | | |
| | 'My brother went ...' | | | | |
| b. | <i>à</i> | <i>né</i> | <i>íj</i> | <i>wà</i> | <i>kóy.</i> |
| | 3SG | say | 3SG.LOG | IMPF | go |
| | 'He said that he goes.' | | | | |

For an example of a perfective imperfective distinction without any formal markedness correlation, one can consider Yucatek Maya in (3). In this ex-

ample, the imperfective is marked with the suffix *-k*, and the perfective with the suffix *-h*.³

(3) Yukatek Maya (Mayan, Mexico, Lehmann 1990: 41)

- a. *k-in* *tàas-k-o'b*.
PRS-1SG bring-TR.IMP-ABS.3PL
'I bring them.'
- b. *t-in* *tàas-h-o'b*.
PRT-1SG bring-TR.PFV-ABS.3PL
'I brought them.'

3. Imperative

Languages that have grammaticalized the perfective imperfective distinction also differ as to whether it is relevant in the imperative mood. We will focus on positive imperatives⁴ and on one that could be called "direct" (see also Schalley in progress). A direct imperative is a construction that is morphosyntactically dedicated to expressing an appeal to the hearer(s) to do something. (4) lists three examples for direct positive imperatives.

- (4) a. Spanish
Llor-a!
cry-IMP.2SG
'Cry!'⁵
- b. English
Cry!
- c. Sawu (Malayo-Polynesian, Indonesia, Walker 1982: 33)
əgo we ri ou Ø ne kuhi d'e!
fetch.SG IMP ERG 2SG ABS ART key DEM
'Fetch the key!'

In Spanish the ending *-a* is specialized for the imperative second singular.⁶ In English there is no special morphology, but the imperativeness is signalled by the syntax, more particularly by the verb first pattern and by the lack of a subject pronoun. Sawu has no special imperative morphology either, but (4c) contains a dedicated imperative particle *we*.

Direct strategies contrast with indirect ones: the latter have a wider use. In Monumbo, imperative meaning can be conveyed by a declarative indicative present, and in Önge, one can use a declarative indicative future.

- (5) a. Monumbo (Monumbo, Papua New Guinea, Vormann and Scharfenberger 1914: 130)
u-ndáro.
 2PL-go.IND.PRS
 ‘You go.’ or ‘Go!’
- b. Önge (South Andamese, Andaman Islands, Dasgupta and Sharma 1982: 34)
n-ilokowale-nene.
 2SG-eat-IND.FUT
 ‘You will eat.’ or ‘Eat!’

Of course, English allows declarative indicative presents and futures to convey imperative meaning as well. But we assume that in Monumbo and Önge the association of the imperative meaning and the indicative present, respectively, indicative future is a strong one, no doubt in part because the languages lack direct strategies. We could say that the use of the indicative present or future has conventionalized the imperative meaning and even that the relevant forms in Monumbo and Önge are not actually indicative but rather “indicative-imperative”.

4. (Im)perfective imperatives: data

How does the perfective imperfective contrast fare in the context of direct imperatives? It would seem that one can order both an action or a process as such or one that is or would be in progress. So one would expect at least some languages to reflect the distinction in imperatives. Russian is a case in point: the language allows both perfective and imperfective imperatives.

- (6) Russian
a. *Pishi* *pis'mo!*
write.IMP.F.2SG letter.ACC.SG
'Write the letter!'

- b. *Na-pishi* *pis'mo!*
 PFV-write.IMP.2SG letter.ACC.SG
 'Write the letter!'

But the language that has both imperfective and perfective imperatives is only one of four logical possibilities. Are there any languages with imperatives are obligatorily neither imperfective nor perfective? Are there languages in which the imperatives are obligatorily perfective? And finally, are there languages in which the imperatives are obligatorily imperfective? The answers to each question will be positive.

A language in which the imperatives cannot have any perfective imperfective marking is Yucatek Maya. In this language, the imperative suffixes occupy the same slot as the perfective and imperfective suffixes and the two types of suffixes are incompatible.

- (7) Yucatek Maya (Elisabeth Verhoeven, p.c.)
 tàas-Ø-e'x-oʔ b!
 bring-IMP-2PL-ABS.3PL
 'Bring them!'

Another possible example is Tondi Songway Kiini. But here the situation is not that clear, and this has to do with the fact that at least in indicatives the perfective marking is zero. (8) illustrates the imperative in Tondi Songway Kiini.

- (8) Tondi Songway Kiini (Heath 2005: 174)
 a. *kóy!*
 go
 'Go!'
 b. *ò* *kóy!*
 2PL.IMP go
 'Go!'

It is clear that the imperative cannot contain the imperfective marker *wà* illustrated in (2b). But what does its obligatory absence imply? Heath (2005: 173–174) takes it to mean that the imperative is aspect neutral, though he does not explain why.⁷ It seems that one could also argue the imperative to be obligatorily perfective, and this would be the third type, but again Tondi Songway Kiini would be a controversial illustration.

A straightforward illustration of the obligatorily perfective imperative comes from Misanla Totonac. Both the perfective and the imperfective aspect use suffixes, though in both the exponent must sometimes be a zero. For the second person singular the perfective marker is *-ti* and for the plural it is a zero – compared to imperfective zero for the singular and *-yaa* for the plural (MacKay 1999: 125–126, 139–140). The imperative has to use the perfective markers.

- (9) Misanla Totonac (Totonacan, Mexico, MacKay 1999: 144)
- a. *ka-paš-ti!*
IRR-bathe-PFV.2SG
'Bathe!'
 - b. *ka-paš-Ø-tat!*
IRR-bathe-PFV-2PL
'Bathe!'

In a fourth and final type the imperative has to be imperfective. In Egyptian Arabic verb stems are either imperfective or perfective. Thus 'write' has a perfective *katab* stem and an imperfective *ktib* stem. The direct imperative has to use the imperfective stem.⁸

- (10) Egyptian Arabic (Semitic, Egypt, Woidich 2006: 76)
- I-ktib!*
IMP-write.IMPF.2M
'Write!'

It is important to point out that this overview only deals with the direct imperatives which have to be either perfective or imperfective (the first, third and fourth type exemplified above) or cannot be perfective or imperfective (the second type). For some languages, the basic direct imperatives can be argued to be aspect neutral, but they may optionally be enriched by perfective or imperfective marking. In *Tukang Besi*, the direct imperative is arguably neutral, but the verbal form also accepts the perfectivizing suffix *-mo*, which is used to mitigate the imperative appeal. In *Una*, the direct imperative is arguably aspect neutral, too, but it can optionally get what the grammarian calls "continuous" or "incomplete" markers (Louwerse 1988: 35) (12) illustrates the "continuous" marking. Of course, like for *Tondi Songway Kiini*, one should investigate whether the expandability of these basic forms with either a perfective or an imperfective form can be con-

strued as evidence for the claims that the basic forms are actually imperfective (in *Tukang Besi*) or perfective (in *Una*). In the case of *Tukang Besi*, however, such a claim would seem implausible for the perfectivizing suffix does not seem to have its normal aspect meaning and it does not therefore clearly contrast with a zero exponent marking imperfectivity.

- (11) *Tukang Besi* (Western Malayo-Polynesian, Indonesia, Donohue 1999: 453)

- a. *kede!*
sit.IMP.2SG
'Sit down!'
- b. *kede-mo!*
sit.IMP.2SG-PFV
'Sit down!' (polite)

- (12) *Una* (Mek, Indonesia, Louwerse 1988: 36, 37)

- a. *buk-dum!*
sit-IMP.2SG
'Sit!'
- b. *bu-ran-dum!*
sit-CONT-IMP.2SG
'Sit continually!'

A final note is that we dare not, at this stage, pronounce any frequency claims. To do this well one would need a careful study of the relevance and the nature of aspect distinctions in indicatives as well. One would expect, for instance, that the perfective imperfective distinction matters for imperatives only if it also matters for indicatives.¹⁰ We leave this for future research.

5. (Im)perfective imperatives: explanations

One may assume that if languages with a general perfective imperfective distinction employ this distinction in imperatives too, what is at play (at least to some extent) is analogy. And similarly, analogy will be a factor in the explanation of why languages that do not have the distinction in the rest of the grammar don't have it in imperatives either. In what follows we hope to shed some light on why languages with an obligatory indicative

perfective imperfective choice do not have that choice in their imperatives, which are either obligatorily neutral (like Tondi Songway Kiini, under one interpretation) or perfective (like Tondi Songway Kiini, under the other interpretation, or like Misanla Totonac) or imperfective (like Egyptian Arabic). Let us start with a preliminary consideration: the fact that each of the four logical possibilities is in fact attested (both perfective and imperfective, neither, only one, only the other) predisposes one to think that more than one explanatory factor may be involved. In fact, we propose three such factors.

One of them, we claim, is pragmatic. We assume that the typical and most frequent imperative will involve an appeal to the hearer(s) to achieve something, to perform the action as a whole and not merely to be engaged in the activity or part of it. This idea has been used to explain why the English progressive, which successfully pervaded the English verb system, is exceedingly rare in imperatives (see e.g. De Clerck 2006: 171), though not impossible (see Davies 1986: 15–16; Williams 2001). (13) is an authentic (web) example retrieved by De Clerck (2006).

- (13) *Get that Summer Static sticker on your vehicle now, and be listening to 88.9 SHINE.FM!* (De Clerck 2006: 19)

Of course, the English progressive is a peculiar type of imperfective, but the idea seems generalizable. Thus, though Russian allows both perfective and imperfective imperatives, the imperfective usually does not have a progressive meaning ('Continue V-ing!'), which is a primary function of imperfective indicative forms (cf. Birjulin and Xrakovskij 2001: 32). Thus, *Pishi pis'mo* in (6a) typically does not imply that the addressee is already in the process of writing a letter ('continue writing'), unlike the imperfective indicative form *Pishet pis'mo* '(S/he) is writing (imperfective) a letter'. The hypothesis of the pragmatic perfectivity bias also allows an interesting perspective on why the formally perfective *-mo* suffix in *Tukang Besi* (11b) is not semantically perfective: on the assumption that even the *Tukang Besi* bare stem imperative is predominantly perfective and that the politeness meaning is a derived meaning, the addition of an exclusively perfective suffix is relatively redundant and thus "free" for a derived meaning (cp. Malchukov 2001: 174 on the politeness use of a perfectivizing suffix in the imperatives of the Tungusic language Even).¹¹

A second explanatory factor may be formal. Imperatives are cross-linguistically relatively simple constructions: they are often limited to sec-

ond persons, they have limited tense options, and they often lack agreement morphology.¹² From that point of view, one would expect imperatives to be aspectually simple too, which would then result in the imperative taking the morphosyntactic trimming of either the perfective or the imperfective, whatever happens to be simpler. English again serves to illustrate this point: the bare stem *sing* is simpler than the periphrastic *be singing*, which makes it unsurprising that the normal imperative is *sing*. Or consider *Tukang Besi*: the bare stem *kede* is simpler than the suffixed *kedemo* form, which might (help) explain why the normal imperative is *kede*. Note that the formal argument does not really force any view on whether the meaning of the simple format imperative is either perfective or imperfective or, instead, aspect neutral. Another point is that the above argument related the degree of formal markedness of either perfective or imperfective to the relatively low degree of formal markedness of the imperative. But this relation is not necessary. It is a well-known observation in the typological literature that formally marked categories are more restricted in their distribution as compared to unmarked ones (Croft 1990: 157). From this point of view the imperative could be a context that the more restricted format might not extend to. Note, finally, that the pragmatic and the formal factors may reinforce one another. Thus the absence of the progressive form in the English imperative can be attributed both to formal markedness and to the perfective bias of the imperatives. However, they could be in conflict as well. Thus in *Qiang* the imperative uses the perfective, even though it is a marked form (which also marks direction).

- (14) *Qiang* (Tibeto-Burman, China, Lapolla 2003: 173)

ə-z-na!

DIR-eat-IMP

'Eat!'

We now come to the third explanatory factor, which concerns the dimension of time. Languages may or may not have their perfective and imperfective verbs line up with default time spheres, and then it is the perfective that goes with the past and the imperfective with the non-past (compare e.g. Comrie 1976: 82–84). If this happens, then the perfective is a less likely candidate for the imperative function, for the latter has a definitional future orientation. This is arguably the case for Egyptian Arabic. Basically, the perfective stem is strongly dedicated to past sphere uses (Eisele 1999: 63–81; Woidich 2006: 270) and the imperfective stem is used for anything

else. The imperfective stem would therefore be the obvious choice for imperatives.¹³

6. Conclusion

In this paper we had a preliminary look at the interaction of mood and aspect, more particularly, at the relevance of the perfective imperfective distinction for positive imperatives. We found there to be at least four types of languages: in some languages the imperatives are obligatorily either perfective or imperfective. Other languages do not have that choice: the imperatives have to be aspect-neutral, or they have to be imperfective, or they have to be perfective. We then speculated about the explanations for these facts. We focussed on three factors: (i) imperatives may be expected to be typically and most often result-oriented, which yields a preference for perfective imperatives, (ii) imperatives are typically coded in a relatively simple format, which may line them up with whatever aspect type happens to be formally simpler, and (iii) imperatives are future oriented, a fact that harmonizes better with the imperfective aspect.

Notes

1. Thanks are due to the University of Antwerp, Princeton University, and the Flemish Science Foundation. They supported the first author during a sabbatical in Princeton, and the University of Antwerp further supported the third author with a predoctoral fellowship. We are also grateful to the Belgian Federal Government (Interuniversity Attraction Poles, Project P6/44). Thanks are also due to Daniel Van Olmen.
2. Overall, Russian aspect is more complex than would appear from example (1). For one thing, certain verbs have a marked imperfective ("secondary imperfectivization"). Second, for some aspectual pairs the formal markedness is the other way round. Nevertheless, the contrast illustrated in (1) is the majority pattern and there is furthermore a correlation with functional markedness (Jakobson 1957; Bondarko 1971; Mel'čuk 1988: 28), as manifested in neutralization contexts.
3. Perhaps the clause-initial prefixes *k-* and *t-*, glossed as temporal in (3), are aspectual as well (compare Lehmann, Shin, and Verhoeven 2000; Bohnemeyer 2002: 216–344), but then again, both aspects are marked. Note also that for intransitive verbs there are two main groups as concerns markedness of aspect:

intransitive verbs of the “inactive class” are morphologically marked in the imperfective by the suffix *-VI* while the perfective is \emptyset . In contrast, intransitive verbs from the “active” class are morphologically marked in the perfective by the suffix *-nah* while the imperfective is \emptyset . Then there is a third class, and here both the perfective and the imperfective are marked (cf. e.g. Bohnemeyer 2002).

4. One might assume that aspect distinctions made in positive sentences carry over to negative sentences, but as we know for declaratives (Miestamo 2005: 180–181; Miestamo and van der Auwera, in print), that would be a mistake.
5. The English imperative does not show number, but here and elsewhere the gloss will make clear whether number is expressed in the source language.
6. This is not to say this ending does not occur anywhere else in Spanish verbal paradigms. Thus the indicative present third person singular may also be marked with an *-a*. This is considered homonymy and the rule of thumb for ruling out homonymy is that for morphological dedication only second persons are to be considered.
7. Interestingly, aspect does seem to matter for prohibitives. The language has negative markers: perfective *ná* and imperfective *sí*, and it is the latter that is used in prohibitives: *ò sí kóy!* (IMP.2PL PROH go) ‘Don’t go!’, (Tondi Songway Kiini Heath 2005: 174). The imperfectivity of the prohibitive is a problem for both analyses. If one takes the positive imperative to have no aspect, one should explain why the prohibitive does have it, and if one takes the positive imperative to be perfective, then one has to explain why its negative counterpart switches aspect.
8. This stem is normally prefixed, except precisely in the imperative, and for this reason one may resist considering the stem itself imperfective (thanks are due to Samia Naïm (Paris) for this point). But even then the imperfective and the imperative will be considered to use the same stem and thus show at least an affinity. Note that the true, prefixed imperative can also convey imperative meaning (Woidich 2006: 276).
9. Note that the imperative is irrealis. Just like in Tondi Songway Kiini, it is interesting to look at the prohibitive. Like in Tondi Songway Kiini, the prohibitive is necessarily imperfective, but whereas the Tondi Songway Kiini the prohibitive is arguably irrealis (Heath 2005: 175), the one in Misanla Totonac is arguably realis (MacKay 1999: 201).
10. This is not say that imperatives may not have distinctions that are unique to them (see van der Auwera, De Vogelaer and Schalley, in print), but this is probably very rare.
11. We do not claim that politeness can only accrue to redundant perfective morphology; Gusev (2005: 76), for one, notes politeness effects for imperfectives.

12. Note the hedge in the phrase “relatively simple” though: in about half of the 419 languages studied by Schalley (in progress), imperatives have overt morphological marking, even for a singular or a number neutral form.
13. Interestingly, in some languages (Schalley in progress lists Georgian, Laz, Monumbo, Yapese, Bambara and, with some reservation, Jola-Fogny and Pampangan), imperatives are morphologically identical with past tense forms. If imperatives are preferentially perfective and if in these languages the past tense historically derives from perfective aspect, this paradoxical fact makes sense. (There is another, pragmatic explanation, however, offered in Schalley (in progress): one presents the wished for state of affairs as already in effect, thus allowing no other option for the hearer than to catch up with reality and do what the speaker wants him/her to do.)

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Animacy and argument hierarchy in conflict: constraints on object-topicalization in Korean

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1. Introduction: the phenomenon¹

A central issue in contemporary language typology is the impact of different hierarchical concepts of syntactic, semantic, and pragmatic properties and the interaction between them:

- (1) a. syntactic functions hierarchy: subject > object
- b. role hierarchy: actor > undergoer
- c. animacy hierarchy: animate > inanimate
- d. topicality hierarchy: topic > non-topic

Optimal constructions result from the harmonic alignment of these hierarchies (cf. Comrie 1981; Dahl and Fraurud 1996; Aissen 1999) which means that a sentence in which the subject is animate, actor and topic and the object is inanimate, undergoer and non-topic is an optimal configuration for a transitive clause (cf. prototypical transitivity in Hopper and Thompson 1980). Conflicts between these hierarchies result in constructions that are less typical: consider a sentence with an inanimate and non-topical subject or a sentence with an animate and topical object. The world's languages may display constraints that ban suboptimal constructions of this type or they may mark them through specific constructions such as voice, ergative marking, differential object marking etc. The kind of constraints (or their hierarchical arrangement in optimality approaches) and the corresponding range of constructions that are banned or receive special marking are highly language specific: hence, it is a task of language description to identify the exact locus of the constraint in the respective object language and the range of constructions that are excluded or more marked.

In this paper, we discuss an empirical phenomenon in Korean illustrating the abovementioned conflict between the hierarchy of syntactic functions, the hierarchy of semantic roles, the topicality hierarchy, and the animacy hierarchy. We use primary data elicited with 4 native speakers.

Korean experiencer object constructions typically occur in SOV order, which is the canonical order in Korean, exemplified in (2). The subject may be either topic-marked or nominative-marked, both suffixes being mutually excluded; the object appears in the accusative.

- (2) *kʰ kunin-ɯn/-i* (kʰ) *haengin-ɯl* *nolla-ke*
 D3 soldier-TOP/-NOM D3 pedestrian-ACC surprised-ADVR
haess-ta.
 do:CMP-DECL
 ‘The soldier surprised the pedestrian.’

It is generally possible to topicalize and front the undergoer constituent (e.g. Sohn 1999: §9.2.8), which results in the OSV order, as exemplified in (3) for 3rd and 1st person subjects.

- (3) *kʰ haengin-ɯn* *kʰ kunin-i* */nae-ka*
 D3 pedestrian-TOP D3 soldier-NOM 1.SG-NOM
nolla-ke *haess-ta.*
 surprised-ADVR do:CMP-DECL
 ‘As for the pedestrian, the soldier/I surprised him.’

However, when the object outranks the subject on the animacy hierarchy the construction of object fronting and topicalization is rejected by some consultants. Example (4a) illustrates a situation where an inanimate subject acts upon an animate 3rd person object, in example (4b) an animate 3rd person subject acts upon a 1st person object, and in (4c), an inanimate 3rd person subject acts upon a 1st person object. The constructions that correspond to (4a-c) without object fronting and topicalization, i.e. constructions parallel to (2) are all perfectly well-formed.

- (4) a. [?]*kʰ haengin-ɯn* *kʰ kwangko-ka* ...
 D3 pedestrian-TOP D3 advertisement-NOM
 (int.) ‘As for the pedestrian, the advertisement ...’
 b. ^{??}*na-nɯn* *kʰ kunin-i* ...
 1.SG-TOP D3 soldier-NOM
 (int.) ‘As for me, the soldier ...’
 c. ^{??}*na-nɯn* *kʰ kwangko-ka* ...
 1.SG-TOP D3 advertisement-NOM
 (int.) ‘As for me, the advertisement ...’

... *nolla-ke* *haess-ta*.
 surprised-ADVR do:CMP-DECL
 ... surprised him/me.'

As indicated in (4a-c), the judgments which our consultants gave, differed as to the degree of acceptability. Prosodic prominence of the second NP and a pause between the first and the second NP sometimes helped to increase acceptability for some consultants. Additionally, judgments were not always identical. Thus, (4c) was rejected more clearly and by more consultants than example (4b), while example (4a) was judged better than the other two. Differences in judgment indicate that the phenomenon that we are dealing with is not a clear-cut matter of grammaticality but merely reflects the preference against certain structures.

Our study shows that Korean syntax is sensitive to the harmonic alignment of participants on the prominence hierarchies introduced above (cf. Lee 2001, 2003, 2006). The data to be examined provide evidence that there are a number of factors which influence the fronting and topicalization of object constituents in Korean. One factor is the relative position of the arguments on the animacy hierarchy (see (3) vs. (4)), which is discussed in section 2. Another factor is the case marking of the fronted argument: the constraint applies to those fronted and topicalized arguments that are unmarked for case and not to case-marked fronted arguments (see section 3). A third factor is the complexity of the verbal construction: complex verbal constructions are more clearly judged as infelicitous than simple ones, when a fronted and topicalized object outranks the subject on the animacy hierarchy. In section 4, it will be discussed in how far putative constructional ambiguities influence the rejection of such constructions.

2. Hierarchies in conflict

2.1. Hierarchies

As indicated in section 1, we assume a number of hierarchies, which will be briefly introduced in the following. A participant bears certain properties independently of its relational properties in a situation. These are features such as [animate], [human], [speech act participant], [abstract], [individuated], etc. The properties of a participant can be viewed as its position on the so-called animacy hierarchy (cf. Comrie 1981, ch. 9) or empathy

hierarchy (cf. Kuno and Kaburaki 1977; Kuno 1987). Distinctions in this hierarchy have been identified as relevant to many grammatical features, among them split ergativity (Silverstein 1976), pronominal systems, inverse systems (e.g., Palmer 1994, ch. 8.2.2.), the assignment of grammatical relations (e.g., Lehmann et al. 2000), etc. In our present investigation, we test effects with respect to two main oppositions on the animacy hierarchy, namely 'speech act participant > non-speech act participant' and 'animate > inanimate'.

Furthermore, a hierarchy of syntactic functions is assumed. Such a hierarchy can be established on the basis of criteria such as the accessibility of the nucleus of a relative clause to a given relation (cf., e.g., Keenan and Comrie 1977; Lehmann 1984, ch. IV.3.1.1), its structural markedness concerning case marking and verb agreement (cf., e.g., Lehmann 1983: §4; Croft 1990, ch. 5.3.2), or its dependency on the valency of verbs. For the aims of our present study, the two-way distinction in the upper part of the hierarchy as outlined in Lehmann et al. (2000: 10), namely 'subject > object', will be considered.

Hierarchies of semantic roles have been proposed in numerous approaches (e.g. Fillmore 1968; Dik 1997; Foley and Van Valin 1984; Van Valin and LaPolla 1997). We will use the macro role concepts actor and undergoer, which are related to the basic notions of control and affectedness (Foley and Van Valin 1984; Grimshaw 1990; Van Valin and LaPolla 1997).² They form the actor > undergoer hierarchy. More specific semantic roles are located on this hierarchy which indicates their probability of being marked as an actor or undergoer in a language.

Finally, the topicality hierarchy orders topic before non-topic following work by Chafe 1976, Givón 1976, Givón (ed.) 1983, 1994 and others. Topics are associated with given prominent information in discourse which canonically precedes new and less prominent information.

There is rich cross-linguistic evidence for a harmonic alignment of the mentioned hierarchies (Aissen 1999; Bresnan et al. 2001; Lee 2001, 2003, 2006 for Korean etc.). A harmonic alignment means that corresponding positions on the scales are naturally associated and less marked while the association of a high-ranking value on one scale with a low-ranking value on another scale may cause a morphologically more marked expression or may even be subject to a constraint in a language.

A harmonic alignment of the animacy hierarchy and the role hierarchy means that items on the upper end of the animacy hierarchy are more natural actors while items on its lower end are more natural undergoers. There

is rich evidence in functional typological literature supporting a harmonic alignment of animacy hierarchy and role hierarchy starting with Silverstein 1976, which shows that more marked configurations on these hierarchies are also morphologically more complex.

In an accusative language such as Korean, in an active clause, the highest-ranking macro-role, i.e., the actor, is linked to the syntactic subject while the lowest-ranking macro-role, i.e., the undergoer is linked to the syntactic object. Since within this work, we will only deal with active constructions, we can merge the semantic role hierarchy and the syntactic function hierarchy to a generalized semanto-syntactic argument hierarchy in the following way: actor/subject > undergoer/object.

As regards the topicality hierarchy, a harmonic alignment of this hierarchy with the animacy hierarchy and the hierarchy of syntactic functions has been discussed by various authors (e.g. Aissen 1999 following influential work by Chafe, Givón and others). Topicality naturally aligns with a high-ranking value on the animacy scale, i.e. highly animate referents are more natural topics. Furthermore, there is an unmarked association of topic with subject, which is also reflected in Korean morpho-syntax. The preferred configuration of a transitive construction in discourse involves a topic-marked actor/subject. Nominative case on the actor/subject is information-structurally marked and has a focus interpretation (cf. e.g. Kim 1990).

In the remainder of the paper, we investigate in how far alignment mismatches on the introduced scales affect the possibilities of object fronting and topicalization, i.e. the occurrence of the construction $[NP_{top} NP_{nom} V_{tr}]$.

2.2. Relative position on animacy hierarchy

The data shown in section 1 gives rise to the following observation: When the undergoer/object outranks the actor/subject on the animacy hierarchy, the construction of object topicalization, i.e. $[NP_{top} NP_{nom} V_{tr}]$, may be judged as infelicitous. When, however, object and subject occupy the same position on the animacy hierarchy or, when the subject outranks the object on the animacy hierarchy, $[NP_{top} NP_{nom} V_{tr}]$ is judged as well-formed. In this section, we are going to investigate the behavior of representative verbs of a number of transitive verb classes with respect to the above generalization in order to explore if it applies to transitive verbs or constructions in general or only to a subset of these.

Another set of examples largely confirming the above observation will be discussed in the following. In contrast to the construction tested in (2) to (4), which is a periphrastic causative construction based on an intransitive experiencer-oriented verb and the transitive auxiliary verb *hata* ‘do’, examples (5)–(7) feature a transitive (activity) verb *piphanhata* ‘criticize’ (composed of *piphan* ‘criticism’ + *hata* ‘do’). In (5a), the actor/subject outranks the undergoer/object on the animacy hierarchy; in (5b), actor/subject and undergoer/object occupy the same position on the animacy hierarchy, and both constellations allow for object topicalization in the initial position of the clause.

- (5) a. *k# kica-n#n nae-ka piphanhaess-ta*
 D3 journalist-TOP 1.SG-NOM criticize:CMF-DECL
 ‘As for the journalist, I criticized him.’
 b. *k# cakka-n#n k# kica-ka piphanhaess-ta*
 D3 author-TOP D3 journalist-NOM criticize:CMF-DECL
 ‘As for the author, the journalist criticized him.’

However, in (6) and (7), the undergoers/objects outrank the actors/subjects on the animacy hierarchy, i.e. in (6) the undergoer/object is a 1st person while the actor/subject is an animate 3rd person; in (7) the undergoer/object is again a 1st person argument while the actor/subject is an inanimate 3rd person. In these constellations, object topicalization in the initial position of the clause is rejected or judged as infelicitous by most of our consultants, similar to (4) above. Similar to the judgments given for (4), more marked associations of animacy hierarchy and argument hierarchy are more clearly rejected, i.e. in sentences with a topicalized 1st person undergoer/object, an animate 3rd person actor/subject is less clearly rejected than an inanimate 3rd person actor/subject.

- (6) *na-n#n k# kica-ka piphanhaess-ta.*
 1.SG-TOP D3 journalist-NOM criticize:CMF-DECL
 (int.) ‘As for me, the journalist criticized me.’
 (7) **na-n#n k# sinmun-i piphanhaess-ta.*
 1.SG-TOP D3 newspaper-NOM criticize:CMF-DECL
 (int.) ‘As for me, the newspaper criticized me.’

Note that we tested both proper nouns and definite common nouns as instances of the animacy class ‘animate 3rd person’. Since they did not show a difference in behavior with respect to our research question, we use instances of both types in the examples. Moreover, the second NP, intended to be the actor in the sentences, is preferentially definite, independent of the relative animacy of the participants. Sentences with bare nominative NPs in second position are generally rejected in an interpretation of object topicalization, even if the putative topicalized undergoer does not outrank the putative actor on the animacy hierarchy (e.g., in (3), (5b)).³

Furthermore, also canonical (basic) transitive verbs such as *ttaelita* ‘hit, beat’, *capta* ‘hold’, *chita* ‘hit’, *kʰlita* ‘paint’, *hʷmtʰlta* ‘shake’, *kkʰlta* ‘pull’, *chata* ‘kick’, *ppopta* ‘choose, select’, *kkocipta* ‘pinch’ etc. may produce infelicity judgments when they occur with topicalization of a more animate object in the construction [NP_{top} NP_{nom} V_{tr}], as shown in (8) for a constellation with a 3rd person subject and a 1st person object. Note that examples (8) are rejected by fewer consultants.

- (8) [?]*na-nʰn* *Suni-ka* *ttaelyæss-ta* /*cap-ass-ta*
 1.SG-TOP Suni-NOMhit:CMF-DECL hold-CMP-DECL
 (int.) ‘As for me, Suni hit/held me.’

These verbs occur naturally with animate actors/subjects so that a participant constellation of an inanimate actor/subject acting on an animate undergoer/object cannot be tested with them.⁴ However, transitive causative verbs derived from intransitive bases such as *cukta* ‘die’ ~ *cukita* ‘kill’, *salta* ‘live’ ~ *salita* ‘make alive, animate, save’ select for animate as well as inanimate causers/subjects. Again, some consultants rejected sentences with a more animate topicalized undergoer/object, as in (9a) and (9b). Again, sentences with a 1st person undergoer/object are more clearly rejected than sentences with a 3rd person undergoer/object when the actor/subject is an inanimate 3rd person (cf. judgments of (4a) and (4c)).

- (9) a. [?]*kʰ ai-nʰn* *kʰ yak-i* *salyæss-ta*.
 D3 Kind-TOP D3 m.-NOM live:CAUS:CMF-DECL
 ‘As for the child, the medicine saved it.’
 b. [?]**na-nʰn* *kʰ yak-i* *salyæss-ta*.
 1.SG-TOP D3 medicine-NOM live:CAUS:CMF-DECL
 ‘As for me, the medicine saved me.’

Finally, we consider the canonical ditransitive verb *cuta* ‘give’ and the possibility of topicalizing and fronting the indirect object. The example in (10) gives evidence that the construction $[NP_{top} NP_{nom} NP_{acc} V_{tr}]$ featuring an indirect object recipient which outranks the subject on the animacy hierarchy is judged as infelicitous by some consultants, too.

- (10) *??na-n#n Suni-ka ppang-#l hana cu-#ss-ta.*
 1.SG-TOP Suni-NOM bread-ACC one give-CMP-DECL
 (int.) ‘As for me, Suni gave me one bread.’

In sum, the constraint of topicalizing and fronting an undergoer/object which outranks the actor/subject on the animacy hierarchy affects a variety of verb classes and verbal constructions. Rejections of the examples presented differed in number and strength. There seems to be a tendency that more marked associations of animacy and argument hierarchy are more clearly rejected across verb classes. This concerns sentences with a 1st person undergoer/object and an inanimate 3rd person actor/subject. In the reminder of the paper, we will further investigate, under which conditions topicalization of a more animate undergoer/object is rejected in Korean.

3. Resolving ambiguity: topic marking vs. case marking

In the preceding section, we saw that for a number of verbs object fronting and topicalization of the form $[NP_{top} NP_{nom} V_{tr}]$ is rejected when the undergoer/object outranks the actor/subject on the animacy hierarchy. The next examples disentangle the effect of case ambiguity: (11a-b) differ from the rejected (4a-b) in that the fronted objects in (11) are marked for case (accusative) (which induces a focus interpretation). Since these examples are completely well-formed, we conclude that the constraint against fronted outranking undergoers/objects applies to case-ambiguous arguments.

- (11) a. *k# haengin-#l k# kwangko-ka ...*
 D3 pedestrian-ACC D3 advertisement-NOM
 b. *na-l#l k# kunin-i ...*
 1.SG-ACC D3 soldier-NOM
 ... *nolla-ke haess-ta.*
 surprised-ADVR do:CMF-DECL
 ‘The advertisement surprised the PEDESTRIAN (a)/ME (b).’

Further evidence for the view that the case ambiguity of the topic constituent causes the rejection of fronting an undergoer/object which outranks the actor/subject on the animacy hierarchy comes from dative-marked NPs. The examples in (12a-c) illustrate a verbal construction with an idiomatic verb – object meaning (*phihaelul cuta* ‘give damage’). It retains the argument structure of ditransitive *cuta* ‘give’ so that the person damaged receives dative case. (12a) illustrates the canonical word order. The dative-marked constituent follows the topic-marked or nominative-marked actor/subject constituent. (12b) shows that a construction featuring fronting and topicalization of the more animate object constituent is rejected by most consultants. However, when the fronted argument bears both a topic marker and a case suffix (which is possible for dative arguments), then there is no restriction on the topicalization of a more animate object.

- (12) a. *k# salam-ɲn/-i na-eke ...*
 D3 (wo)man-TOP/-NOM 1.SG-DAT
 ‘(As for) the person(, s/he) ...’
 b. *?*na-nɲn k# salam-i ...*
 1.SG-TOP D3 (wo)man-NOM
 (int.) ‘As for me, the person ...’
 c. *na-eke-nɲn k# salam-i ...*
 1.SG-DAT-TOP D3 (wo)man-NOM
 ‘As for me, the person ...’
 ... *phihae-lul cu-əss-ta.*
 damage-ACC give-CMP-DECL
 ... damaged me.’

In conclusion, the fronting constraint for objects outranking subjects on the animacy hierarchy applies to arguments which are not marked for case.

4. Evidence from complex constructions

In this section, we will compare the acceptability of undergoer/object topicalization in simple vs. complex verbal constructions (section 4.1). Furthermore, some of the complex constructions display some constructional ambiguity regarding the identification of the semanto-syntactic roles of their lexical NPs. It will be discussed in how far putative constructional ambiguities influence the object topicalization constraint (section 4.2).

4.1. Complex control constructions

In section 2.2, we saw that undergoer/object fronting and topicalization in sentences with canonical transitive verbs such as *ttaelita* ‘hit, beat’ or *capta* ‘hold’ receive mild rejections when the undergoer/object is more prominent on the animacy hierarchy than the actor/subject. In this section, we examine the acceptability of object topicalization when such verbs are subordinated under control verbs such as *siphtha* ‘want’ and *pota* ‘try’.

Example (13) illustrates subordination under the volitive auxiliary *siphtha* ‘want’. Contrary to (8) the sentence in (13) is rather clearly rejected by all consultants. It becomes obvious that a more animate topic-marked initial constituent is not interpreted as the undergoer of *ttaelita* ‘hit, beat’, i.e. (13) is rejected with the translation indicated. (Note that with another interpretation, this sentence is grammatical, see 4.2.)

- (13) [?]**na-nɯn* *Suni-ka* *ttaeli-ko* *siph-əss-ta*.
 1.SG-TOP Suni-NOM hit-CON want-CMP-DECL
 (int.) ‘As for me, Suni wanted to hit me.’

If we again change the relative animacy of the topic and the nominative constituent, i.e. if the topic-marked putative undergoer/object is outranked in animacy by the following nominative-marked constituent, then the construction is fully accepted with the interpretation of object topicalization.

- (14) *Suni-nɯn* *nae-ka* *ttaeli-ko* *siph-əss-ta*.
 Suni-TOP 1.SG-NOM hit-CON want-CMP-DECL
 ‘As for Suni, I wanted to hit her.’

Subordination under *pota* ‘try’ produces results identical to those of sentences with *siphtha* ‘want’, as regards the constellations tested before: (15a-b) are parallel cases to (13) and (14).

- (15) a. [?]**na-nɯn* *Suni-ka* *ttaelyø* *po-ass-ta*.
 1.SG-TOP Suni-NOM hit:CON try-CMP-DECL
 (int.) ‘As for me, Suni tried to hit me.’
 b. *Suni-nɯn* *nae-ka* *ttaelyø* *po-ass-ta*.
 Suni-TOP 1.SG-NOM hit:CON try-CMP-DECL
 ‘As for Suni, I tried to hit her.’

Thus, we conclude that the fronting and topicalization constraint is clearer in complex control constructions than in corresponding simple constructions featuring the otherwise subordinate verb as main verb.

4.2. Constructional ambiguity

For some of the complex constructions exemplified above, there is an alternative analysis under which the nominative case of the second constituent is licensed. Example (13) is well-formed if the initial topic-marked constituent is interpreted as actor/subject and the second nominative-marked constituent as undergoer/object with respect to the subordinate verb *ttaeli*- ‘hit’, as indicated in (16). The volitive auxiliary *siph**ta* ‘want’ may assign nominative case to the undergoer/object NP of the subordinate verb (cf. Yoo 2003). Thus, with the mentioned interpretation, (16) follows a harmonic alignment of animacy hierarchy, semanto-syntactic argument hierarchy, and topicality hierarchy and hence is completely acceptable.

- (16) *na-n#n Suni-ka ttaeli-ko siph-ess-ta.*
 1.SG-TOP Suni-NOM hit:CON want-CMP-DECL
 ‘As for me, I wanted to hit Suni.’

Furthermore, peripheral causative constructions such as (4b) may receive an alternative analysis justifying the nominative case of the second constituent. Under the bracketing in (17), the sentence in (4b) is marginally acceptable with the interpretation that the initial topic-marked constituent takes actor/subject function.

- (17) ^(?)*na-n#n [k#n kunin-i nolla-ke] haess-ta.*
 1.SG-TOP D3 soldier-NOM surprised-ADVR do:CMP-DECL
 ‘As for me, I surprised the soldier.’

Now we may hypothesize that the fact that the sentences in (13)/(16) and (4b)/(17) may receive competing interpretations may cause the rejection of fronting and topicalizing a more animate undergoer/object. However, this hypothesis is not borne out if we investigate alternative construction possibilities for (15) which features subordination under the control verb *pota* ‘try’. Example (15) does not possess a construction alternative with a nominative-marked undergoer/object. The auxiliary *pota* ‘try’ be-

longs to a group of auxiliary verbs which do not assign nominative case to the undergoer/object of the subordinate verb. Rather case marking of the undergoer/object is determined by the subordinate verb itself (cf. Yoo 2003). Furthermore, an alternative interpretation of peripheral causative constructions as indicated in (17) is semantically acceptable only if the nominative-marked constituent is a possible argument of the intransitive subordinate verb. This does not hold true for sentences such as (4a) and (4c) above. (E.g., the putative alternative interpretation of (4) ‘As for the pedestrian, he surprised the advertisement.’ does not make sense.) Thus, alternative interpretations in the way indicated in (17) are not available for all instances of peripheral causative constructions.

Hence we conclude that factual constructional ambiguity is not a reason to reject one of the possible interpretations, i.e. the one which is not conform with a harmonic alignment of animacy hierarchy and argument hierarchy. Rather, it can be argued that the pattern $[NP_{top} NP_{nom} V AUX_{tr}]$ constitutes a possible construction in Korean with the interpretation that the second nominative-marked constituent is the undergoer/object of V. Given this potential interpretation and, thus, a possible ambiguity as to the role interpretation of a nominative argument in complex constructions, harmonic alignment of animacy hierarchy and argument hierarchy is favored.

The harmonic alignment hypothesis is corroborated by the preferential interpretations of sentences with factual constructional ambiguity, i.e. sentences with subordination under the auxiliary *siphtha* ‘want’. Example (18) (repeated from (14) above) is perfectly acceptable with the interpretation resulting from a harmonic alignment of animacy hierarchy and argument hierarchy (i.e. 1st person actor/3rd person undergoer), but is rejected by some consultants with the reading resulting from a non-harmonic alignment of animacy hierarchy and argument hierarchy (i.e. 3rd person actor/1st person undergoer), as indicated in the translations of (18).

- (18) *Suni-nŋm nae-ka ttaeli-ko siph-ess-ta.*
 Suni-TOP 1.SG-NOM hit-CON want-CMP-DECL
 ‘As for Suni, I wanted to hit her.’
 ?? ‘As for Suni, she wanted to hit me.’

Examples (13) and (16) above feature the reverse participant constellation with respect to animacy and topic/case marking in comparison to (18). The reading resulting from a harmonic alignment of animacy hierarchy and argument hierarchy in (16), ‘as for me, I wanted to hit Suni’ is accepted,

while the reading ‘as for me, Suni wanted to hit me’ resulting from a non-harmonic alignment of these hierarchies is rejected, see (13).

Finally, if we also take the topicality hierarchy into consideration, we notice that the rejected interpretation in (18) is still harmonic in featuring an actor-topic, while the rejected interpretation in (13) violates a harmonic alignment of topicality hierarchy and argument hierarchy. Note that this is in line with the strength of rejection, as indicated in the examples.

5. Summary

The data presented in this paper supports earlier analyses (cf. Lee 2001, 2003, 2006) claiming that Korean syntax is sensitive to a harmonic alignment of participants on diverse prominence hierarchies, i.e. the animacy hierarchy, the semanto-syntactic argument hierarchy, and the topicality hierarchy. In this paper, we investigated a particular mismatch of argument hierarchy and topicality hierarchy, i.e. constructions of fronting and topicalization of undergoers/objects, and its consequences for alignment constraints concerning the animacy and argument hierarchies. In particular, we discussed animacy constraints in the construction $[\text{NP}_{\text{top}} \text{NP}_{\text{nom}} \text{V}_{\text{tr}}]$.

Our results show that a harmonic alignment of animacy and argument hierarchy yields well formed constructions of the mentioned type, even if the undergoer/object role is underspecified due to the lack of case marking. However, sentences with a non-harmonic alignment of animacy and argument hierarchy are rejected to different degrees if the case roles are not fully explicit. This holds true for a wide range of transitive verbs and also in complex verbal constructions of the type $[\text{NP}_{\text{top}} \text{NP}_{\text{nom}} \text{V} \text{AUX}_{\text{tr}}]$.

Additionally, the evidence presented in sections 1 and 2 suggests the conclusion that more marked associations of animacy hierarchy and argument hierarchy, i.e. participant constellations of 1st person undergoers and inanimate 3rd person actors produce stronger rejections than less marked associations of values on these hierarchies. However, this observation needs to be tested more systematically in a follow up study.

Furthermore, object fronting and topicalization were analyzed in more detail in complex verbal constructions since some of these constructions are structurally ambiguous, providing for an alternative analysis that identifies the second nominative-marked constituent as undergoer/object of the subordinate verb. It could be shown that interpretation preferences of am-

biguous constructions are also sensitive to a harmonic alignment of animacy hierarchy and argument hierarchy.

Finally it has to be highlighted that, given the gradient nature of the acceptability judgments and thus the phenomenon investigated, a follow up study should systematically test a variety of associations of the prominence scales and consider judgments of a sufficiently large number of speakers. On the basis of such an experimental study, constraints of alignment mismatch can be identified more exactly.

Notes

1. Work on this paper was financially supported by the University of Bremen (project 10/853/05) for Elisabeth Verhoeven.
2. In the proto-role approach (Dowty 1991), these largely correspond to proto-agent and proto-patient, which are characterized by a number of prototypical properties (e.g., control, sentience, cause etc. for the proto-agent and affectedness, change of state, etc. for proto-patient).
3. For the construction type investigated, relative definiteness (specificity) may play a role with two third person common noun arguments. Within our current investigation this factor was not systematically tested, but will be in a follow up study.
4. Marginally, some of these verbs may take an inanimate subject, as e.g. *mang-chi* 'hammer' may be combined with *chita* 'hit', or *cha* 'car' may occur as the subject of *kkulta* 'pull'. However, in such cases, the object is generally inanimate, too, so that this constellation does not concern our research question.

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A.3 Limits of the Exponent of Functions: Zero

Zero and nothing in Jarawara

R. M. W. Dixon

1. Introduction – zero and nothing in Pāṇini

The analytic device called “zero” in modern linguistics has its origin in Pāṇini’s analysis of Sanskrit. He uses the term *lopa* to describe a blank in a grammatical pattern. “This blank or *lopa* is in several places treated as having a real existence and rules are made applicable to it, in the same way as any ordinary substitute that has an apparent form” (Vasu 1891, 1: 56). Bloomfield (1933: 209) applies this idea to English and suggests that, in sheep, “the plural-suffix is replaced by zero – that is, by nothing at all.”

The idea of “zero” (written as \emptyset) is nowadays used in a variety of different – and sometimes confusing – manners. I suggest (pace Bloomfield) that a distinction should be made between:

- (a) zero, referring to an empty (and blank) slot in grammar (this to be shown by “ \emptyset ”); and
- (b) nothing, the absence of anything (this to be shown by a space, or by “{nothing}”).

Note that an empty slot is something. It is relevant to quote in full the relevant Sūtras from Pāṇini’s *Aṣṭādhyāyī* (Vasu 1891, 1: 55–56):

- 1.1.60 The substitution of a blank (*lopa*) signifies disappearance.
- 1.1.61 The disappearance of an affix when it is caused by the words *luk*, *ślu* or *lup* are designated by those terms respectively.
- 1.1.62 When elision of an affix has taken place (*lopa*), the affix still exerts its influence, and the operations dependant upon it take place as if it were present.
- 1.1.63 Of the base (*anga*) whose affix has been elided by use of any of the three words containing *lu* [that is, *luk*, *ślu*, *lup*], the operations dependent on it do not take place, regarding such base.

I understand this to mean that *lopa* indicates a zero allomorph of a suffix, an empty slot (or blank) where the suffix would be expected to be. Sūtra 62 states that this blank functions in many ways as a non-zero suffix in its

position, and sūtra 63 states that elisions called *luk*, *ślu* or *lup* do not have this property. In confirmation, Monier-Williams' (1899: 904) dictionary of Sanskrit includes within its entry for *lopa*: "when *lopa* of an affix takes place, a blank is substituted, which exerts the same influence on the base as the affix itself, but when either *luk* or *ślu* or *lup* of an affix is enjoined, then the affix is not only dropped, but it is also inoperative on the base."¹

In terms of the distinction suggested here, Pāṇini's *lopa* represents what I would call (a) zero, whereas *luk*, *ślu* and *lup* correspond to (b) nothing. In section 6, a morphological distinction between zero and nothing will be illustrated for Jarawara, from the small Arawá family of southern Amazonia. But first it will be useful to survey some of the varying uses of zero and of nothing.

2. Phonological change

English *knee* was originally pronounced with initial /kn/, later simplified to just /n/. This kind of change is sometimes written as $k > \emptyset$; that is, *k* being replaced by zero. In terms of the parameters adopted here, this is not an appropriate use of the term zero. There is no justification for saying that the modern form /ni:/ involves an underlying consonant cluster, with its initial slot being left empty. The change should be described as $k >$, or $k > \{\text{nothing}\}$.

3. Syntactic constructions

Zero may legitimately be used to represent an empty slot in a syntactic construction (which is a syntagmatic chain). A clear example is *John came in and \emptyset sat down*, where the subject slot of the second clause is left empty. In terms of the syntactic conventions of English, the subject of the second clause – realized by zero – is taken to be identical with the subject of the first.

Other circumstances in which zero may be employed as a syntactic tool in English include sentences such as *John ate an apple and Mary \emptyset an orange, I like sour milk better than fresh \emptyset* , and *You were running faster than I was \emptyset* (Bloomfield 1933: 252). The zeros here should be reconstituted as *eat*, *milk* and *running* respectively. One way of describing these examples is to say that an underlying element is replaced by zero through a rule of ellipsis (there is a multitudinous literature on this).

4. Morphological structures

Generally, every word should include a root, which typically may be flanked by a number of prefixes and/or suffixes. There can be special circumstances under which a root slot is left empty; one could say that here the root has a zero alternant. It is highly unusual for a root to have zero form in every circumstance. Roberts (1997) does report such a situation in Amele (Gum family, Papua New Guinea). In this language a verb takes pronominal suffixes referring to (in this order): direct object, indirect object, oblique object and subject. ‘Give’ is realized simply by a complex of bound pronouns in regular form, but with indirect object preceding direct object (the indirect object pronoun could be regarded as a surrogate root to which the other bound forms are attached).

My Jarawara corpus includes about 700 verb roots. One of these makes up no less than 17% of the textual occurrences of verbs. This is *-ka-* ‘be in motion’; it shows a number of irregularities. There is a verbal suffix *-ke ~ -ki* ‘coming’. As might be expected, it occurs most frequently with the verb *-ka-* ‘be in motion’, the combination being equivalent to the English verb *come*. When there is no prefix (which is when the subject is 3rd person singular), we get the straightforward root-suffix combination *ka-ke*, as in:

- (1) *bati ka-ke*
 father be.in.motion-COMING
 ‘Father is coming.’

However, if there is a pronominal prefix (for instance, *o-* for 1st person singular subject), the root slot is left blank (Dixon 2004: 148):

- (2) *o-Ø-ke*
 1SG:SBJ-be.in.motion-COMING
 ‘I am coming.’

Since *-ka-* is the only root which may have zero realization, one infers that the empty root slot in (2) is realization of ‘be in motion’. There are two ways of describing this:

- (a) Saying that ‘be in motion’ has zero realization when preceded by a prefix and followed by the ‘coming’ suffix.
- (b) Saying that the underlying structure of (2) is *o-ka-ke*, and the *-ka-* drops from this sequence (the root slot then becoming a blank).

We can note that the ‘coming’ suffix has form *-ke* when preceded in its phonological word by one or three syllables and *-ki* when preceded by two or four syllables; it can conveniently be represented as *-kI*, where *I* is a morphophoneme realized as *i* or *e*. Under analysis (b), the underlying form of (2) would be *o-ka-kI*; if the *-ka-* did not drop, it would be realized as *o-ka-ki*. We would have to specify that the rule omitting *-ka-* applies before the rule specifying realization of the morphophoneme. However, under analysis (a) there are no concerns of this sort, suggesting that (a) is to be preferred.

Sections 3–4 have discussed zero elements in syntagmatic strings – in a syntactic construction in section 3 and in a morphological structure in section 4. We can now look at the most pervasive use of zero, which is as realization of a term (or as one of the alternative realizations of a term) in a paradigmatic system.

5. Grammatical systems

A grammar includes a number of closed systems, each consisting of a limited number of terms. The function and meaning of each term is defined with respect to the functions and meanings of the other terms in its system. For example, in a typical three-term number system, something which is neither “singular” nor “plural” is recognized to be “dual”.

One term in a system may have zero realization in all environments; this produces an empty slot (a “blank”) in the place where the system is realized. The blank has contrastive value, just as do the other terms in the system, which have non-zero realization. Consider the regular inflection for number of an English noun, such as *dog*:

- | | | | |
|-----|----------|--------------|-------------------------------|
| (3) | SINGULAR | <i>dog-Ø</i> | referring to just one dog |
| | PLURAL | <i>dog-s</i> | referring to two or more dogs |

Singular, marked by zero (a blank in the slot available for number suffix in the template of noun structure in English), has the specific meaning of referring to a single individual, in contrast to plural, which has the specific meaning of referring to more than one individual. Consider:

- | | | |
|-----|----|--------------------------------------|
| (4) | a. | <i>The dog-Ø stands in the yard.</i> |
| | b. | <i>The dog-s stand in the yard.</i> |

The noun *dog-Ø*, as subject, selects the 3rd person singular present/generic ending, orthographic *-s*, on the verb, whereas noun *dog-s* selects the non-3rd-singular ending *-Ø*.

There are two ways in which zero plays a role within grammatical systems. Zero may be the sole realization of a term, as for singular on nouns in English. Or zero may be one of a number of alternative realizations (an allomorph) of a term. Plural is shown by orthographic *-s* on most count nouns in English, but by zero on a few, including *sheep* (also *deer*, *fish* and a few others). Corresponding to (4a-b), we get:

- (5) a. *The sheep-Ø stands in the yard.*
 b. *The sheep-Ø stand in the yard.*

Number agreement with the 3rd singular ending *-s* on the verb in (5a) shows that the *Ø* on *sheep* in (5a) is the invariant realization of singular number, while agreement with the non-3rd-singular ending *-Ø* on the verb in (5b) shows that the *Ø* on *sheep* in this sentence is the zero allomorph of plural. For another example, consider inflections on an English verb.

- (6)
- | | | | |
|--|---|---|--|
| <div style="display: inline-block; vertical-align: middle;"> <div style="display: inline-block; vertical-align: middle;">present/generic</div> <div style="display: inline-block; vertical-align: middle;">past</div> </div> | [| <div style="display: inline-block; vertical-align: middle;"> <div style="display: inline-block; vertical-align: middle;">3rd singular subject <i>-s</i></div> <div style="display: inline-block; vertical-align: middle;">non-3rd-singular subject <i>-Ø</i></div> </div> | <div style="display: inline-block; vertical-align: middle;"> <div style="display: inline-block; vertical-align: middle;">regular <i>-ed</i>, some verbs use internal change (e.g., <i>take/took</i>), some have zero (e.g., <i>cut</i>)</div> </div> |
|--|---|---|--|

With a regularly inflecting verb, such as *slice*, we get:

- (7) ENDING ON VERB
- a. generic, 3.SG subject, *-s*
John slice-s the bread each morning.
- b. generic, non-3.SG subject, *-Ø*
I slice-Ø the bread each morning.
- c. past, *-ed*
John slice-d the bread yesterday.
- d. past, *-ed*
I slice-d the bread yesterday.

The sentences corresponding to (7a-d) for a verb, such as *cut*, which has zero allomorph for past tense are:

(8) ENDING ON VERB

- a. generic, 3rd sg subject, -s
John cut-s the bread each morning.
- b. generic, non-3rd-sg subject, -Ø
I cut-Ø the bread each morning.
- c. past, -Ø
John cut-Ø the bread yesterday.
- d. past, -Ø
I cut-Ø the bread yesterday.

In (8b), the Ø on *cut* is the invariant realization of the present/generic term in the tense system. In (8c-d), the Ø on *cut* is the allomorph, for this verb, of the past term in this system. Quoted outside of an instance of use, *cut-Ø* is ambiguous between present/generic and past values. But, within a sentence, the identity of the zero is likely to be clarified by the other items present. In (8d), time adverb *yesterday* indicates that the Ø here is an allomorph of past, while in (8b) the time adverb *each morning* shows that the Ø on *cut* is the present/generic term. We have seen that there are two uses of zero within a grammatical system:

- (a) The sole realization of a term – for example, singular in the number system for nouns in English, and present/generic with a non-3rd-singular subject in the tense system for verbs.
- (b) One of the alternative realizations of one (or more) terms in a system – for example, plural in the number system and past in the tense system.

It would not be possible for there to be two terms in a system both having entirely zero realization, type (a). However, there could be two terms of type (b), each having a zero allomorph (in different, or in overlapping, circumstances). And, as illustrated for *sheep* and *cut*, a system can have one term of type (a) and one (or more) of type (b). This leads to potential ambiguity, which is likely to be resolved from the discourse context.

5.1. Markedness

It is often said that zero is linked to markedness. For example: “within a grammatical correlation a zero affix cannot be steadily assigned to the marked category and a ‘nonzero’ (real) affix to the unmarked category”

(Jakobson 1990: 157). In point of fact, one needs to distinguish two kinds of markedness within grammar:

- (a) Formal markedness. A term with invariant zero form is the formally unmarked member of its system.
- (b) Functional markedness. This relates to context of use. The marked term(s) are only used with specific meanings, in restricted contexts, whereas the unmarked term may be used with a general meaning in general contexts.

Formal and functional markedness do not necessarily coincide. Consider the inflectional system on verbs in Dyirbal, illustrated for *bani-* ‘come’:

(9)	positive imperative	<i>bani-Ø</i>
	negative imperative	<i>bani-m</i>
	present/past	<i>bani-nyu</i>
	future	<i>bani-ny</i>
	purposive	<i>bani-gu</i>

Positive imperative is realized by zero and is the formally unmarked term in the system. But the present/future, *baninyu*, is the functionally unmarked form. Whenever a speaker wishes to refer to a verb (without recourse to whether it is imperative, purposive, past, present or future) they will use *baninyu* as citation form.²

5.2. Obligatory system, including zero, versus optional system

There can be, say, three possible forms for a word – with suffix X, or with suffix Y, or with no suffix. There are then two possible analyses:

- (a) An obligatory three-term system, with two of the terms having suffixal realization and the third term being realized by zero.
- (b) An optional two term system, with the terms realized by suffixes X and Y. When a word is used with no suffix at all, this indicates that the system has not been applied.

In contrast to the “zero” analysis, (a), we could call (b) a kind of “nothing” analysis. Which analysis should be preferred depends on whether or not the root with no suffix has a specific meaning, a value contrastive to (and complementary with) those of the words with suffix X and with suffix Y,

or whether it simply bears a general meaning, independent of those relating to X and Y.

Many languages have a grammatical system which must or can specify the type of evidence on which a statement is based. As with other systems, one term can have zero realization. There is a three-term evidentiality system in Bora (Bora-Witoto family, Colombia; see Aikhenvald 2004: 44).

(10)	TYPE OF EVIDENCE	REALIZATION
	visual	zero
	inferential	clitic <i>ʔha</i>
	reported	clitic <i>βa</i>

Here zero has a specific meaning, visual evidence, complementary to the inferential and reported meanings of the other two terms in the system, each realized by a non-zero clitic. Analysis (a) is plainly appropriate for the obligatory system of evidentiality in Bora (one term of the system having zero realization).

This can be contrasted with evidentiality specification in Retuarã (Tucanoan family, Colombia; data from Aikhenvald 2004: 49). There are three non-zero markers onto verbs:

(11)	TYPE OF EVIDENCE	REALIZATION
	auditory	suffix <i>-ko</i>
	reported	suffix <i>-re</i>
	assumed	suffix <i>-rihi</i>

But, in addition, a verb may bear none of these three suffixes. Is this a zero, a fourth term in the system? It is not, the reason being that a verb with none of these suffixes does not carry a specific meaning. It simply indicates that no specification of evidentiality is being made (a “nothing”). A verb with no suffix can be used if in fact the evidence was auditory or reported or assumed, but the speaker does not choose to specify this; and it must be employed when the evidence was of some other type (for instance, visual). It will be seen that analysis (b) is appropriate for Retuarã; there is an optional evidentiality system, all of whose terms have non-zero realization. The system need not be applied; then we get nothing in the way of information about type of evidence.

The number system on nouns in English is of type (a), the term with zero realization having a specific value (singular) in contrast to that of the

formally marked term (plural). This is an inflectional system, obligatory on each count noun, see (3). Now compare the system in (3) with ways of marking number on nouns in Dyirbal, for example, on *guda* ‘dog’:

- (12) a. *guda* any number of dogs (one, two or more)
 b. *guda-jarran* two dogs, a pair of dogs
 c. *guda-guda* many dogs (generally, three or more)

This is not a grammatical system of number marking, similar to that in English. In (12c), reduplication indicates plurality; since there is a specific marker for dual, illustrated in (12b), reduplication is generally (but not exclusively) used for a group of more than two individuals. Dyirbal has a set of stem-forming affixes to a noun; they include *-jarran* ‘two, a pair of’ – in (12b) – and also *-gabun* ‘another’, *-mumbay* ‘all (and only)’ and *-bajun* ‘really, very’ (Dixon 1972: 221–232, 243–243). The point to note is that the plain noun with neither suffix nor reduplication, in (12a), indicates nothing about number. It could not be considered a term in a number system in the way that zero (indicating singular) can be for English. (To specify singular reference in Dyirbal, one must simply modify the noun with number adjective *yungul* ‘one’; that is, *guda yungul* ‘one dog’.)

Mithun (1986) provides a fascinating account of differing systems of bound pronouns. In some languages, an argument is obligatorily realized by a bound pronoun, optionally augmented by a noun phrase; if one term in the paradigm of bound pronouns – say 3rd person singular – has zero realization, then the absence of an overt realization in the bound pronominal slot implies 3rd person singular. In other languages, an argument may be realized either by a bound pronoun or by a noun phrase. There may be no bound pronoun for 3rd person singular, so that a noun phrase has to be included to indicate this argument. Here the absence of an overt realization in the bound pronominal slot carries no implication of 3rd person singular reference (that is, there is no term in the system with zero realization).

6. Zero and nothing in Jarawara

Pāṇini’s discussion, summarized in section 1, is also appropriate for Jarawara. The masculine form of the “continuous” suffix can be assigned zero form (Pāṇini’s *lopa*); in contrast, the masculine form of polar inter-

rogative corresponds to one of Pāṇini's *lu* elisions, being nothing. First we need to supply a little grammatical background.

6.1. Some basic grammatical information

Jarawara has two genders: f(eminine), the functionally unmarked choice, and m(asculine). These are not shown on a noun itself but by agreement of modifiers within a noun phrase, and on the verb. Verbal agreement is with the pivot (grammatical topic) of the clause. This is in A function in one kind of transitive clause (an A-construction) and in O function in another kind (an O-construction). All the examples below involve intransitive clauses, where the pivot is in S function, or copula clauses where the pivot is in CS (copula subject) function.

Most verbal suffixes have distinct feminine/masculine forms, e.g., declarative *-ke/-ka*. For example, with nouns *mati* 'mother' and *bati* 'father' and intransitive verb *tafa* 'eat':

- (13) a. *mati_S tafa-ke* 'Mother eats.'
 b. *bati_S tafa-ka* 'Father eats.'

A verb whose root ends in *a* (and a number of suffixes, including negator *-ra*) maintain a constant form when non-final, as in (13a-b). However, when word-final, they do agree with the pivot in gender – *a* is maintained for feminine and raised to *e* for masculine agreement. Thus:

- (14) a. *mati_S tafa* 'Mother eats.'
 b. *bati_S tafe* 'Father eats.'

6.2. Zero realization of masculine form of "continuous" suffix

The "continuous" suffix appears to have form *-ⁱne* (where the *i* replaces a preceding *a*) for feminine and zero (\emptyset) for masculine (Dixon 2004: 187). Thus, when followed by declarative, we get (15a-b); when there is no following declarative suffix, we get (15c-d).

- (15) a. *mati_S tafi-ne-ke* 'Mother is eating.'
 b. *bati_S tafa-ka* 'Father is eating.'

- c. *mati_s tafi-ne* 'Mother is eating.'
 d. *bati_s tafa* 'Father is eating.'

These forms can be explained by the following analysis:

- (16) a. *tafa-ⁱne*
 eat-CONT.F
 b. *tafa-Ø*
 eat-CONT.M

In 'eat-CONT.M', the root-final vowel *a* is not word-final; it is followed by the zero allomorph of the continuous suffix for masculine gender. It is because of this zero element that the root-final *a* of *tafa* is not word-final and is thus not raised to *e* in order to show masculine agreement, as in (14b).

6.3. Masculine polar interrogative is not zero, but nothing

The situation is rather different for the polar interrogative mood suffix (Dixon 2004: 410–411). This has feminine form *-ⁱni*, as in the copula clause (including negative suffix *-ra*):

- (17) *ratena_{CS} ama-ri-ni?*
 flashlight.F be-NEG-POL.INT.F
 'Isn't it a flashlight?'

Here negative suffix *-ra-* plus feminine polar interrogative *-ⁱni-* gives *-ri-ni*. The corresponding question with masculine agreement is:

- (18) *afiao_{CS} ama-re?*
 plane.M be-NEG.M
 'Isn't it a plane?'

We could suggest that the masculine form of the polar interrogative is zero. But if this were the case we would get:

- (19) *ama-ra-Ø*
 be-NEG-POL.INT.M

And the zero would stop the raising of the *a* of negator *-ra* to *e* to mark masculine gender agreement. But we do get this raising. The only thing to conclude is that the masculine form of the polar interrogative is not zero, but nothing. The *a* of negative suffix *-ra* does count as word-final, since nothing follows it, and is raised to *e* to mark masculine agreement. In the morphology of Jarawara – as in Sanskrit (and probably many other languages) – there appears to be a distinction between zero and nothing.³

Notes

1. Note that Pāṇini did not employ the word for “zero” in Sanskrit (see Allen 1955: 113). According to the *Oxford English Dictionary* the earliest use of “zero” as a grammatical term in English is in Vasu’s 1891 translation of the *Aṣṭādhyāyī*. It occurs in the sentence immediately preceding that quoted in the first paragraph above: “In Sanskrit Grammar, this ‘lopa’ is considered as a substitute or ādesa and as such this grammatical *zero* has all the rights and liabilities of the thing which it replaces.” Vasu’s introduction of the term “zero” was unfortunate; “gap” or “blank” might have been preferable. However, the usage is now too deeply ingrained to be overturned. For further useful discussion of Pāṇini’s *lopa*, etc., see Subrahmanyam (1999: 45–46, 148, 176–177).
2. The account given here applies to the southern dialects of Dyirbal. Northern dialects have the same forms of inflections, but differ in how they assign time reference to them:

INFLECTION	SOUTHERN DIALECTS	NORTHERN DIALECTS
-nyu	present/past	past
-ny	future	present/future

Interestingly, the citation form is present/past, *baninyu*, for southern dialects but present/future, *baniny*, for northern dialects. That is, the inflection whose reference includes present time is always the functionally unmarked term in the system.

3. Contini-Morava (2006) presents a very similar analysis of noun class prefixes in Swahili, in terms of zero and nothing.

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Clause linkage in a language without coordination: the adjoined clause in Iatmul

Gerd Jendraschek

This paper describes the adjoined clause in the Papuan language Iatmul. After some general remarks on the language in section 1, the adjoined clause will be introduced in section 2. One prominent feature of the adjoined clause in Iatmul is switch-reference syntax, which means that it indicates whether the superordinate clause has the same or a different subject referent as the adjoined clause. There are no means of coordinating clauses, so that clause linkage is always morphosyntactically asymmetrical (section 3). The semantics of the linkage can be left to inference, so that the adjoined clause can be either semantically restrictive or non-restrictive; in the latter case, it can give rise to clause-chains. I will argue in favour of recognizing the “adjoined clause” as a characteristic of Iatmul syntax, as it is more appropriate than the alternative term “medial clause” (section 4). The linkage can occur at a subclausal level, thereby yielding verb forms functionally equivalent to simple adverbs and complex predicates (section 5). Finally, the superordinate and the adjoined clause may or may not have the same illocutionary force, as will be shown in section 6. A distinction between subordination and cosubordination is therefore unfounded.

1. The Iatmul language: some general information

Iatmul is a Papuan language of the Ndu family, spoken in the East Sepik Province of Papua New Guinea. The speakers live in approximately 30 villages along and close to the Sepik River, although half of the community has migrated to towns, e.g., Wewak and Madang. Overall, there are over 40.000 speakers, although children, especially in the towns, grow up speaking the national creole Tok Pisin most of the time.

The morphosyntax of Iatmul is half-way between agglutination and fusion, with some elements of polysynthesis, and the language is predominantly suffixing. Basic constituent order is AOV/SV, both transitive and intransitive subjects appear in the unmarked nominative and are cross-referenced on the verb.

2. The adjoined clause: introduction

Iatmul links clauses by suffixal morphology on the verb. Relative clauses and adverbial (conditional, causal, purposive) clauses will not be considered in this paper. The language has no established class of conjunctions, and no means of coordinating independent clauses.¹ To compensate for this, it has a type of “generic” dependent clause that has no direct equivalent in European languages. I will call this clause type “adjoined clause”, to distinguish it from the semantically more specific adverbial clauses.

The term “adjoined clause” was used in Hale (1976) to refer to a type of multifunctional subordinate clause common in Australian languages. Because of its versatility, the adjoined clause can express various interpositional relations, including temporal, conditional, causal, purposive, and contrast. The “correct” interpretation then depends on contextual clues, although it seems more appropriate to say that the interpositional relation is not semantically specified in the way it is in English, where the different types of adverbial clauses are structurally distinguished. I do not wish to imply that what I call “adjoined clause” in Iatmul is directly comparable to the type of clause Hale described for Australian languages. I will use the term rather in the sense of Lehmann (2004):

a subordinate clause that modifies its main clause as a whole without being a constituent of it is an adjoined clause ... Adjunction is the weakest and loosest form of subordination. The subordinate clause is almost of the same rank as the main clause, the only difference being that the main clause, but not the subordinate clause by itself can represent the whole structurally. Apart from this small bias, the construction is almost coordinative.

Morphologically, the adjoined clauses in Iatmul do split up in two types, those with person-marking on the predicate and those without. The latter, non-finite, verb forms are typologically common and have been called “converb”, “medial verb”, “dependent verb”, or “participle”, depending on the descriptive tradition and theoretical persuasion of the author. I will avoid all these terms, and simply use “non-finite verb form”, as it does not highlight any particular use of these versatile forms.

Semantically, the adjoined clause can be non-restrictive or restrictive. The non-restrictive adjoined clause expresses a sequence or addition of events and is often found in clause chains, whereas the restrictive adjoined clause can express reason, cause, manner, etc. As this is a semantic and not a structural division, a given linkage can often be interpreted in more than one way.

3. Switch reference: different vs. same subject in adjoined clauses

Although switch-reference is not marked morphologically, it is a characteristic of Iatmul syntax. When the adjoined clause and the superordinate clause share their subject referent, a non-finite verb form *must* be used in the adjoined clause; only the verb of the superordinate clause is marked for person and number, see (1a). Person-marking in both clauses implies that their subject referents are different, as in (1b).

- (1) a. *ki'ki'da kuk-ka yaki ki'-li'-li']*²
 [food do-DEP] [tobacco eat-PROG-3.SG.F]
 'She was preparing food and smoking.'
 'She was smoking while preparing food.'
- b. *ki'ki'da kut-ti'-li' yaki ki'-li'-li'*
 [food do-PROG-3.SG.F] [tobacco eat-PROG-3.SG.F]
 'While she_i was preparing food, she_{*i/j} was smoking.'

In (1a), the suffix *-ka* indicates the dependency of the first clause morphologically. The form *kukka* is marked for neither tense nor person. In (1b), the verbs in the two clauses seem to be of comparable morphological complexity, as both consist of a root, an aspect marker, and a pronominal marker.³ However, only the verb in the superordinate clause can be tense-marked. As past tense is zero-marked, none of the verbs in (1b) has tense-marking; in other words, there is no morphological difference between the tenseless form in the first clause and the past tense form in the second. In contrast, if the utterance has future reference, the asymmetry between the two clauses becomes obvious. In (2), only the verb in the superordinate clause contains the future tense morpheme *-kiya*, whereas the verb of the adjoined clause cannot be tense-marked.

- (2) *Pius avla but-di' wuk-kiya-mi'n]*
 [Pius self tell-3.SG.M] [hear-FUT-2.SG.M]
 'When Pius himself tells you, you'll hear it.'

This asymmetry entails that independent clauses cannot be coordinated. While this may sound odd from a European perspective, it seems to be a typological characteristic of many clause-chaining languages (see e.g., Genetti 2005: 51). Compare examples (3a) and (3b). In both examples, the first clause is subordinated to the second. Although the semantic nature of

the linkage is not overtly expressed, the adjoined clause is functionally equivalent to a temporal adverbial clause in these examples.

- (3) a. *gabuli'-ni'n* *sudu kwa-a-mi'n*
 [speak-PROG-1.PL] [sleep lie-PRS-2.SG.M]
 'You are sleeping, while we're talking.'
- b. *sudu kwa-mi'n* *gabuli'-ni'n*
 [sleep lie-2.SG.M] [speak-PROG-1.PL]
 'We were talking, while you were sleeping.'

Examples (3a) and (3b) also illustrate the difference between the tenseless adjoined clause on the one hand, and the superordinate clause where past tense is marked by a zero-morpheme, on the other. The form is *gabuli'ni'n* in both cases: in (3a), it is interpreted as present tense, as it appears in a present tense context marked only in the second clause. In contrast, *gabuli'ni'n* in (3b) constitutes the superordinate clause, and can only be interpreted as past tense.

4. Non-restrictive vs. restrictive adjoined clauses

Because of its versatility, the adjoined clause can be functionally equivalent to coordinate as well as subordinate structures in European languages. Especially when several successive clauses share the same subject referent, they can be arranged in a string of non-final clauses containing non-finite verb forms, with only the final clause containing a finite form marked for tense, person, and number. The clause-chain in (4) shows two linking suffixes: the general, i.e., semantically non-specific marker *-ka* (simply glossed as 'DEP'), and *-laa/-taa*⁴ for consecutive events ('CONS'). Note that *-ka* is reduced or omitted after stems ending in *a*.

- (4) *sak* *yi-ka* *naami'i* *vi'-ka*
 [lake go-DEP] [basket see-DEP]
 kakka *vi'-ka* *ki'ki'da* *kwat-taa*
 [fish.trap see-DEP] [food find-CONS]
 lugwamat-taa *ya-a*
 [return-CONS] [come-DEP]
 nyaan *o* *laan-kak* *nau* *sau-ka*
 [child or husband-DAT sago fry-DEP]

ki'ki'da *kuk-ka*
 [food do/hold-DEP]
ki'-ka *ki'sa* *ti'-kiya-nyi'n*
 [eat-DEP] [chew(DEP)] [stay-FUT-2.SG.F]
 'You will go to the lake, check the baskets, check the fish traps, find
 food, come back, fry sago for child or husband, prepare food, and
 eat.' (lit.: 'Going to the lake, seeing the basket [...] you will stay.')

The verb forms of the non-final clauses have been called “medial”, as they appear in the “middle” of the clause-chain, i.e., at the end of the non-final clauses, while preceding the final clause. However, at least for Iatmul, this terminology is misleading, as the non-finite forms can appear in various positions. They can for example appear sentence-finally, as the adjoined clause can follow the superordinate clause. In these cases, the linkage is interpreted as semantically restrictive, i.e., indicating the manner, reason, or temporal frame of the state of affairs expressed in the superordinate clause. In (5a), the adjoined clause gives a reason; in (5b), *jwaakka* ‘walking’ specifies the manner of the verb *yi* ‘go’.

- (5) a. *yaki'bi-ba* *daali'-ka-di* *ki'viya-kak* *vaak-ka*
 [smoke-LOC sit-PRS-3.PL] [mosquito-DAT fear-DEP]
 ‘They are sitting in the smoke, because they are afraid of the
 mosquitoes.’
 b. *a-yi* *jwaak-ka*
 [IMP-go] [walk-DEP]
 ‘Go and have a walk.’

5. Complex verb phrases

Another possible position for non-finite verb forms is *inside* a clause, i.e., between another verb and its arguments. In (6), the finite form *kutdi* ‘he made’ governs the direct object *ni'ma gaai* ‘big house’; the non-finite form *kulakka* occurs between the finite verb and its argument.

- (6) *ni'ma* *gaai* *kulak-ka* *kut-di'*
 big house win-DEP do-3.SG.M
 ‘He has successfully built a big house.’

Genetti (2005: 72-75) has convincingly argued that such an arrangement should not be analyzed as embedding of one clause within another, but as the result of the linkage “applying at a level below the clause” (2005: 37). The non-finite form in (6) is therefore functionally equivalent to an adverb in English.

This type of linkage can give rise to “case prolepsis”, the “case-marking of an argument by a verb in a non-adjacent clause” (Genetti 2005: 35). Note that in Iatmul only highly individuated direct objects receive case-marking. This explains why in (6) *ni'ma gaai* ‘big house’ is not case-marked, although it is a direct object. In (7), the superordinate verb form is *vi'li'di* ‘they were watching’. Its direct object argument is *Yavi*: like all proper nouns functioning as direct objects, it is marked with the dative case marker *-kak*.

- (7) *Yavi-kak* *paku-laa* *vi'-li'-di*
 [Yavi-DAT [[hide-CONS] [see-PROG-3.PL]]]
 ‘Having hidden, they watched Yavi.’, ‘They secretly watched Yavi.’

The ambitransitive (S=O) verb *paaku* ‘hide’ is shortened to *paku-* when a linking suffix is attached. In (7), this verb carries the suffix *-laa* for consecutive events. The form *pakulaa* ‘having hidden’ is then part of a complex verb phrase consisting of two simple verb phrases, of which only the second governs the clause-initial argument *Yavi*. Note that any of the verbs in such a complex verb phrase can govern the preceding argument, so that the correct interpretation may depend on prosody and pragmatics. The verbs in a complex verb phrase can also share arguments. Compare (8a) and (8b); both contain forms of the verbs *paaku* ‘hide’ and *ki* ‘eat, drink, smoke’. (8a) contains the generic linker *-ka*, which can express restrictive, i.e., adverbial, relations. In contrast, (8b) introduces a new marker, the suffix *-kakwi* for simultaneous events. The different properties of the two suffixes lead to a different syntactic representation of verb-argument relations, as shown by the labels in the first line.

- (8) a. S=A O intr. verb tr. verb
 maatnyan-gu *yaki* *paku-ka* *ki'-li'-ka-di*
 child-PL tobacco hide-DEP eat-PROG-PRS-3.PL
 ‘The children, hiding, smoke cigarettes.’, ‘The children smoke secretly.’

- b. A O tr. verb tr. verb
 maatnyan-gu *yaki* *paku-kakwi* *ki'-li'-ka-di*
 child-PL tobacco hide-SIM eat-PROG-PRS-3.PL
 'The children [hide and smoke] cigarettes.' (i.e., they smoke
 some of the cigarettes straight away and steal some to smoke
 later)

In (8a), *paaku* is used intransitively: the children hide while smoking cigarettes. In (8b) however, the same verb is used transitively: the children hide cigarettes, while at the same time smoking.

Another possibility is for the first verb to be transitive and the second to be intransitive. The two verb phrases can either share the same subject referent (9a), or have different subjects (9b).

- (9) a. O tr. verb intr. verb
 di-kak *yalavi'k-ka* *li'-ka-wun*
 3.PL-DAT think-DEP stay-PRS-1.SG
 'I am (staying here) thinking about them.'
- b. S=O tr. verb intr. verb
 da'mage *laavwi-di* *li'-ka-di'*
 door open-3.PL stay-PRS-3.SG.M
 'They left the door open.', lit.: 'They opened the door (and it
 stays (open)).'

The first construction bears similarity to periphrastic tense-aspect expressions, and can therefore be translated into English as a progressive. In Iatmul, however, the finite verb is not grammaticalized to an auxiliary, as (a) there is no semantic bleaching; the semantics of *li'* implies that the subject referent is not moving; and (b) it does not become obligatory, maintaining its paradigmatic relation to similar intransitive verbs such as 'sit' or 'lie'.

The different-subject complex predicate in (9b) has no equivalent in European languages. Note that the first verb in (9b), 'they opened', is subordinate to the second, 'it stays', just as the non-finite form 'thinking' in (9a) is subordinate to the finite verb 'I stay'. Thus, the two constructions are parallel, the only difference being same vs. different subject linking, this time at a subclausal level.

6. The adjoined clause: subordination or cosubordination?

The mismatch between the morphologically expressed dependency of the verb forms in adjoined clauses and the observation that they sometimes translate into English (and other European languages) as coordinate structures has led to proposals that we have to do in fact with a third way of clause linkage between subordination and coordination. This has consequently been termed “cosubordination” (Foley and Van Valin 1984: 256–259), and the corresponding verb forms as “coordinate-dependent” (Foley 1986: 177). The crucial characteristic of cosubordination that distinguishes it from subordination was said to be the scope of operators. More specifically, the cosubordinate clause must have the same illocutionary force as the “final” clause (Foley and Van Valin 1984: 257). Similarly, Foley (1986: 199) asserts that “dependent verbs take their illocutionary force specification from the independent verb: whatever speech act is marked on the independent verb applies to the dependent verb as well”.

As for Iatmul, it is true that there is a difference between adverbial and adjoined clauses with respect to the scope of illocutionary force. Compare (10a), where the first clause is a temporal-conditional adverbial clause (which is not affected by switch-reference), and (10b), where it is an adjoined clause. The superordinate clause in both examples has imperative mood.

- (10) a. *Wewak yi-m-ay-an, wun-kak yaki*
 Wewak go-2.SG.M-FUT-COND 1.SG-DAT tobacco
 a-kla-ba
 IMP-get-OPT
 ‘When/if you go to Wewak, buy me cigarettes.’
- b. *pi’li’-ka a-yi*
 run-DEP IMP-go
 ‘Run and go.’

The conditional clause in (10a) is not under the scope of the imperative of the second clause, whereas in (10b), the imperative has scope over both verbs. However, this is more a pragmatic difference, rather than a robust syntactic criterion (a similar argumentation can be found in Genetti 2005: 68). A conditional clause constitutes a presupposition for its apodosis. The linkage involving an adjoined clause, however, has no such conceptual basis; the semantic relation between the clauses is therefore more variable.

Note that in (10b), the dependent form *pi'li'ka* 'running' can also be analyzed as the functional equivalent of a manner adverb, yielding the alternative translation 'go fast!'. Examples (11a) to (11c) show even more clearly that there is no requirement for the linked clauses to share the same illocutionary force.

- (11) a. *agwiba daali'-ka mi'da-na kut-ti'-m-a?*
 [there sit-DEP] [what-FOC do-PROG-2.SG.M-FOC]
 'What are you doing (while) sitting there?'
 b. *agwiba daali'-ka nau-a sau-li'-ny-a?*
 [there sit-DEP] [sago-FOC fry-PROG-2.SG.F-FOC]
 'Are you frying sago (while) sitting there?'
 c. *wega yi-laa wun-kak ya-a a-vi'-ba*
 [market go-CONS] [1.SG-DAT come-DEP IMP-see-OPT]
 'After going to the market, come and see me.'

In (11a), the superordinate clause is a constituent question, while in (11b) it is a polar question. In both examples, the first clause is outside the scope of the question. In (11c), there is no requirement to interpret the utterance in such a way that the speaker asks the addressee to go to the market; the addressee might go there anyway. Therefore, the imperative has only scope over the second clause, the first clause being presupposed. Consequently, shared scope of interrogative or imperative operators is not a characteristic of the construction, and cannot be used as a criterion to distinguish between cosubordination and subordination.

We can conclude that all clause-linkage in Iatmul is subordination. European languages, which have both subordinate and coordinate linkage, split the functional domain of interpropositional relations into these two areas. As Iatmul does not distinguish between these two types of linkage, a coordinate linkage in English corresponds to a subordinate construction in Iatmul. This is particularly visible in the clause-chain, and also explains why a subordinate clause may or may not be under the scope of main clause operators.

Notes

1. A few concessions should be made here: a) Iatmul has borrowed the conjunctions *o* 'or' and *tasol* 'but' from Tok Pisin; while *o* is well integrated into the system, *tasol* continues to be considered as borrowed; b) sentences can be

- linked by connectives like *wuba* ‘then’, *wugikak* ‘therefore’, *ti’kali’ka* ‘in the meantime’ etc.; these are morphologically complex and thus obvious recent innovations (cf. Aikhenvald 2007: 29 on their Manambu counterparts); c) two imperative/optative clauses are frequently juxtaposed if the first event is a prerequisite for the second (‘extrinsic interpropositional relation’) as in *[come!][let me see!]* or *[walk slowly!][don’t you fall!]* or *[come!][let’s go!]*.
2. The letter on the left represents the allophone(s) on the right. Those allophones divided by ‘;’ are in complementary distribution; those divided by ‘or’ are in free (idiolectal, regional, stylistic, etc.) variation: *a* [a]; [a] or [ɒ]. *a’* [aʔ] or [aʔi]. *aʔi* [aʔi] or [aʔi]. *aa* [a:]. *b* [ʰb]. *d* [ʰd]. *g* [ʰg]. *i*ʔ [i]. *j* [ʰdʒ]. *k* [k]; [g]. *kk* [k]. *kʔ* [kʰ]. *l* [l] or [r]. *n* [n]; [ŋ]. *nʔ* [ŋ]. *tt* [t]. *u* [u]; [ʊ]. *v* [β].
 3. This superficial similarity of the verb forms in the subordinate and the superordinate clause has led to the erroneous claim that both verb forms are ‘independent’ (Foley 1986: 183).
 4. The alternation between the stop and the liquid is phonologically conditioned, the liquid appearing intervocalically.

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Semasiological Perspective: From Form to Function

B.1 Establishing Categories and Relations

Once more on linguistic categories

Paolo Ramat

According to the so-called “Sapir/Whorf hypothesis” our way of perceiving the world and shaping our thoughts is deeply influenced by the particular language we speak. People who make use of very different grammatical systems will observe the reality in different ways and will think of it in different forms. Language is therefore much more than a technique for communicating: it is a system which influences our “Weltanschauung” and has a creative function.

Within the framework of this relativistic way of thinking Benjamin Lee Whorf (1897-1941) maintained that the basic distinction between nouns and verbs we find in almost any language of Europe does not hold in Hopi and many other American Indian languages.

Our Indian languages [Hopi, etc.: Paolo Ramat] show that with a suitable grammar we may have intelligent sentences that cannot be broken into subjects and predicates. Any attempted breakup is a breakup of some English translation or paraphrase of the sentence, not of the Indian sentence itself (Whorf 1956: 241).

The problem raised by Whorf and the relativistic hypothesis clearly touches the question of the existence or non-existence of universally valid categories: are nouns and verbs universal categories which have to be present in every language? Can a language do without such a verb-noun opposition? As we shall see below, the question cannot be answered without a clear distinction between form and function. This distinction was not clear-cut in the classical tradition: philosophers such as Plato and Aristotle used *ónoma* both as noun and subject, *rhêma* both as verb and predicate (cf. Sasse 1993: 190).

The discussion concerning the universality of concepts like noun and verb started more in philosophical and ideological than in linguistic terms, but it has been taken up again in recent times within the framework of cognitive linguistics on the one hand, and linguistic typology on the other. Cognitive linguistics is concerned with how grammatical strategies are tied to more general cognitive capacities and more general cognitive processes (of categorization), (see, among others, Tomlin 1997: 164, Tomasello 2003).

As for linguistic typology, the debate on the existence of such universal categories is still open. Relating particularly to North American languages such as Cayuga (Iroquoian family), Comox and Bella Coola (Salish family), Nootka (Wakashan family) etc., H.-J. Sasse has maintained that Cayuga does not possess the lexical category noun as traditionally conceived of on the basis of the European languages (see, e.g., Sasse 1993).¹ The lexicon of Cayuga has roots which must always appear endowed with affixes expressing pronouns, and aspect (also tense, mood, negation, etc.). Thus, a root never appears in isolation: the root *-nhoh-* 'door' is realized as a predication: *kanhóha* 'it is a door'.² Consequently Sasse assumes that categories have to be considered as language-specific clusters of features or properties, having formal as well as conceptual aspects. According to him there exist no cross-linguistic abstract categories (Sasse 1993: 195). This assumption is clearly along the relativistic line already alluded to and advocated by Sapir, Jespersen and many other linguists. As Edward Sapir put it in his famous book on *Language*:

No logical scheme of the parts of speech – their number, nature, and necessary confines – is of the slightest interest to the linguist. Each language has its own scheme. Everything depends on the formal demarcations which it recognizes. (Sapir 1921: 119, quoted in Anward, Moravcsik, and Stassen 1997: 168)

And Otto Jespersen wrote:

The principle here advocated is that we should recognise in the syntax of any language only such categories as have found in that language formal expression. (Jespersen 1924: 50, quoted in Bickel 1997:62)

The French linguist Gilbert Lazard has recently reconsidered the entire problem (Lazard 1999). Contrasting languages of different types, he has suggested a continuum between two ideal poles which are never fully realized in real languages. At one end we can posit an ideal type without any lexical, morphological or syntactic distinction between verbs and nouns; at the other end the opposite ideal type would have verbs and nouns not sharing any feature at any language level. As a matter of fact we do not know of any real language which does not possess at least one criterion for distinguishing nouns from verbs, nor there exists a language where verbs and nouns are completely separated. Even the European languages which have a sharp distinction between noun and verb as two different morphological categories, may have some overlapping between nominal and verbal forms when the root is the same for nouns and verbs: see for instance French

change, marche (noun and verb inflected for 1st–3rd person singular, indicative and present), Italian *ripiano, conforto* (noun and verb inflected for 1st person singular, indicative and present), and consider also participles such as French *commandant* ‘officer’, *chantant* ‘singer’. Cross-linguistic data, as well as (neuro)psychological tests concerning linguistic production and comprehension, lead to the conclusion that the distinction between nouns and verbs is not neatly dichotomic but may be thought of as a continuum between two poles (cf. e.g., the Arabic *maṣḍar* and ‘*ism al-marrati*’ constructions, Simone 2003).

This is due to the very fact that categories are bundles of features. Different categories may share some features. Verbs usually have a number distinction just as nouns do. Cayuga nouns may have aspect suffixes. Bhat (1994) observes that, due to their high dependence on their head nouns, adjectives prototypically should not take “nouny” inflectional endings marking case, number, gender or definiteness, since these specifications are usually already marked on the head nouns. English adjectives without agreement would therefore be more prototypical than Latin or Sanskrit adjectives. As a matter of fact, adjectives show in many (Indo-)European languages the same features as their head nouns: gender, number, case; and there are adjectival lexemes that in specific contexts may be used as nouns:

- (1) Italian
 [il/la giovane]_{NP} sorrise
 ‘The boy/the girl smiled’.

The article-marked noun phrase has *giovane* as its head noun, and the meaning of this head is determined just by the gender of the article. Gender is a feature prototypically connected with noun. But there are many examples of verbs endowed with gender distinction as, e.g., the 3rd Past Sg. of Russian: *on čital* ‘he read’, *ona čitala* ‘she read’, *ono čitalo* ‘it read’; Arab. *kataba* ‘he wrote’, *katabat* ‘she wrote’, etc.

It is well-known that infinitives may be substituted by action nouns (*nomina actionis*), especially in agglutinative languages, whereas fusive languages seem to prefer infinitive forms which belong more strictly to the verbal paradigm (cp. Sgall 2006: 410–417). Contrast Turk. *gitme-m lazım*, lit. ‘go-my (Infin. *gitmek*) is necessary’, with its Engl. translation ‘I must go, I have to go’.

The examples of overlapping features in different morphological categories could be easily augmented. We may conclude that features are not

rigidly bound to categories: on the contrary, they may extend over different categories in quite unexpected ways (N.B.: unexpected for a Eurocentric linguistics!).

Moreover, syntax may play a decisive role in assigning a lexeme to different categories (see already (1), above). The famous sentence of *Logical Structures in Language*, *Flying planes can be dangerous* (Chomsky 1957), receives different meanings according to the rules of the English syntactic structures.

This discussion shows that categories are not to be considered as water-proof boxes. Shifts from one box to another are always possible. What is the word like? To decide whether it is a verb, an adjective or an adverb we need an appropriate morphosyntactic context. Categorial assignment has often been a one-sided operation based either on semantic, or morphological, or syntactic criteria only (Ramat 1999). After having underlined the necessity of a global assessment in order to (prototypically) assign a lexeme to a given morphological category, we have to add that the functional nature of language, which basically serves to predicate something about someone or something, causes that with more than chance frequency the basic categories are cross-linguistically comparable.

As a matter of fact linguists who study “exotic” languages keep speaking of “verbiness”, “nouniness”, “adverbiality”, thus applying these labels to linguistic elements which are difficult to be categorized. A recent study on Tobelo, a Papuan language spoken by approximately 15.000 people in the eastern Indonesian province of Maluku, has shown that words indicating properties of the referent have categorial ambiguity: they behave as nouns when the noun they modify represents new information, and as verbs when the noun they modify represents old information (Holton 1999: 342). The distinguishing criterion is thus a pragmatic one – but in spite of the great difference between Tobelo and European languages, Holten finds it useful to keep on speaking of adjectives, verbs and nouns as categories.

Accordingly, it seems that the old *partes orationis* of the classical rhetorical and grammatical tradition are still the most useful approach to linguistic categories. I do not think that this is simply due to a Eurocentric perspective. Rather, I would say that these morphosyntactic categories do really refer to basic cognitive functions and behaviours which necessarily find their reason and, at the same time, their realization in the functional nature of language. There are mixed flexible types and changes of syntactic category (e.g. verb → noun, noun → verb) but the typological comparison confirms the validity of the parts-of-speech analysis we know from the

tradition. As I said at the beginning of this contribution, the difference between the traditional approach and the typological one lies in the fact that the former made no distinction between morphological behaviour and semantic function. The typological approach takes account of both dimensions (plus the syntactic one) though keeping them distinct (see Ramat 1999).

Notes

1. Hagège (1982: 71) writes: "Dans certaines langues tout nom d'entité X peut indiquer un état 'être X', et même une action, d'où par ex. en comox [...] l'identité formelle entre '(il est) ce qui court' et 'il court' ou entre '(il est) ce qu'Y voit' et 'Y le voit'." Cp. also Yaguello (1988: 70f.): "[...] certaines langues ignorent radicalement l'opposition nom / verbe et le prédicat y prend une forme qui échappe à toute distinction de catégorie syntaxique".
2. However, Marianne Mithun (2000) maintains that nouns and verbs are clearly distinguished lexical categories in Iroquoian languages; *ka-* of *kanhóha'* is a noun prefix and *-a'* is a suffix forming nouns and not an aspect marker suffixed to a noun. See also Broschart (1997: 126).

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Questions surrounding the basic notions of the word, *lexie*, morpheme, and lexeme

Christian Touratier

Some linguists would like linguistics to be a science, and even the science of language. But linguists are not scientists. They are men of letters, who have studied (and often continue to study) the beautiful texts of Literature. They like beautiful sentences and expressions, and they generally either don't understand or hate mathematics (there is no science without mathematics!). Like in literature or philosophy, every 10 or 20 years, someone bases linguistics on new principles or discovers a new field, and throws out all earlier theories into prescientific darkness. But even if each little revolution brings a new set of vocabulary, it doesn't erase earlier terms.

1. Morpheme and word¹

There are terms such as *morpheme*, *word* or *lexeme* which are used in linguistics to describe a grammatical fact or to elaborate a general and new theory, but they are not defined on the basis of a consensus among linguists. "Word" is the oldest of these terms. Almost all linguists now say that although the word is a difficult grammatical unit to define, native speakers generally have no difficulty identifying words in actual speech. "The morpheme", which, in accordance with its etymology (cf. gr. *μορφή* 'form'), was originally either a grammatical element of the word, like a prefix or a casual inflexion, or a grammatical word, like a preposition or a conjunction (cf. Marouzeau 1969: 148–149). With structural linguistics, the morpheme became the minimal unit of linguistic description. Now this term chiefly means two different things (cf. Touratier 2002: 13–17). In Harris's distributional analysis, it means "a class of one or several complementary morphemic elements" (Harris 1960: 212–213), the morphemic elements being "independent phonemic sequences" (Harris 1960: 157). But for the Prague School and American structuralism, "Morphemes are the smallest individually meaningful elements in the utterances of a language" (Hockett 1969: 123). This is the meaning that we will adopt here. Martinet needlessly tried to call this minimal meaningful unit a *moneme*. But his defini-

tion of the moneme, which fortunately relates it to Saussure's theory of the linguistic sign, brings nothing new to the structuralist definition of the morpheme: "Like every linguistic sign, the moneme is a unit with two sides, one side which is signified, its meaning or its value, and one side which signifies, which shows it through a phonic form, and which is composed of second articulation units" (from Martinet 1967: 16). So we will call a morpheme the smallest unit that associates a signifier (i.e., expression or "signifiant") with a signified (i.e. content or "signifié"). Since a morpheme seems to be a very different unit from the "word" of traditional grammar, Martinet goes as far as dismissing the word completely: "Our conclusion is, of course, that this term cannot be used either in serious syntactic research or in the presentation of its results" (from Martinet 1965: 84).

But why completely reject a notion which has been used by all grammarians to describe different languages, and in the end describes them in a rather satisfactory or at least understandable way? We have shown (cf. Touratier 2002: 22–24) that the "word" is probably definable, if, as Tesnière proposed, syntactic structure is distinguished from word order. Then we can say that the "morpheme" pertains to syntactic structure, while the "word" pertains to the linear sequence of word order. Under these conditions, the morpheme can be considered as a minimal syntactic unit and the word as a minimal syntagmatic unit by giving the syntagmatic order its Saussurian meaning of a succession in a spoken sequence (cf. Saussure 1967: 176–177). This point of view gives a definite place to the word in linguistic theory, but it will be necessary to reexamine the traditional problems of so-called compound and derived words.

Chomskyan linguists, for whom the term "structuralist" was almost an insult, soon rejected the morpheme with structuralism altogether. Noam Chomsky claimed to have counterexamples to the definition of morphemes "as minimal meaning-bearing elements" (Chomsky 1957: 110); and the morpheme was only considered as a simple morphological unit of description, which Noam Chomsky called a "formative". But curiously, he admitted that "the formatives [could] be subdivided into lexical items and grammatical items" (Chomsky 1968: 65).

2. Lexeme and "lexie"

As far as the lexeme is concerned, it denotes the abstract unit which occurs in different inflexional forms of the same word (cf. Lyons 1968: 197), or, to

simplify, a “dictionary entry” (Aronoff, in Frawley 2003, vol. 2: 439). Rather than relating it to the word, we will define, along the same lines as Martinet, the lexeme as a sort of morpheme: a lexical morpheme, i.e. a morpheme that belongs to an unlimited class of morphemes (cf. Martinet 1967: 119 and Touratier 2002: 17). Martinet differentiated the lexeme, defined as a lexical moneme, from the morpheme, defined as a grammatical moneme. If we don’t use the term moneme, we can differentiate the lexeme from the grammeme, defined as the grammatical morpheme. But this term, notably proposed by Bernard Pottier (cf. Pottier 1967: 15–16), is not very common.

If the word is recognized as a syntagmatic unit in linguistic theory, it is necessary to examine how syntactic structure is expressed by syntagmatic sequence, and among other things how the word is related to the morpheme. For there are words that are not minimal units, and there are groups of words that grammar books or dictionaries usually consider as simple words. Martinet proposed the term *syntheme* to denote “a combination of significant units corresponding to a single choice by the speaker” (Martinet 1975: 272), functioning as a single morpheme, and belonging to a class of morphemes. The syntheme “has the same compatibilities as the monemes (= morphemes) with which it commutes” (Martinet 1975: 272), and it is a minimal syntactic unit.

Some good examples of synthemes are the French nouns *maisonnette* ‘small house’, *fillette* ‘little girl’, *chansonnette* ‘ditty’, etc. or the French adjectives *indésirable* ‘undesirable’, *croyable* ‘credible’, *dirigeable* ‘dirigible’. But Martinet himself provided quite bad examples, such as *chaise-longue* ‘deckchair’ (Martinet 1975: 189), *au fur et à mesure* ‘as one goes along’ (Martinet 1975: 194), or *pomme de terre* ‘potato’ (Martinet 1975: 193), which are nothing but minimal units or morphemes. Bernard Pottier proposed to call these bad examples “lexies”, and gave the following definitions :

The lexie is the behaviour unit. It is constituted of words. (Pottier 1967: 17)

The lexie is the memorized lexical item. (Pottier 1974: 265)

The lexie or sequence of words memorized as an individual sign. (Pottier 1992: 34).

Bernard Pottier, who uses the term “lexeme” to denote lexical morphemes (cf. Pottier 1992: 37), seems to have thought that the *lexie* was a general term to designate every lexical item, when he wrote:

The simple *lexie* coincides with the word: chien [‘dog’]. The compound *lexie* contains several words partly or completely integrated (graphically, or in its tactical behaviour: a brise-glace [‘icebreaker’]). The complex *lexie* is a more or less set sequence of words: faire une niche [‘to play a trick’], en avoir plein le dos [‘to be fed up’], pomme de terre [‘potato’], au fur et à mesure [‘as one goes along’] (Pottier 1967: 17).

But we prefer to reverse this point of view and give the *lexeme* the major role. It seems more in accordance with the traditional theory of the linguistic sign if we admit that the *lexie* is fundamentally both a sequence of words and a single lexical item memorized by the speaker, and consequently a *lexeme*. We can also say that the *lexie* is a particular kind of *lexeme* and not vice-versa; it is a *lexeme* composed of several words. Defined thus so, the *lexie*, like the *syntheme*, becomes a notion that sets up a relationship between the level of morphemes and the level of words, the *lexie* being a *lexeme* formed by several words, and the *syntheme* a word formed by several morphemes.

Considering the *lexie* as a sort of *lexeme*, as well as considering the *lexeme* as a sort of morpheme, doesn’t separate the study of lexicon from the developments of modern linguistics, but strictly relates lexicology to morphemic analysis. However, the terms “*lexie*” and “*lexeme*” are often used by linguists or grammarians simply as lexical items or even dictionary entries; and the progress of modern linguistics is thus thrown out the door. But this is not Bernard Pottier’s position:

The morpheme”, he said, “is the smallest linguistic sign. It cannot be decomposed, synchronically speaking. In most languages, there are two classes of morphemes: lexical morphemes or *lexemes*, which belong to endless and open lists, and grammatical morphemes or *grammemes*, which belong to limited and closed lists (Pottier 1967: 15).

When Bernard Pottier uses the term *linguistic sign*, he means the Saussurian sign. Indeed, he wrote:

The sign, whatever size it might be, always has the same constituents:
 sign = signifier + signified
 The relationship between both components has a double implication:
 signified <==> signifier

Accordingly, if a signifier has no signified in a natural language, it is not a sign: **croupère*. In the same way, a signified which begins to appear in a natural language will become a sign if it is related to a signifier (Pottier 1974: 26).

It is important to position the lexie of Bernard Pottier in the perspective of the morpheme and of the word. The lexie is a morpheme, more precisely a lexical morpheme, and also a group of words. It belongs to both levels distinguished by Tesnière, the structural level and the linear level.

Bernard Pottier defines the word as an “independent constructed unit” (Pottier 1992: 34). This definition seems very accurate to us, and corresponds exactly to our definition of the word, if “constructed” means “morphologically constructed”, and “independent” means “syntagmatically, linearly independent”. When we are performing morphemic analysis, it is important to distinguish between the words Danielle Corbin calls “complex unconstructed words” and the words she calls “constructed words” (cf. Touratier 2002: 52–57). Constructed words are words formed by several morphemes, which Martinet calls *synthèmes*, such as *maisonnette*, *indésirable*. Their overall meaning is constructed from the meaning of their segments. Complex unconstructed words are words such as *carpette* (‘rug’, and no ‘little carp’), all of whose segments are not interpretable; these words are not analysable and consequently correspond to a single morpheme. But apart from complex unconstructed words, it is still necessary to distinguish constructions of words whose overall meaning is not constructed from the meaning of each of these words; these complex unconstructed words are morphemes which are unanalysable in smaller meaningful units. These units are precisely what we call *lexies*.

We will thus consider the following examples (almost all taken from Bernard Pottier) as *lexies* :

les allées et venues [‘the running about’], *le chemin de fer* [‘the railway’], *la porte cochère* [‘the carriage entrance’], *un poids lourd* [‘a heavy goods vehicle’], *faire une niche* [‘to play tricks’], *en avoir plein le dos* [‘to be fed up with’], *se la couler douce* [‘to have it easy’], *table ronde* [‘round table’], etc.

But how should we analyse the following examples?

prêt-à-porter (Pottier 1974: 307) [‘ready-to-wear’], *par cœur* [‘by heart’], *charbon de bois* [‘charcoal’] (Pottier 1992: 17), *mettre la table* [‘to lay the table’] (Pottier 1992: 123), *juge de paix* [‘justice of peace’]?

Native speakers are often tempted to believe that these compound words are complex meaningful units which linguists would call “more-or-less bound associations of morphemes”. What is indeed *prêt-à-porter* ‘ready to wear’ or *tire-bouchon* ‘corkscrew’? The former is a mass-produced line of clothing which allows a customer to try on a garment, buy it and wear it home straight away; the latter an instrument with which one removes corks from bottles. But never, or at least rarely, does it correspond to a dictionary definition. For *prêt-à-porter*, the dictionaries say:

mass-produced clothing..., as opposed to *custom-made clothing* [from *Le Nouveau Petit Robert* 1993], a set of clothes made according to normalized measurements [from *Le Petit Larousse Illustré* 1991], clothes cut according to normalized measurements and which are suited to the size of the customer [from *Lexis* 1994].

If it seems possible to associate a signified with one or several formal elements of this compound word, nothing among these means that it is a matter of clothes. If the American English word *ready-to-wear* (the French word *prêt-à-porter* is a calque of the English term) is an abbreviation of *ready to wear clothing*, we can admit that *ready to wear clothing* is a phrase, which has become a bound expression, and thus a syntHEME. But the meaning of the words *ready-to-wear* and *prêt-à-porter* doesn’t result in the meaning of all the elements, and these three words are consequently the signifier of a single meaningful unit and thus a morpheme. This morpheme is a lexie whose signifier is partially motivated. We say that a linguistic item is motivated “if we perceive a link between the linguistic sign and the denotated entity, and if the linguistic sign provides some information about what it denotes” or means (from Fruyt 1998: 56). The morphological segments — we call morphological segment, as Harris would, every sequence of one or several phonemes that is formally independent of its environment (cf. Touratier 2002: 57–59) — of the word *prêt-à-porter* correspond to three segments which in other environments are the signifier of three different morphemes whose content has a certain relationship with the signified of the morpheme *prêt-à-porter*. Because of this relationship, the lexie is said to be partially motivated.

Led by my native speaker intuitions, I falsely considered the following lexies as syntHEMES:

casse-noisettes [‘nutcrackers’], *tire-bouchon* [‘corkscrew’], *essuie-main* [‘hand towel’], *taille-crayon* [‘pencil sharpener’], *lave-vaisselle* [‘dish-washer’], *sèche-cheveux* [‘hair drier’]

machine à laver ['washing machine'], *machine à écrire* ['typewriter'], *table à repasser* ['ironing board'], *fer à repasser* ['iron'], *fer à souder* ['soldering iron'] (Touratier 2002: 50).

But in the word *tire-bouchon*, nothing means that it is a tool made with a long twisted piece of metal, and that a cork is a round object made of cork or plastic that is used for closing wine bottles. The meaning is richer than that of both of the free lexemes *tirer* 'to pull' and *bouchon* 'cork'. Even if two of the segments of the word *fer à repasser* can commute, which gives the words *table à repasser* and *fer à souder*, and if the segment *repasser* means 'to smooth out clothes', the segment *fer*, when it is a free form, doesn't mean 'a tool with a flat metal base'. Thus the word *fer à repasser* cannot be a syntheme; it is only a lexie. If the word *machine*, as a lexeme, means 'a device with moving parts which uses power, chiefly electricity, to do a particular job', we find this meaning in the word *machine à laver*, but not in the word *machine à écrire*. Nevertheless, nothing in the word *machine à laver* indicates that this machine is used to wash clothes, and is different from the *lave-vaisselle*, which is a machine to wash plates, cups, etc. Consequently, all these compound words are not syntheses, but lexies.

Therefore must we conclude that compound words are never entirely formed of morphemes? It seems that it is not the case, since the meaning of words such as lat. *pater familias* 'the head of a family, a householder', fr. *chef de famille* 'head of the family', *maîtresse de maison* 'housewife', *chien de chasse* 'gun-dog', or germ. *Sprachwissenschaft* 'linguistics' indeed corresponds to the combination of the meanings of all its components. The *pater familias* is the man who has authority (*pater*) over all the family, the *maîtresse de maison* is the woman who governs (*maîtresse*) a house, i.e. all that takes place in a house: cooking, washing, receptions, etc.; a *chien de chasse* is a dog that hunts (*chasse*), i.e., that 'chases wild animals or birds in order to catch or kill them', and the *Sprachwissenschaft* is 'the scientific study (*Wissenschaft*) of language or of particular languages (*Sprache*)'. Both lexemes of these compound words can commute, which respectively gives us:

lat. *pater familias*: *mater familias* 'the wife of a paterfamilias, the mistress of a household', *filius familias* 'a son subject to the patria potestas'; *pater patriae* 'father, protector of city', *dium pater* 'father of gods'

fr. *maîtresse de maison*: *employé de maison* 'domestic employee', *gens de maison* 'household servants', *maître de maison* 'host'; *maîtresse de ballet* 'ballet mistress', *maîtresse d'école* 'teacher'

fr. chien de chasse: avion de chasse 'fighter plane', *fusil de chasse* 'hunting rifle'; *chien de garde* 'guard dog', *chien d'appartement* 'house dog', *chien de berger* 'sheepdog'

all. Sprachwissenschaft: Rechtswissenschaft 'law, jurisprudence', *Wirtschaftswissenschaft* 'economics, case law', *Geschichtswissenschaft* 'history'; *Sprachlehrer* 'language teacher', *Sprachlehre* 'grammar'.

Should we consider these compound words composed of several morphemes as lexies or as syntheses? It would be rather unsatisfactory to say that they are lexies, because it would modify our definition of the lexie too much and needlessly, since it would be either a morpheme or a combination of morphemes. Consequently it is preferable to modify our definition of the synthesis, which will still be a bound combination of morphemes, but which could correspond to one or to several words, and no longer, as we said above, to just a single word. Thus we will say that the compound words such as *lat. pater familias*, *fr. maîtresse de maison*, *germ. Sprachwissenschaft*, are syntheses, and not lexies.

3. Conclusion

We believe that it is better not to reject the notions our predecessors profitably worked with. It is preferable to elaborate a general theory that integrates, without contradiction and with coherence, the word and the compound word of classical grammarians, the morpheme of structuralism, the linguistic sign of Saussure, the synthesis of Martinet and the lexie of Bernard Pottier. This way, linguistics will develop a cumulative base of knowledge and will become a true science: the science of language.

It is with my best wishes that I dedicate this essay to Christian Lehmann.

Notes

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Linguistic typology and language theory: the various faces of syntax

Lunella Mereu

1. Introduction¹

Until recently syntax has primarily been associated with formal grammar, in other words with abstract theories exclusively aimed at detecting universal syntactic principles of sentence construction. The principal point of reference has been Chomsky's work on generative grammar from its first formulations up to Principles and Parameters Theory (Chomsky 1979, 1981) and the Minimalist Program (Chomsky 1995).²

When it comes to typology, syntax has never been a privileged area of investigation because of typology's broader conception of grammar as a multi-level system to be studied on the basis of large scale cross-linguistic comparison. However, since the mid-eighties various typologists have started publishing studies on syntax; alongside the work on Functional-typological syntax by Givón (1984,1990), one may think of Payne's (1997) volume on morpho-syntax, or Van Valin and LaPolla's (1997) wide-ranging study and also of Tallerman's (1998) introduction.

Of course this does not mean that typologists have discovered the importance of syntax only recently. After all the notion of linguistic type was developed precisely on the basis of Greenberg's (1963) investigation on syntactic order, and a great deal of typological work has always been devoted to syntax, not only to the issue of word order as in Li (1975), in Comrie (1981), or Hawkins (1983)³, but also to syntactically related phenomena. But it is certainly true that in recent times more attention has been devoted to syntax, to its role and its interaction with both morphology and the other levels of grammar.

The aim of this paper is therefore to discuss what syntax is today on the basis of all the theoretical and typological insights we have achieved so far, and also to see what kind of universals of sentence construction we can now propose after all the empirical research that has specifically been devoted to the syntax of the world's languages.

In sum we will compare different definitions of syntax and see what kind of theoretical background is associated with each definition and ap-

proach. We will not go through a historical overview of all the approaches which have had to do with syntax as in the well-documented work by Graffi (2001); we will instead discuss two basic and opposing views in order to propose a third way for syntax. From our discussion it will emerge that this third way simply involves a combination of some of the theoretical and methodological issues deriving from both typology and formal grammar.

2. Definitions of syntax

Various definitions have been applied to syntax in the literature. The simplest or the one which can be shared by all linguists is that syntax is the study of “how words group together to make phrases and sentences” (Tallerman 1998: 1). Generally the definition also points out that the aims of syntax are “to discover the common properties between languages, and .. ultimately to discover something about the workings of the human brain” (Tallerman 1998: 6). The first part of the above definition implies that when doing syntax we basically ask the following questions:

- (1) What is a sentence?
- (2) What are the elements of a sentence?

We can find more or less articulated replies to question (1) depending on the theoretical approach; one distinguishing trait between different theories is related to whether we assume a sentence to be connected to the utterance or not, that is whether we have a functional perspective – according to which a sentence must be a meaningful unit in discourse – or whether we stick to a formal definition of a sentence in terms of grammaticality judgments, as in generative grammar. The more radical differences are certainly to be found in answer to (2) not so much in terms of the nature of syntactic constituents as both functionalists and formalists would agree in considering noun phrases, verb phrases and so on as sentence constituents, but more in terms of its subcomponents. Let us have a look, for example, at Van Valin’s and LaPolla’s (1997: 1) definition of syntax: “the branch of grammar dealing with the ways in which words, with or without appropriate inflections, are arranged to show connections of meaning within the sentence”; here we find an explicit mention to morphology as this “can be used

to express ‘who is doing what to whom’ in some languages, while word order does this in others and accordingly the cross-linguistic study of syntax cannot be carried out without paying serious attention to morphology” (Van Valin and LaPolla 1997: 2). Although even generativists acknowledge that inflectional morphology is important for syntax (after all the affix hopping rule applied to verbs and to the affixes under the auxiliary constituents [Chomsky 1957] was the first syntactic rule to include morphological units), certainly they would not see the morphological processing of the sentence as an alternative way of building sentence meaning. Instead functional typologists not only recognize morphology “as a system of adjustments in the shapes of words that contribute to adjustments in the way speakers intend their utterances to be interpreted” (Payne 1997: 21), but they even characterize the way in which morphology can contribute to the syntactic construction of the sentence as shown by Nichols’ (1986) distinction between head-dependent and dependent-marking languages.

However the major differences are connected to the second part of the definition above, the one which specifies the aims of syntax; these really depend on the kind of linguistic theory adopted and lead to different methodologies for characterizing syntactic data.

We will just consider here the differences between generative grammar and the functional-typological approach. When dealing with generative grammar, we will refer exclusively to Chomskian grammar, and not to other generative approaches such as Lexical-Functional Grammar (Bresnan 1982, 2001), as this shares some properties with the typological approach.

2.1 The generative approach to syntax

The basic idea of generative grammar is that languages share a common organizing structure and that the differences among individual languages are only superficial. This is due to the fact that languages are the realization of a shared linguistic capacity, the “language faculty” (Chomsky 1979) which is innate and biologically determined. The fact that the child is able to acquire a language on the basis of limited data or according to the so-called “poverty of stimulus” (Chomsky 1986: 7) has led to a view of syntax as an abstract linguistic capacity. This is also called “Universal Grammar” insofar as it “may be regarded as a characterization of the genetically determined language faculty .. as a ‘language acquisition device’, an innate component of the human mind .. a device that converts experience into a

system of knowledge attained” (Chomsky 1986: 3). Universal Grammar is therefore “a theory of the ‘initial state’ of the language faculty” (Chomsky 1986: 3), and it is characterized by a set of universal principles shared by all languages, and a few parameters to account for linguistic variation.

Though initially not interested in diversity in languages, generative grammar has started to account for the study of variation through the studies on parameters, as they allow to identify “open points of variation, ... choice left open by Universal Grammar, which are set on one of the values on the grounds of exposure to a corpus of data” (Longobardi 2003: 255). Two important parameters identified in the eighties, the null subject (Jaeggli and Safir 1989) and the ‘head first’ and ‘head last’ parameters (Chomsky 1986)⁴ have led to distinguish in formal grammar between pro-drop and non-pro-drop languages and between head-initial and head-final languages. More recently more work on parameters has characterized the Minimalist Program (Chomsky 1995). However, with the notable exception of the important work Longobardi (2003a, 2003b, 2005)⁵ has been developing recently, the interest of generative grammar is more in characterizing universal principles of language structure than in pursuing the extension of language variation.

Going back to the conception that generative grammar has of syntax, this is defined as a computational system ($=C_{HL}$), and it is characterized as an autonomous level with properties of meaning and of sound being considered as “conditions ‘from the outside’” (Chomsky 1995: 221). Therefore communicative aspects of language or performance data are neglected as they represent sources of ‘imperfections’:

“..output conditions reveal that items commonly appear ‘displaced’ from the position in which the interpretation they receive is otherwise represented at the LF interface .. Why do languages have such devices? .. facilitation of parsing on certain assumptions, the separation of theme-rheme structures from base-determined semantic relations .. conditions imposed on C_{HL} by the ways it interacts with external systems. That is where we would hope the source of ‘imperfections’ would lie, on minimalist assumptions.” (Chomsky 1995: 316f.).

In this sense the interest of canonical generative grammar mainly concerns the common properties of languages. However, in addition to the studies on parameters, there has been another way in which generative grammar has contributed to the study of variation, even though this line of research no longer characterizes generative studies today. In the eighties a macro-typological distinction was proposed by Hale (1981, 1983) on the

basis of his studies on Warlpiri. In his works Hale drew a distinction between configurational and non-configurational languages and the distinction was meant to recognize that not all languages are hierarchically organized with subjects and objects occurring in different positions in the syntactic tree, therefore identifiable in terms of their configurations. There are languages with flat syntactic trees, that is languages in which subjects and objects may occur in any position within the sentence determining the so-called free word order effect. These non-configurational languages have a number of other peculiar properties such as extensive pro-drop and/or discontinuous elements which make it difficult to apply the technical generative machinery without adding some devices to handle non-configurationality. However, in the nineties Kayne (1994) reformulated the hypothesis that languages share a unique construction principle in terms of his 'antisymmetry of syntax', stating that all languages are SVO at deep structure level and that the superficial order for languages which strongly deviate from SVO sequences is obtained through dramatic displacements of their elements. This has led to a restatement of the configurational property of syntax in terms of what is now called the 'cartographic' approach (Rizzi 1997, 2004; Cinque 2002, Belletti 2004). This idea of configurationality is of course also shared by those who, like Chomsky, do not adopt the antisymmetry approach.

2.2 The typological approach

Basically typology too is concerned with the search for universal principles of language, but these are not only syntactic insofar as they relate to the communicative function of language: "human language's role as a means of communication, its role in broader cognitive processes .. are all relevant .. to the study of language structure" (Van Valin and LaPolla 1997: 11). However typology is also interested in linguistic diversity or variation as this shows the range of grammatical realizations different languages can incorporate. In Lehmann's words "The invariant itself, i.e. human language, does not present itself directly. It appears exclusively under the form of its variants, the historical languages. Variation is essential to the nature of the invariant. Human language could never be fully represented by a single historical language" (Lehmann 2006: 164). To Chomsky's assumption about the poverty of stimulus, typology opposes a belief in the richness of linguistic data (Comrie 1981). In other words, typology concentrates on

weighting “the breadth .. of coverage of languages” (Comrie 1981: 4) rather than the depth of single languages.

Methodologically this means concentration on cross-linguistic data and also on cross-level work or interface studies. Syntax is not viewed as an autonomous level but it interacts with all levels as one phenomenon can be marked syntactically in one language and morphologically or phonologically in another and the marking is always motivated by communicative needs, therefore by semantico-pragmatic constraints.

3. A third way to syntax

Recently some linguists have started exploring a common route to syntax; the idea they share is that in order to do syntax it is useful to combine the typological and the formal approach and to build a kind of formal system, that is a theoretical syntactic architecture open to typological hypotheses, to the study of variation and to the interaction with morphology and with the other level of analysis (Mereu 2004: 14). In brief a typological-formal grammar with a strong cross-linguistic basis, oriented towards interface analyses. We believe Van Valin’s and LaPolla’s (1997) or Van Valin’s (2001) version of Role and Reference Grammar, or, on the side of formal grammars, the non derivational multi-dimensionally constrained models of Lexical-functional Grammar (Bresnan 1982, 2001) or Head-driven Phrase Structure Grammar (Pollard and Sag 1994) should be understood precisely as moving in this direction.

At this point, rather than describing each single theoretical framework, which is certainly not among the aims of this paper, we think it is more useful, as a preliminary operation, to define what a syntactic approach of this kind should ideally look like.

4. What it means to do syntax

A good way of building syntactic argumentation is in terms of the questions syntax ought to answer; apart from questions (1) and (2) above, we think the following are important questions:

- (3) Which linguistic phenomena belong to the sentence domain?

- (4) What relationship does syntax have with the other levels of analysis, or how does it interact with the other components in determining the organization of the sentence?
- (5) What relationship is there among the syntax of languages which are different from one another?

Curiously enough, (3) is never explicitly asked in texts introducing formal syntax. We generally find definitions of what the sentence unit is, how this is hierarchically organized in groups containing classes of words or grammatical categories, the lexical properties of some word classes such as verbs bearing information about its complements (and argument structure). This set of elements and relations are what Graffi (1991, 1994) calls 'naïve syntax', as it concerns concepts which (a) are part of the linguistic capacity, (b) are independent from any theory, and (c) are identifiable at the observational-descriptive level. This of course leads to the recognition of a 'theoretical syntax' which includes the set of all theory-bound concepts, principles, modules and operations that are typical of some version of generative grammar. Only through the handling of all this technical apparatus can we characterize some theoretically relevant linguistic behaviour, in particular some operations such as passive or subject raising or long-distant operations, best known as movement phenomena, or also the binding of overt and non-overt anaphoric categories. Of course there are a number of analyses and insights which have been an important contribution of generative grammar, especially the distinction between functional and lexical projections (though this idea has a long and pre-generative tradition). But linguistic phenomena certainly cannot emerge from theoretical syntax if this aims at stating abstract conditions on rule application, and therefore at isolating and 'cleansing' phenomena in relation to fixed objectives (Cinque 1991: 16).

Typologists, instead, are more focused on linguistic phenomena, but certain phenomena nonetheless escape their examination due to the perspective adopted⁶, among these those concerning *wh*-movement or the pro-drop phenomena, i.e. null anaphora and its conditions.⁷

We think it useful therefore to give a list, albeit non exhaustive, of the main phenomena that have syntactic relevance in the world's languages:

- (6) a. syntactic order;
- b. distinction between argument and adjunct behaviour;

- c. complex structures (coordination and subordination);
- d. pronominalization;
- e. inflectional (case and agreement systems) and syntactically relevant derivational (incorporation) morphology;
- f. prosodic marking of grammatical features;
- g. function-changing operations;
- h. long-distance and *in situ* operations;
- i. information structure systems;
- j. negation;
- k. definiteness and animacy.

We do not have space to go through all the items on the list, but will just say a few words about some of them. Starting from (6a) it is curious, if not paradoxical, that generative grammar books should not contain sections devoted to syntactic order,⁸ if only to state, after extensive exemplification, that this is only a superficial problem⁹ and show how to handle variation of word order in terms of movement rules.

The distinction in (6b), instead, is recognized in all syntactic approaches, but not much work, at least until recently, has been devoted to detecting the diagnostics to distinguish between oblique complements and adjuncts.¹⁰

As for (6d), typologists are more concerned with analyzing overt forms of pronouns and discriminating them in terms of their agreement properties (Givón 1976; Lehmann 1982, 1985), whereas generativists are concerned with stating the binding conditions of some kinds of overt and empty nominal and pronominal forms.

Instead, as far as (6e) is concerned, though Chomsky (1995) recognizes that most variation is morphological (and the verbal functional projections singled out since the eighties have been in line with his statement) not much work has been devoted by generativists to analyzing different case and cross reference systems,¹¹ while this is the area deeply investigating upon by typologists.

As for (6g-h) it is, of course, also curious that typological approaches do not deal with movement rules in those languages in which function changing operations are given by movement of constituents, or with wh-movement or wh- *in situ* phenomena.

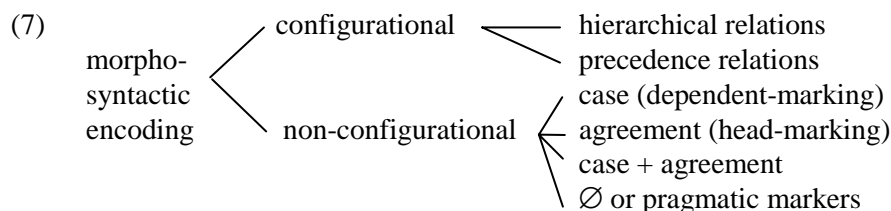
Moving to question (4) this has been the main contribution of typological approaches to syntax; in this perspective grammar is identified as morpho-syntax under the assumption that grammatical relations and their rela-

tionships to semantic and pragmatic relations are basically marked by morphological and syntactic means.

As for question (5), although it has always been on the typological agenda, we think that it has not yet been given completely satisfactory answers. Of course this is not an easy question, as it really implies the ability to single out the universal algorithm of sentence construction. Let us try then to deal with question (5) in our own terms.

4.1 Towards a universal principle of sentence construction

To answer question (5) we think it is useful to show the various possibilities of morpho-syntactic encoding that languages use to form sentences (Mereu 2004):



The part of this scheme we are interested in is the one concerning non-configurational systems of morpho-syntactic encoding which, in addition to dependent-, head-marking and mixed systems, also takes into account \emptyset -marking systems. These appear in languages such as Mandarin Chinese described by Li and Thompson (1976, 1981) as “Topic prominent languages” as they mark the Topic in initial position while the Comment, usually given by the predicate, follows the first position. Interestingly, there is no morphological or syntactic marking for grammatical relations, and that is why we think Chinese is a \emptyset -marking language; subjects and objects, when they do not correspond to Topic – Comment sequences determining SVO order, can occur in any position while no marking helps identify them. Just to give an example, consider the following sentence:

- (8) Nèi-chang huǒ xìngkuì xiāofang-duì lái de kuài
 that-CLF fire fortunate fire-brigade come PCL quick
 ‘(As for) that fire, fortunately the fire-brigade came quickly’ (Li and Thompson 1976, ex.(7))

In (8) the Topic is not a syntactic argument of the verb, rather it is linked to the predicate semantically. As a matter of fact, if we have something such as the coordinate clause in (9):

- (9) *Nèi-chang huǒ xīaofangduì; làide zǎo, *suǒyì ___; hěn lèi*
 that-CLF fire fire-brigade came early so very tired
 ‘(As for)that fire the fire-brigade came early, so they are very tired’
 (Li and Thompson 1976: [29])

we notice that the coordinate clause is ungrammatical since the null subject is controlled by the subject of the previous clause and not by the Topic.

Given these data from Chinese, we think that Li and Thompson are right in considering this language as being constrained by information structure. Now the question is what kind of pragmatic principle governs Chinese syntax. We can go back to the two principles which Givón (1984) proposes in relation to word order variation, namely:

- (10) More indefinite/discontinuous/new information *follows* more definite/continuous/old information. (Givón 1984: 207)
- (11) More surprising/disruptive/new information *precedes* more continuous/predictable/old information. (Givón 1984: 206)

We have no space to discuss Givón’s principles on the ground of the data he describes. We can only say that (10) can be considered the principle of progression from given to new information applied in configurational languages. Instead (11), which is also proposed by Mithun (1987) as the “Newsworthy Principle”, is shared by non-configurational languages if we modify it in the following way (Mereu 2004):

- (12) Pragmatically prominent information precedes less prominent information.

(12) states that, rather than just New or Focus information, non-configurational languages can have both Topic and Focus in first position provided that either is prominent in that it represents contrastive or emphatic or restricted information. Evidence in favour of this interpretation of the newsworthy principle comes from Chinese. Consider the following piece of discourse:

- (13) A: *tā gēn shéi niàn-shū?*
 3.SG with who study-book
 'Who does s/he study with?'
 B: *Gēn Lìsì niàn-shū.*
 With Lisi study-book
 'S/he studies with Lisi.' (Li and Thompson 1981: 558)

In (13) there is a restricted Focus in initial position and not a Topic. We can also have a contrastive Topic in first position, as in:

- (14) *yīfu xīn de hǎo; péngyǒu jiù de hǎo.*
 clothes new NOM good friend old NOM good
 'Clothes, new ones are good; friends, old ones are good.' (Li and Thompson 1981: 101)

In other words we propose that the distinction between configurational and non-configurational languages, either morphologically or \emptyset -marked, is still valid, if we regard the former as syntactically oriented languages and the latter as pragmatically oriented ones. In these terms syntactically oriented languages would be those configurational languages undergoing the pragmatic principle in (10) above, while pragmatically oriented ones would be those undergoing the principle in (12). However the distinction is not only to be intended in cross-linguistic terms, as there are configurational languages with areas of non-configurationality and vice versa (Hale 1994; Mereu 2004). Therefore principle (12) applies both to non-configurational languages and to non-configurational phenomena in configurational languages. Evidence in this direction is given by the differences in left and right dislocations and left or right focalizations in languages such as Italian. Let us consider the following sentences:

- (15) (*Il libro*), *Giann l' ha comprato*
 The book Gianni DO.3.SG.M has bought
 'As for the book, Gianni bought it'
 (16) *Giann l' ha comprato, il libro*
 Gianni DO.3.SG.M has bought the book
 'Gianni bought it, the book'

(15) and (16) are instances of left and right dislocations respectively; Bosson (1981), Berruto (1986) and Simone (1997) rightly consider instances of right dislocation as mechanisms for making whatever stands to the left prominent. This interpretation is further confirmed by prosodic evidence: whereas left dislocation is marked by a pitch accent, right dislocation is prosodically flat. The same happens with cases of left and right focalization, as only left focalization is marked by a pitch accent (Mereu 2004; Mereu and Frascarelli 2005).

Therefore, there are two universal algorithms of sentence construction according to whether we are dealing with configurational or non-configurational languages or phenomena: the principle of progression from given to new information in (10) implies equivalence among syntactic positions, semantic and pragmatic roles and is applied to configurational languages in neutral sentences; the principle in (12) linked to non-configurationality implies no correspondence among syntactic positions, semantic and pragmatic roles, but entails that salient information comes before non-salient information.

5. Conclusions

In this paper we have tried to show that after a large body of empirical and theoretical work on syntax in the past century, a good way of doing syntax today is simply to sum up the results of both formal and typological approaches. Both recognize that there are universal principles of sentence construction, even if they take into account cross-linguistic variation in different ways.

Basically we need to maintain the distinction between a configurational and non-configurational way of constructing the sentence and abandon the idea that variation pertains exclusively to morphology. As a matter of fact, sentence construction is constrained by pragmatic principles according to which either we have the SVO structure corresponding to the Given – New sequence, or apparent free word order corresponding to a [+ Prominent] – [- Prominent] pragmatic sequence.

Notes

1. I wish to thank my friend Nigel Vincent for his useful suggestions and comments on this paper. I am, of course, fully responsible for any mistakes or inaccuracies.
2. There are also other formal approaches such as Lexical-Functional Grammar (Bresnan 1982, 2001) and Head-Driven Phrase Structure Grammar (1994) which share the idea of syntax as a highly-constrained system, but these are more oriented towards a multi-linguistic and a cross-level analysis of languages and in line with the idea of syntax we will defend in the paper.
3. Of course the work mentioned in the text is only part of the foundational work done by typology up to the eighties.
4. The 'head first' and 'head last' parameter which was initially proposed to take into account the VO and OV languages then becomes the 'head directionality parameter' and extended to characterize a head, both verbal and nominal, in relation to its dependent phrases, see Baker (2001).
5. Specifically Longobardi has conducted large-scale comparisons of languages both synchronically and diachronically in terms of a rich set of parameters and has also contributed to the theory of parameters.
6. This does not mean that typology does not analyse interrogative sentences or binding phenomena in the languages it investigates upon, it simply means that it is not interested in movement phenomena and binding conditions per se, as again neither movement of constituents nor general binding conditions are shared by all types of languages. Still it is true that in configurational languages question formation rules may be characterized as syntactic operations which look like movement or chain formation rules. As for binding, things are a bit more complicated, as they would be dealt with by typology according to the different logophoric systems languages implement and more in cross-level terms, that is considering the interaction between morphosyntax and semantics.
7. Van Valin and LaPolla (1997) refer to pro-drop, but they only hint at this phenomenon without characterizing it.
8. By syntactic order we mean both different orders of constituents and free word order. Variation of word order is therefore the possibility for languages to realize either one of the six order of constituents for a sentence with two arguments or total freedom of syntactic order, that is discontinuous sequences of words.
9. Remember that word order variation in generative grammar is generally characterized in terms of the parametric difference between head-initial and head-final structures.
10. The book in the Eurotyp series (van der Auwera 1998) mainly focuses on bare adverbs and sentential adverbials. Van Valin and LaPolla (1997) discuss the

distinction and give a typology of obliques in terms of different kinds of prepositions. Prandi (2004) also discusses the issue.

11. In other words, with few exceptions such as Bitter and Hale (1996) in which ergative case systems are analysed, the different case systems (nominative / accusative, ergative / absolutive, active, ..) or the cross referencing of subject and object through agreement markers on the verbal head, have not been dealt with very extensively in generative grammar.

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Linking without grammatical relations in Yucatec: alignment, extraction, and control

Jürgen Bohnemeyer

It is argued that the linking between semantic roles and syntactic arguments is not governed by grammatical relations in Yucatec. Intracausally, alignment (or “obviation”) constraints disambiguate arguments for linking: the “actor” argument of transitive active verb forms must outrank the undergoer on a “prominence” hierarchy if both are third-person. Interclausally, linking is regulated by construction-specific rules: in the case of extraction, one that mandates use of a special voice form in case the target of extraction thematically outranks another argument; in the case of control, one that requires the highest-ranking thematic role to be linked to the target of control.¹

1. The problem

Yucatec Maya has a typologically exotic cross-reference system which treats the single argument of intransitive clauses on a par with the “actor” argument of transitive clauses in some inflectional categories and with the “undergoer” in others, while argument marking in transitive clauses is invariable. What organization of grammatical relations – if any – co-occurs with such an unusual argument marking pattern?

Grammatical relations (GRs) or “grammatical functions” – subject, direct object, indirect object, primary/secondary object, etc. – serve to regulate the “linking” between thematic relations and syntactic arguments (e.g., Culicover and Jackendoff 2005: 187–232; Van Valin and LaPolla 1997: 242–316, and references therein). I assume the Role-and-Reference Grammar (RRG) framework, in which GRs are considered language-specific. The hallmark of GRs is “restricted neutralization” (Van Valin and LaPolla 1997: 274–285): syntactic processes – or properties of syntactic representations – that are restricted to a particular “privileged” argument thematically neutralized in the sense that a range of different thematic relations is linked to it. In this paper, I examine evidence from clause-internal linking and from linking in two families of inter-clausal constructions in Yucatec, ex-

traction and control constructions.² I show that clause-internal linking is subject to “alignment” constraints of a nature similar to what has been described for other Mayan languages (Aissen 1997, 1999; Zavala Maldonado 1997, 2007): in active transitive clauses with two third-person arguments, the “actor” argument must outrank the “undergoer” argument on a prominence hierarchy. Left-dislocation, passivization, and clefting are used as means to resolve alignment violations. However, none of these constructions can be said to be restricted to inverse alignment, and so none can be said to express inversion. I argue that the Yucatec alignment system serves to disambiguate linking between two third-person arguments, and I take this as evidence that GRs are not involved in regulating intra-clausal linking in Yucatec. Disambiguation is an issue with 3rd-person arguments only, for obvious reasons. 3rd-person arguments are realized by bare agreement or cross-reference markers and optionally in addition by noun phrases. Direct evidence that the interpretation of these noun phrases is not governed by GRs comes from the regular repair interpretations triggered by sentences with alignment violations. These repair interpretations appear to override the otherwise rigid constituent order of the Yucatecan clause. Constituent order, instead of discriminating GRs, directly determines the linking between syntactic arguments and semantic roles – but only under “harmonic alignment,” i.e., in case the highest-ranking argument on the thematic hierarchy – the actor – corresponds to the highest-ranking argument on the prominence hierarchy.

Extraction constructions include relativization, clefting, and content questions in Yucatec. These show an organization that has been considered ergative in work on Mayan syntax (e.g., Dayley 1981 on Tz’utujil; Larsen 1981 on Awakatek; Van Valin 1981 on Jakaltek): all arguments and obliques are extracted without restriction except for the “actor-” (i.e., highest-ranking on a thematic hierarchy) argument/oblique of active transitive and passive clauses. Extraction of the passive actor is barred completely, while extraction of the active actor requires the so-called “agent-focus” (or “A-focus”) form, a special voice form of the Mayan verb. Both restrictions can be accounted for in terms of a single linking rule that mandates the use of the A-focus form in case the target of extraction outranks another argument of the same verb. In RRG terms, extraction operates on an “invariable syntactic pivot” in Yucatec which includes arbitrary arguments and obliques except for the transitive A-argument. However, this pivot has no uniform morphological expression. Control constructions in turn operate on a nominative invariable syntactic pivot: they require the target of control to be

either the actor argument of a transitive verb or the single argument of an intransitive verb, but disallow passivization of the controlled core. Again, the relevant generalization cannot be stated in terms of a uniformly marked grammatical relation of Yucatec. The simplest alternative is a linking rule that requires the highest-ranking thematic role in a controlled verbal projection to be linked to the target of control.

In sum, in line with an argument marking system that fairly transparently reflects the “macro-roles” of actor and undergoer, linking between semantic roles and syntactic arguments is governed, not by GRs, but clause-internally by alignment constraints and in inter-clausal syntax by construction-specific linking rules.

2. Argument marking

Yucatec lacks nominal case marking. There are two paradigms of cross-reference markers, customarily called “set A” and “set B” in Mayan linguistics. These behave like agreement markers in the presence of a co-indexed nominal in the same clause and like bound pronominal arguments in its absence; they do not co-occur with free pronouns inside the clause unless the latter are used deictically (see examples in section 5). The set-B markers are suffixes. The singular set-A markers are clitics; they either procliticize to the (verb or noun) stem or form a phonological word with a preceding host, in particular, the preverbal “aspect-mood markers” (see (2)). The plural set-A markers are complex, combining a clitic with the set-B plural marker of the requisite person category. Example (1) shows nominal predicates that carry the A1.SG clitic marking the speaker as possessor and the B2.SG suffix marking the addressee as theme:

- (1) *Sī in=īho-ech, in=pàal-ech, ko'x!*
 yes A1.SG=son-B2.SG A1.SG=child-B2.SG EXHORT
 ‘You ARE my son alright, you ARE my child; let’s go!’

The single argument of intransitive verbs (henceforth “S”) is cross-referenced by the set-A markers in incomplete “status”, but by the set-B markers in complete, subjunctive, and extra-focal “status”. In contrast, cross-referencing of the actor (the higher-ranking argument; “A”) and undergoer (the lower-ranking argument; “U”) of transitive verbs is not sensitive to status. Status is an inflectional category specific to and common

among Mayan languages (Kaufman 1990). The architecture of the status system varies from language to language. The Yucatecan system is presented in Bohnemeyer (2002: 216–242) along with a semantic analysis of its aspectual and modal components. Examples (2a) and (3a) illustrate the argument marking contrast between incomplete (2a) and complete (3a) intransitive forms of *hàats* ‘bat’. For comparison, (2b) and (3b) show the corresponding transitive forms (*hàats* is the antipassive of *hats* ‘hit’). No more than two arguments are marked on the verb, and there are neither primary nor indirect objects; recipients of transfer events are encoded by obliques.

- | | | | | |
|-----|----|---|----|---|
| (2) | a. | Intransitive incomplete
<i>k-in=hàats</i> ’-Ø
IMPF-A1.SG=hit\APASS-INC
‘I bat’ | b. | Transitive incomplete
<i>k-u=hats</i> ’-ik-en
IMPF-A3=hit-INC-B1.SG
‘he hits me’ |
| (3) | a. | Intransitive complete
<i>h=hàats</i> ’-nah-en
PFV=hit\APASS-CMP-B1.SG
‘I batted’ | b. | Transitive complete
<i>t-u=hats</i> ’-ah-en
PFV-A3=hit-CMP-B1.SG
‘he hit me’ |

A number of different classifications and analyses of the Yucatec argument marking pattern have been proposed; cf. Bohnemeyer (2004) for an overview. Bohnemeyer (2004), building on DeLancey (1985), and rejecting in particular an ergative feature-based linking mechanism proposed by Krämer and Wunderlich (1999), describes the system as split-intransitive, with linking organized as follows: where there is a ranking of thematic roles, the higher role is linked to the set-A-marked argument and the lower to the set-B-marked one. In intransitive clauses, where there is no ranking, linking depends on viewpoint aspect: incomplete forms are semantically imperfective, and so their single argument patterns with the transitive A-argument. In contrast, complete, subjunctive, and extra-focal forms are semantically perfective; their single argument patterns with the U-argument of transitive clauses.³

The linking rules proposed in Bohnemeyer (2004) do not refer to GRs, but operate directly on the arguments cross-referenced by the set-A and set-B markers. The aim of the present paper is to demonstrate that the facts of linking in Yucatec are best accounted for in terms of the interaction of argument marking, constituent order, and a system of constraints on the

alignment between thematic roles and relative “prominence” of referents in active transitive clauses, without reference to GRs. Constituent order and the alignment system are the topics of the following two sections.

3. Constituent order

Yucatec, like all Mayan languages, is verb-initial. This fact is obscured in connected discourse – above all, in narratives – due to the high frequency of left-dislocations. The conditions under which left-dislocation occurs are discussed in some detail in section 4. In brief, left-dislocation is used to make the discourse topic of a sentence explicit. In addition, there is a tendency to avoid multiplicity of clause-internal noun phrases. One way to achieve this is to left-dislocate the A of transitive clauses, the “figure” or theme of locative descriptions, and so on. The pervasiveness of this pattern has led some researchers to conclude an SVO order for Yucatec (e.g., Durbin and Ojeda 1978; Gutiérrez Bravo 2006). Consider example (4):

- (4) *Juan=e'* *túun* *lúub-s-ik* *le=che'=o'*.
 Juan=TOP PROG:A3 fall-CAUS-INC(B3.SG) DET=tree=D2
 ‘Juan, he’s felling the tree.’

The question is whether the preverbal nominal preceding the progressive marker in (4) is clause-internal, and thus bears the A-argument relation to the verb. Crucial evidence against the clause-internal analysis comes from the particle *=e'* following the nominal in question. This belongs to a paradigm of four indexical particles which are in complementary distribution. They only occur pre-verbally and clause-finally. Their use is triggered by a variety of expressions. For instance, definite descriptions must be followed by either the exophoric (and, by implicature, proximal) particle *=a'* or the indexical (and, by implicature, distal) particle *=o'* (Bohnenmeyer 2009). In contrast, proper nouns and indefinite NPs are optionally followed by the text-deictic particle *=e'* (see detailed account and further triggers such as adverbials, negation, etc. in Bohnemeyer 2002). Crucially, the only elements that can intervene between the particle and the preverbal aspect-mood marker (in (4), the progressive marker) are adverbial particles and focused constituents. In short, the particle preceding the verb (or the preverbal AM marker) marks the right edge of a phrase that contains the trigger of the particle. The question is, then, whether this phrase is the S/A

argument of the verb. The answer is clearly negative. In (5a), the particle follows a nominal which stands in a possessive relation to the only clause-internal nominal, and (5b) shows a particle-marked phrase that could not possibly be any constituent of the clause but stands in a superset relation to the object of the clause:

- (5) a. *U=nah-il Pedro=e', nohol yàan u=ho'l.*
 A3=house-REL Pedro=TOP south EXIST(B3SG)A3=hole
 'As for Pedro's house, its door is (facing) south.'
- b. *Le=wolis túun=o', tu'x kéen in=ts'a'*
 DET=circle so.then=D2 where SR.IRR A1.SG=put(B3.SG)
le=t-a=ya'x a'l-eh?
 DET=PFV-A2=first say-SUBJ(B3.SG)
 'As for the circles then, where am I going to put the one you mentioned first?'

In other cases, the particle-marked phrase is a prepositional phrase referring to a time or place. What these examples – which are in no way unusual or infrequent in Yucatec discourse – show is that the particle-marked sentence-initial phrase (a) is not restricted to A, S, or any other particular syntactic function inside the clause, (b) in some cases could not possibly have any syntactic function inside the clause, and (c) always defines a topic of the following clause (cf. section 4). I conclude that this phrase is adjoined, i.e., not a constituent of the clause. In RRG terms, it is in the “left-detached position” (Van Valin and LaPolla 1997: 36–37). It follows that the clause in (4) does not have a nominal A-argument. Hence, it does not have SVO order.

In transitive clauses in which both arguments are realized by nominals, the U argument canonically precedes the A argument (but see Skopeteas and Verhoeven 2005), as in (6a-b).

- (6) a. *T-u=p'at-ah uy=atan Pedro.*
 PFV-A3=abandon-CMP(B3SG) A3=wife Pedro
 'Pedro left his wife.'
- b. *T-u=chi'-ah hun-túul pèek'*
 PFV-A3=mouth-CMP(B3.SG) one-CLF.AN dog
le=síina'n=o'.
 DET=scorpion=D2
 'The scorpion stung (lit. bit) a dog.'

However, transitive clauses that on a “VOS” (i.e., VUA) parse violate constraints on the alignment between the A > U ranking and the ranking of the referents in terms of a “prominence” or “accessibility” hierarchy are readily reinterpreted to the effect of a “VSO” (i.e., VAU) ordering. Alignment constraints are discussed next.

4. Alignment constraints

Transitive clauses with two third-person arguments are subject to alignment restrictions similar to those documented for other Mayan languages (cf. in particular Aissen 1997, 1999 for Tzotzil; Zavala Maldonado 1997 for Akatek; and Zavala Maldonado 2007 for Chol and Huastec). The A-argument must outrank the U-argument on a semantic-pragmatic hierarchy determined in particular by topicality, definiteness, humanness, animacy, and referentiality (Aissen’s “individuation”), and the U-argument cannot be coreferential with the possessor of the A-argument. Like other Mayan languages, Yucatec lacks proximate/obviative marking on nominals and inverse marking on the verb⁴ as known from the Algonquian languages in which grammatical alignment constraint systems have first been studied. The most common means to avoid alignment violations are left-dislocation, passivization, and focussation. Consider, first, the constraint barring the U-argument from coreference with the possessor of the A-argument, illustrated in (7):

- (7) ??*T-u=p’at-ah* *Pedro* *uy=atan.*
 PFV-A3=abandon-CMP(B3.SG) Pedro A3=wife
 intended: ‘His wife left Pedro.’

Under the interpretation that *Pedro* is the U- and *uyatan* ‘his wife’ the A-argument, consultants reject (7) unanimously. However, consultants volunteer that (7) is marginally acceptable if interpreted as synonymous with (6a) above. Such repair interpretations in which alignment patterns appear to override canonical constituent order are readily available with all sentences that trigger alignment violations on canonical-order interpretations.⁵ This suggests that the role grammatical functions play in the linking of thematic roles to arguments is at best malleable. Two common strategies for expressing the intended meaning of (7) are the passive in (8a) and the “agent focus” construction in (8b):

- (8) a. *Pedro=e' h-p'at-a'b*
 Pedro=TOP PFV-abandon-PASS.CMP(B3.SG)
tumèen uy=atan.
 CAUSE A3=wife
 'Pedro, he was left by his wife.'
- b. *Pedro=e' uy=atan p'at-eh.*
 Pedro=TOP A3=wife(B3.SG) abandon-SUBJ(B3.SG)
 'Pedro, his wife (was the one who) left him.'

The so-called agent focus form is a special voice form of the Mayan verb that occurs under "extraction" – focussation or relativization – of the transitive A-argument.⁶ In Yucatec, the A-focus form is characterized by deletion of the set-A marker and the AM marker. As Tonhauser (2007) points out, the form is nevertheless easily identified as transitive since it retains the transitive series of status suffixes. Aspect-mood marking in the A-focus form is reduced to a three-way contrast between bare incomplete status for imperfective reference, bare subjunctive status for past perfective reference, as in (8b), and the irrealis subordinator *keen* plus subjunctive status for future time reference, habitual reference, and generic reference. Aissen (1999) argues that the A-focus form in Tzotzil is a special "inverse" verb form restricted to the A-extraction context. However, as shown in section 6, Aissen's analysis does not apply to Yucatec. In Yucatec, the use of the A-focus form is a strategy of avoiding alignment violations, not an expression of inverse alignment. The same holds for passivization and left-dislocation; cf. section 5. Each of the three constructions has its own semantics (to be briefly analyzed below and in the following sections) of which alignment is not a part; they are tied into the alignment system by pragmatics.

Next, consider humanness as a factor. Example (9a) again triggers a repair interpretation under which it was in fact the child who bit the spider; otherwise, (9a) is rejected. To express the proposition intended in (9a), either left-dislocation (9b) or passivization is chosen (the corresponding example is left out in the interest of space).⁷

- (9) a. *??T-u=chi'-ah le=pàal*
 PFV-A3=mouth-CMP(B3.SG) DET=child
hun-túul x-chìiwol=o'.
 one-CLF.AN F=tarantula=D2
 intended: 'A tarantula bit the child.'

- b. *Hun-túul* *x-chiìwol=e'*,
 one-CLF.AN F-tarantula=TOP
t-u=chi'-ah *le=pàal=o'*.
 PFV-A3=mouth-CMP(B3.SG) DET=child=D2
 'A tarantula, it bit the child'

In (9), the U outranks the A not just in humanness, but also in definiteness. When both arguments are definite, the distribution is the same, as shown in (10a). In (10b), the strategy selected to avoid the alignment violation is left-dislocation; other possible options would be passivization and the A-focus construction (see illustration of these constructions in (8)).

- (10) a. *??T-u=chi'-ah* *Pedro* *le=kàan=o'*.
 PFV-A3=mouth-CMP(B3.SG) Pedro DET=snake=D2
 intended: 'The snake bit Pedro.'
 b. *Le=kàan=o'*, *t-u=chi'-ah* *Pedro*.
 DET=snake=D2 PFV-A3=mouth-CMP(B3.SG) Pedro
 'The snake, it bit Pedro.'

When the A-argument outranks the U-argument in definiteness, the active transitive form with two clause-internal nominal arguments is perfectly acceptable even if the U is human and the A is not:

- (11) *T-u=kins-ah* *hun-túul* *nohoch*
 PFV-A3=die:CAUSE-CMP(B3.SG) one-CLF.AN big
máak *le=x-chiìwol=o'*.
 person DET=F-tarantula=D2
 'The tarantula killed an elderly person.'

Definiteness appears to be the second-most powerful factor governing alignment in Yucatec – it dominates humanness and animacy. An indefinite NP in A combined with a definite in U is rejected even when the former outranks the latter in humanness, as in (12a). Example (12b) illustrates the possibility of avoiding this alignment violation through left dislocation:

- (12) a. **T-u=pech'-ah* *le=xoh*
 PFV-A3=squash-CMP(B3.SG) DET=cockroach
hun-túul *x-ch'úupal=o'*.
 one-CLF.AN F-female:child=D2
 intended: 'A girl squashed the cockroach.'

- b. *Hun-túul* *x-ch'úupal=e'*,
 one-CLF.AN F-female:child=TOP
 t-u=pech'-ah *le=xoh=o'*.
 PFV-A3=squash-CMP(B3.SG) DET=cockroach=D2
 'A girl, she squashed the cockroach.'

I assume that left-dislocation of a nominal coreferential with an argument marks the referent as topic. Then (12b) may be taken to suggest that topicality outweighs even definiteness as a factor determining alignment prominence. Interpreted along the same lines, (9b) and (10b) suggest that topicality outranks humanness and (8b) that it outranks possession. In the absence of left-dislocation, topicality is most commonly expressed by pronominalization (Givón 1983, 1994). In Yucatec, this means that the topical argument is not realized by a nominal at all, but represented by the cross-reference marker only. (However, a referent tracked by a bare cross-reference marker is not necessarily topical; it may not even necessarily be "old" – see below.) The following excerpt from a "Frog Story" narrative (recorded by Christel Stolz in 1992) illustrates that a transitive active voice form may be used with a U outranking the A in humanness if the A's referent is topical and traced from preceding discourse, represented in the clause by the set-A marker only. The excerpt describes the cliff scene; the protagonists of this episode are the boy, his dog, and the deer. The deer is already established as a topic and is marked as such in the first line of the fragment in (13). In the next line, a plain transitive active verb form is used to describe the deer throwing the boy off the cliff from its antlers. The boy is referred to by the sole nominal of the clause, the U argument. Neither left-dislocation nor passivization or A-extraction is needed to avoid an alignment violation in (13) – none occurs because the deer is already understood to be topical in this context.

- (13) Context (literal translation): 'Well, the deer, it is going having shouldered ("backed") the child with its head as it is going. Well, and then the dog as well, there it was hit (by a swarm of wasps) where it was behind its master, the dog was also barking at the deer.'

... *pwes,* *le=kéeh=o'*, *chich* *u=bin* *túun=e'*.
 well DET=deer=D2 hard A3=go so.then=D3
 Le=káa=t-u=pik+ch'ìn-t-ah
 DET=CNJ=PFV-A3=fling+pelt\APASS-APPL-CMP(B3.SG)

le=pàal=o', káa=h-líub le=pàal=e',
 DET=child=D2 CNJ=PFV=fall(B3.SG) DET=child=D3
tak le=pèek' túun=o' h-líub-ih.
 as.far.as DET=dog so.then=D2 PFV-fall-CMP(B3.SG)
 'well, as for the deer, fast was how it went. And then it threw off the
 child, and then the child fell, and even the dog, it fell.'

The correlation between argument realization and “preferred argument structure” (in the sense of Du Bois 1987), accessibility, and topicality ensures a preference for “harmonic alignment” between thematic structure and the relative prominence of referents in transitive clauses in which one or both arguments are realized by a bare cross-reference marker: the referent of the A-argument tends to be topical in line with the prominence hierarchy in (15) below. The first line of the passage also illustrates the use of left-dislocation to select one of several entities all of which are accessible in the discourse as the topic of the sentence. In contrast, clause-internal nominal arguments are used in reference to entities that are accessible, but do not constitute the topic of the sentence in which they occur. Table 1 summarizes the functions of the various realization options in the introduction and tracking of argument referents and the marking of topics.⁸ This table leaves open the question of accessibility in clauses with multiple clause-internal argument nominals. This is the proper domain of the strategies for avoiding alignment violations in (9a) and (10a) above.

Table 1. Argument realization, discourse referents, and topicality in Yucatec

realization	new referent	introduced referent
clause-internal nominal (plus cross-reference marker)	introduction of new, inaccessible referent	tracking of old, accessible but non-topical referent
left-dislocated nominal (plus clause-internal cross- reference marker)	introduction of new, inaccessible referent as sentence topic	selection of old, accessible referent as sentence topic (to mark topic switch or disambiguate topic)
bare cross-reference marker	(N/A?)	continuation of topic from preceding discourse

Animacy, as opposed to humanness, is perhaps the weakest factor in alignment constraints. The preference for the passive over the active is comparatively weak in the following examples featuring inanimate A- and animate but non-human U-arguments:

- (14) a. *?T-u=kins-ah* *le=kàan*
 PFV-A3=die:CAUS-CMP(B3.SG) DET=snake
le=k'áak'=o'.
 DET=fire=D2
 intended: 'The fire killed the snake.'
- b. *H-kins-a'b* *le=kàan*
 PFV-die:CAUS-PASS:CMF DET=snake
tumèen le=k'áak'=o'.
 CAUSE DET=fire=D2
 'The snake was killed by the fire.'

The prominence hierarchy in (15) captures the ranking of some of the factors evidenced above:

- (15) topicality > definiteness > humanness > animacy

The highest property on this scale that applies to a given A-argument must outrank the highest property that applies to its co-argument. I follow Aissen (1999) in that I do not consider possession (coreferentiality of the U with the possessor of the A) part of the semantic-pragmatic hierarchy in (15).⁹ Counterparts of (15) are known in the literature on alignment constraint systems under labels such as "topicality hierarchy", "prominence hierarchy", or "saliency hierarchy".

Finally, there are no alignment restrictions on clauses with 1st- or 2nd – person U-arguments. The example in (16) features a non-human and indefinite A- and a 1st-person U-argument:

- (16) *T-u=nes-ah-en* *hun-túul* *xoh.*
 PFV-A3=gnaw-CMP-B1.SG one-CLF.AN cockroach
 'A cockroach bit me.'

The absence of restrictions on clauses with speech-act-participant arguments, combined with the role of left-dislocation and the interaction between left-dislocation and argument realization as discussed above, strongly suggest that the alignment constraints serve to control the interpretation of clauses or verbal cores with multiple third-person arguments. I suggest below that alignment constraints may be necessitated as a disambiguation mechanism because of the absence of grammatical functions governing linking. I take the repair interpretations triggered by clauses that

violate alignment constraints when parsed according to canonical constituent order as direct evidence of the absence of grammatical functions mediating between arguments and thematic relations.

5. Passive and prominence

Passivization is one strategy used to avoid alignment violations. But passivization is not restricted to inverse configurations and thus cannot be considered an expression of inversion. Thus, the passive in (17) was accepted by all consultants without hesitation, even though the oblique actor phrase outranks the S argument (corresponding to the U of the active form) in humanness and definiteness.

- (17) *H-kins-a'b* *hun-túul* *kàan*
 PFV-die:CAUS-PASS.CMP(B3.SG) one-CLF.AN snake
tumèen le=máak=o'.
 CAUSE DET=person=D2
 'A snake was killed by the person.'

It is thus not necessary for the passive undergoer to outrank the actor on the alignment hierarchy postulated in (15) above. This fact further supports the hypothesis that the function of the Yucatec alignment system is simply to disambiguate linking in clauses with two 3rd-person arguments. The semantic function of the passive is to block the actor role of transitive verbs from argument linking, relegating it to oblique status (Bohnenmeyer 2004). Since the passive has only a single argument, it is not itself subject to alignment restrictions and therefore becomes a pragmatic option for the encoding of configurations that would trigger alignment violations in the active form. This is not to say that actor and undergoer are equally likely to be topical in a passive clause. Sentences such as (17) are at best rare in connected speech. Even less likely are passive sentences in which a nominal coreferential with the actor is left-dislocated. Such configurations seem of limited use pragmatically – but, unlike the alignment violations of section 4, they are not excluded by the grammar of the language.

The passive is, however, subject to a syntactic constraint that bears a certain resemblance to the alignment restrictions. The complement of the causal preposition that “flags” the actor in passive clauses may be a free

3rd-person pronoun, but cannot be a 1st- or 2nd-person pronoun – consultants unanimously reject the corresponding versions in (18):

- (18) *Juan=e' h-ha'ts' tumèen *tèen/*tèech/(letì')*
 Juan=TOP PFV-hit\PASS(B3.SG) CAUSE me/you/it
 'Juan, he was hit by me/you/her-him-it.'

Aissen (1997) reports a parallel restriction on the passive in Tzotzil. Future research will have to clarify what is responsible for the pattern in (30) and how, if at all, it is related to the alignment restrictions on 3rd-person arguments in active transitive clauses.¹⁰

6. Extraction

The extraction of arguments may be restricted by grammatical relations. This is not the case in English and other Indo-European languages; but the phenomenon is well-known from Austronesian languages (e.g., Keenan 1976 on Malagasy). In Yucatec, there is a restriction on the extraction of the A-argument of transitive verbs, which strictly requires the A-focus form introduced above (see (8b)), and on the oblique actor phrase of passives, which is excluded. Other than that, extraction is unrestricted. The following discussion is confined to relativization, but the relevant phenomena are the same in clefts and content questions.¹¹

Relative clauses are illustrated in (19a-b). If the head of the relative construction is a noun, the relative clause follows it immediately. Example (19a) shows relativization of the S-argument of an intransitive verb marked for imperfective aspect. In (19b), the U-argument of a transitive verb is extracted out of a perfective clause.

- (19) a. *T-inw=il-ah le=máax*
 PFV-A1.SG=see-CMP(B3.SG) DET=who
k-u=bin Ho' sáan-sáamal=o'.
 [IMPF-A3=go Mérida RED-tomorrow]=D2
 'I saw the (one) who goes to Mérida every day.' (Bricker, Po'ot Yah, and Dzul de Po'ot 1998: 181)
- b. *K'àas le=wàah*
 bad(B3.SG) DET=tortilla

t-a=hàan-t-ah=o'.

PFV-A2=eat-APPL-CMP(B3.SG)=D2

'The tortilla you ate was bad.'

Now compare (19b) to (20), featuring A-relativization in a perfective clause. In (20a), the A-focus form is used: the transitive verb appears in the bare subjunctive¹² and the set-A clitic is deleted. In contrast, (20b) is an attempt to use a regular transitive active form under A-extraction. This sentence is perfectly unambiguous: the set-B suffix identifies the addressee as the U; so only the 3rd-person set-A clitic, linked, as always, to the actor role, can be coreferential with the head of the relative construction. Nevertheless, participants generally respond to this sentence with puzzlement: out of six speakers with whom I tested (20b), three straightforwardly rejected it, one found it hard to understand, and one rated it as acceptable but prefers (20a) for expressing the same meaning and only one speaker considered (20a) and (20b) equally good. In a sentence completion task I conducted before eliciting judgments about (20b), all six speakers spontaneously produced the form in (20a).¹³

- (20) a. *K'àas le=máak òokol-ech=o'.*
 bad(B3.SG) DET=person steal-B2.SG=D2
 'The person (who) robbed you is bad.'
- b. *??K'àas le=máak t-uy=òokol-ah-ech=o'.*
 bad(B3.SG) DET=person PFV-A3=steal-CMP-B2.SG=D2
 intended: 'The person (who) robbed you is bad.'

I conclude that the A-focus form is generally preferred in A-extraction contexts in Yucatec. As mentioned above, Aissen (1999) analyzes the A-focus form in Tzotzil as a special "inverse" verb form restricted to the A-extraction context: it is used with third-person A and U arguments only and even then competes with the active voice form, being preferred over the latter the more clearly U outranks A on the prominence hierarchy. The Yucatec A-focus form differs from its Tzotzil counterpart in that it is not restricted to third-person arguments – A, U, or both can refer to speech act participants (U does in (20)). It remains to be determined whether the use of the A-focus form is sensitive to the relative prominence of the target of extraction compared to that of a third-person (co-)argument. I tentatively assume that the Yucatec A-focus form marks A-extraction regardless of alignment type. Therefore, I assume that it is not an expression of inverse

alignment, but merely a pragmatic strategy of avoiding it, along with passivization and left-dislocation.

Recipients are expressed by oblique prepositional phrases headed by the generic preposition *ti'*, as in (21). Under relativization of recipients, normal transitive active verb forms can be used, and all argument markers are retained. The head of the relative clause may be a noun phrase, as in (21a), or an indefinite pronoun, as in (21b). The preposition *ti'* follows the head of the relative construction in (21a-b). Alternatively, it may remain in place in the relative clause, which is judged as equally good by the consultants.

- (21) a. *K'àas le=máak ti'*
 bad(B3.SG) DET=person PREP
t-a=ts'a'-ah le=ta'kin=o'.
 [PFV-A2=put-CMP(B3.SG) DET=money]=D2
 'The person to (whom) you gave the money is bad.'
- b. *K'àas le=máax ti'*
 bad(B3.SG) DET=who PREP
t-a=ts'a'-ah le=ta'kin=o'.
 [PFV-A2=put-CMP(B3.SG) DET=money]=D2
 'The (one) to whom you gave the money is bad.'

The pattern in (21) may be replicated for further prepositional phrases, as it is exemplified for comitatives in (22a) and instrumentals in (22b).

- (22) a. *K'àas le=máak y=éetel k-a=tsikbal=o'.*
 bad(B3.SG) DET=person A3=COM [IMPF-A2=talk]=D2
 'The person to (lit. with) (whom) you talk is bad.'
- b. *K'as=ma'+lo'b le=motosyèera*
 rather=NEG+bad(B3.SG) DET=chainsaw
y=éetel k-a=xot'-ik le=che'=o'.
 A3=COM [IMPF-A2=cut-INC(B3.SG) DET=wood]=D2
 'The chainsaw with (which) you cut (down) the tree is pretty good.'

Interestingly, relativization of the oblique actor phrase of a passive appears to be rejected. Even English equivalents of (23) are pragmatically odd and certainly far less common than their active counterparts;¹⁴ however, all consultants rejected the sentence in (23a) without hesitation (and the same holds for the version of (23a) with the preposition *tumèen* in place in the

The rule in (24) takes care of both the extraction of the transitive A-argument and the oblique actor of the passive, requiring the A-focus form in both cases. This effectively excludes extraction of the passive actor, since the passive and the A-focus form are mutually incompatible voice forms of the Yucatec verb.

7. Control

In the framework of this article, a construction is considered a “control construction” if and only if it involves obligatory coreference between an argument of a matrix predicate and an argument of an embedded verbal core such that the two coreferential arguments combined can be realized by a nominal maximally once in either the lower core or the matrix. This definition covers both constructions in which both the “controller” (the antecedent of control, i.e., the higher argument) and the “target” (the lower argument) are cross-referenced in their respective cores and constructions in which the cross-reference marker indexing the target is deleted. Control constructions in Yucatec involve embedded verbal cores that function as arguments or obliques of their matrix predicates.¹⁶

There are two types of control constructions in Yucatec – henceforth “type-I” and “type-II” constructions. Type-I constructions include complements of predicates of desire, fear, and attempt and the so-called “motion cum purpose” construction. Predicates of attempt exhibit the least complex range of possibilities within type-I: one argument of the lower verbal core must be controlled by the A-argument of the matrix. This is illustrated in (25). The matrix verb is *ts’a* ‘put’; the argument structure frame that gives the attempt reading requires this verb to be reflexive, with the embedded core expressing the attempted action. Reflexivity is expressed by realizing the U-argument as a possessed nominal headed by *báah* ‘self’, the possessor coreferential with the A-argument. In (25a), the lower core is intransitive, the antipassive form of the transitive root *k’ay* ‘sing’. The verb appears in the incomplete, which is zero-marked for this class of verbs. The set-A clitic which marks the S-argument of intransitive verbs in the incomplete in main clauses is deleted. Example (25b) shows a transitive lower verb; it appears in the subjunctive, which is unmarked on transitives (except in clause-final position, cf. endnote 18). The target of control is the A-argument; the set-A clitic is retained.

- (25) *Le=pàal=o'*, *t-u=ts'a'-ah* *u=báah...*
 DET=child=D2 PFV-A3=put-CMP(B3.SG) A3=self
 a. ... *(*u=)k'àay*.
 [A3=sing\APASS]
 'The child, (s)he tried to sing.'
 b. ... *u=ts'ak* *le=doktòor=o'*.
 [A3=cure(B3.SG) DET=doctor]=D2
 'The child, (s)he tried to cure the doctor.'; Not: 'The child, (s)he attempted for the doctor to cure her/him'
 c. ... **(u=)ts'a'k-al* *tumèen* *le=doctòor=o'*
 [A3=cure\PASS-INC CAUSE DET=doctor]=D2
 intended: 'The child, (s)he tried to be/get cured by the doctor'
 d. ... *(*uy=)uts-tal*
 [A3=good-INCH.INC]
 'The child, (s)he tried to recover'

The target cannot be the U-argument of a lower transitive verb; thus, (25b) can only be interpreted to the effect that the child tried to cure the doctor, not to the effect that the child tried to bring about an event in which the doctor cured her/him. Crucially, control is incompatible with passivization of the lower core, as (25c) illustrates. This restriction cannot be explained in purely semantic terms; as (25d) demonstrates, syntactic control does not always require the antecedent to have control over the eventuality expressed by the lower core in the semantic/conceptual sense. Neither is the restriction the result of more general syntactic constraint barring passivization in embedded verbal cores. In verbal cores embedded under causative predicates, which do not involve control, passivization is natural and in fact often preferred over the transitive active form. In (26a-b), where the causative light verb is *mèet* 'make', the passive is preferred over the active (whereas with *ch'a'* 'let', active and passive are judged as equally acceptable; examples omitted in the interest of space).

- (26) *Pedro=e'* *t-u=mèet-ah...*
 Pedro=TOP PFV-A3=make-CMP(B3.SG)
 a. ... *?u=ts'ak-ik* *le=pàal* *le=doktòor=o'*.
 [A3=cure-INC(B3.SG) DET=child DET=doctor]=D2
 'Pedro, he made the doctor cure the child.'

- b. ... *u=ts'a'k-al* *le=pàal* *tumèen* *le=dokòor=o'*.
 [A3=cure\PASS-INC DET=child CAUSE DET=doctor]=D2
 'Pedro, he made the doctor cure the child (lit. he made the child's being cured by the doctor).'

Thus, the restriction barring passivization in the lower core is a syntactic constraint that is specific to control constructions. The target of control can be an S- or A-argument, but it can neither be the U-argument of a transitive active verb form nor the S-argument of a passive form. In RRG terms, control, like extraction, operates on an invariable syntactic pivot – but on a nominative (S=A), rather than a “quasi-absolutive” (S=U, plus obliques; see endnote 23), pivot. The same distribution can straightforwardly be captured in terms of a construction-specific linking rule:

- (27) *Linking under control*: The highest-ranking thematic role in a controlled verbal core must be linked to the target of control.

All type-I constructions share the following properties: if the lower core is intransitive, it appears in the incomplete and the set-A marker that would otherwise cross-reference the target is deleted; if the lower core is transitive, it appears in the subjunctive and the set-A marker cross-referencing the A-argument is retained; the A-argument is the only possible target of control in transitive cores. These two properties are illustrated with the stative matrix predicate *sahak* ‘be afraid’ in (28a-b). Passivization of the lower core is again not permissible. One difference to the attempt case in (25) is that instead of a controlled embedded core, *sahak* also licenses a subjunctive subordinative clause introduced by the subordinator *káa*; this clause does not contain a controlled argument (28c).

- (28) a. *Sahak-en* *(*in=)tsikbal*.
 afraid-B1.SG [A1.SG=talk]
 ‘I am afraid to talk.’
 b. *Sahak-en* *in=tsikbat* *le=kwèento=o'*.
 afraid-B1.SG [A1.SG=talk:APPL(B3.SG) DET=tale]=D2
 ‘I am afraid to tell the story.’
 c. *Sahak-en* *káa* *u=lox-en* *le=máak=o'*.
 afraid-B1.SG [SR A3=box-B1.SG DET=person]=D2
 ‘I am afraid that the person (may/might) beat me up.’

Matrix predicates of desire follow the same pattern as those of fear, but introduce another twist. Passivization of the embedded core is again incompatible with control; it requires realization of the complement as an uncontrolled subordinate clause in the subjunctive (29a). However, there is an alternative expression of the same meaning – in (29), the desire to be cured – that involves realization of the complement with a structure headed by the “gerundive” form of the lower verb, a derived stative form with prospective aspectual reference (29b). Like the passive, the gerundive links the undergoer of the base to its sole argument and the actor to an optional oblique. Thus, if the sole argument of the gerundive is controlled in (29b), this construction violates (27). However, on closer inspection it turns out that the sole argument of the gerundive is not controlled at all. This is shown in (29c), where the S-argument of the gerundive is not coreferential with any argument of the matrix.¹⁷

- (29) *Le=pàal=o'*, *t-y=óot-ah*
 DET=child=D2 PFV-A3=want-CMP(B3.SG)
 a. ... *káa ts'a'k-ak tumèen le=doktòor=o'*.
 [SR cure\PASS-SUBJ(B3.SG)CAUSE DET=doctor]=D2
 ‘The child, (s)he wanted that (s)he be cured by the doctor.’
 b. ... *ts'ak-bil tumèen le=doktòor=o'*.
 [A3=cure-GIV(B3.SG) CAUSE DET=doctor]=D2
 ‘The child, (s)he wanted to be cured by the doctor.’
 c. *Pedro=e'*, *t-y=óot-ah*
 Pedro=TOP PFV-A3=want-CMP(B3.SG)
 ts'ak-bil le=pàal tumèen le=doktòor=o'.
 [cure-GIV(B3.SG) DET=child CAUSE DET=doctor]=D2
 ‘Pedro, he wanted that the child be cured by the doctor.’

The so-called motion-cum-purpose construction (cf. Aissen 1987 for Tzotzil, and Zavala Maldonado 1993 for an overview including other members of the Mayan language family) combines a verb of change of position or change of location (a verb of “inherently directed motion”, in Levin’s (1993) terminology; a “path verb” in Talmy’s (2000)) with a lower core that describes an eventuality understood to occur – if realized, which is not entailed – at the end point of the motion event. The lower verb is intransitive in (30a) – the result of incorporation – and transitive in (30b), exhibiting the familiar transitivity-dependent pattern. Once again, passive in the lower core is excluded by control. Alternatives are an uncontrolled

subjunctive clause or an equally uncontrolled gerundive form (see above). The controller is always the theme of the matrix verb; it is linked to the S-argument if the verb is intransitive (30) and to the U-argument if the verb is transitive (31). Together with the examples, in which the controller is the A- ((25); (29)) or S-argument (28) of the matrix, this shows that there are no verb-independent syntactic constraints on the controller.¹⁸

- (30) *Le=pàal=o', h-tàal*
 DET=child=D2 PFV-come(B3.SG)
 a. ... *ch'a'+ta'kin*
 [take+money]
 'The child, (s)he came to collect/withdraw/take money'
 b. ... *u=ch'a' le=ta'kin=o'*
 [A3=take(B3.SG) DET=money=D2]
 'The child, (s)he came to collect/withdraw/take the money'
- (31) *Pablo=e', t-u=túuxt-ah*
 Pablo=TOP PFV-A3=send-CMP(B3.SG)
 a. ... *le=pàal u=ch'a' le=ta'kin=o'*
 DET=child [A3=take(B3.SG) DET=money]=D2
 'Pablo, he sent the child to collect/withdraw/take the money'
 b. ... *u=ch'a' le=ta'kin le=pàal=o'*
 [A3=take(B3.SG) DET=money DET=child]=D2
 'Pablo, he sent the child to collect/withdraw/take the money'

The fact that the gerundive, like the passive, demotes the actor to oblique, but is not controlled by the matrix, makes it possible to leave the actor of the action described by the lower core unspecified, leading to examples such as (32), which seem quite puzzling from an English point of view, but are judged acceptable in Yucatec. The most salient interpretation of (32) is the third one: the captain sent an unspecified agent to kill the prisoner.

- (32) *Le=prisyonèero=o', h-túuxt-a'b*
 DET=prisoner=D2 PFV-send-PASS.CMP(B3.SG)
kins-bil tumèen le=kapitàan=o'
 die:CAUS-GIV(B3.SG) CAUSE DET=captain=D2
 'The prisoner, (s)he was sent by the captain to be killed'
 OR: 'The prisoner, (s)he was sent (by sb) to be killed by the captain'

- OR: 'The prisoner, (sb) was sent by the captain to kill him/her'
 OR: 'The prisoner, (sb) was sent to kill him/her by the captain'

Type-II constructions occur with complements of aspectual verbs, cognition verbs, and in the "gerundial" construction.¹⁹ In these constructions, the lower core uniformly appears in the incomplete and the target of control is invariably cross-referenced by a set-A marker on the lower verb. With cognition verb complements and in the gerundial construction, control is obligatory; with aspectual verbs, control depends on the transitivity of the matrix. If the aspectual verb is intransitive, the lower core itself constitutes its sole argument; if it is transitive, its A-argument obligatorily controls the S-/A-argument of the lower core. As (33a) shows, passivization of the embedded core is fine if the aspectual verb is intransitive, since no control is involved in this case. The same sentence with a transitive form of the aspectual verb is ill-formed (33b). In contrast, (33c), where the matrix verb is passivized, is fine again.

- (33) *Pedro=e', táantik u=chúun-ul*
 Pedro=TOP IMM A3=start\ACAUS-INC
 a. ... *u=hats'-a'l tumèen le=òokol-o'b=o'*
 [A3=hit-PASS.INC CAUSE DET=rob-PL]=D2
 'Pedro, he just started to be hit by the robbers'
 b. ... **u=hats'-a'l tumèen le=òokol-o'b=o'*
 [A3=hit-PASS.INC CAUSE DET=rob-PL]=D2
 intended: 'Pedro, he just started to be hit by the robbers'
 c. *Pedro=e' h-chun-a'b*
 Pedro=TOP PFV-start-PASS.CMP(B3.SG)
u=hats'-a'l tumèen le=òokol-o'b=o'
 [A3=hit-PASS.INC CAUSE DET=rob-PL]=D2
 'Pedro, he was started to be hit by the robbers'

The actors of the two passives in (33c) are likely understood to be coreferential. In fact, this interpretation may be inevitable, since aspectual verbs are not causative verbs (this remains to be tested, however). If so, (33c) represents a case of control that calls for a refinement of principle (27) towards a formulation that takes into account not just the thematic ranking of the target, but also the linking properties of the controller. Given the unclear status of (33c), no such reformulation is attempted here.

Cognition verbs that take embedded cores deserve mention because the controller in this case is an oblique “experiencer” phrase. In the following examples, the lower core is intransitive (34a), transitive (34b), and passive (34c), the last-mentioned case again resulting in ill-formedness.

- (34) *H-tu'b* *tèen*
 PFV-forget(B3.SG) me
 a. ... *in=tsikbal* *y=éetel* *le=máak=o'*
 [A1.SG=talk A3=COM DET=person]=D2
 ‘I forgot to talk to the person’
 b. ... *in=túuxt-ik* *le=kàarta=o'*
 [A1.SG=send-INC(B3.SG) DET=letter]=D2
 ‘I forgot to send the letter’
 c. ... **in=ka'n-s-a'l*
 [A1.SG=learn:PASS-CAUS-PASS.INC
 tumèen *le=màaystro=o'*
 CAUSE DET=teacher]=D2
 intended: ‘I forgot to be taught by the teacher’

To summarize, with the possible exception of the double-passive case with aspectual matrix verbs illustrated in (33c), the generalization expressed in (27) holds for all Yucatec control constructions: the target of control thematically outranks all other arguments and obliques of the controlled core. This explains both the exclusion of passivization in controlled cores and, given the language-specific linking principles outlined in section 2, the restriction of the target to set-A-marked arguments.

8. Conclusions

The starting point of this paper was the question what kind of organization of grammatical relations (GRs) might co-occur with an argument marking system that expresses the macro-roles of actor and undergoer, rather than any grammatical functions defined in terms of thematic neutralization, as argued for Yucatec in Bohnemeyer (2004). I have considered evidence from three domains of syntactic structure. Alignment restrictions constrain the realization of clause-mate co-arguments. They require the actor (A) argument in transitive active-voice clauses to outrank the undergoer (U) on a semanto-pragmatic hierarchy determined by topicality, definiteness, hu-

manhood, animacy, and other factors. A set of facts together suggest that the alignment constraints function to disambiguate 3rd-person arguments for linking: the absence of alignment restrictions on clauses with 1st- or 2nd-person arguments; the use of left-dislocation, passivization, and clefting to avoid alignment violations (each of these constructions has its unique function; none of them is restricted to inverse configurations, and so none can be said to mark inverse alignment; but all three constructions leave a maximum of one argument realized by a clause-internal nominal); the fact that topicality trumps all other properties on the alignment hierarchy; and the fact that the most accessible argument of a clause is clause-internally realized by a cross-reference marker only. These findings suggest that intra-clausal linking is not controlled by GRs in Yucatec. This conclusion is further supported by the characteristic repair re-interpretations of clauses that when parsed according to the canonical order of constituents trigger alignment violations. These re-interpretations simply ignore constituent order, suggesting that the linking between thematic relations and arguments as per their configurational properties is mutable.

Linking in inter-clausal constructions likewise is regulated independently of GRs. “Extraction” in relative clauses, clefts, and content questions is unrestricted except in case the target is the A-argument of a transitive verb – which triggers the so-called A-focus form – or the oblique actor phrase of a passive, which is barred from extraction altogether. In control constructions, the target of control has to be the A-argument of a transitive verb or the S-argument of an intransitive verb; but passive voice is excluded from controlled verbal cores. In the Role-and-Reference-Grammar framework, extraction and control may be characterized as operating on invariable syntactic pivots in Yucatec – extraction on a “quasi-absolutive” pivot, control on a nominative one. Cross-reference marking, however, is not sensitive to either pivot, as Yucatec is morphologically neither nominative-accusative nor ergative-absolutive, but rather split-intransitive. Hence, inter-clausal linking is described most parsimoniously in terms of construction-specific linking rules: in the case of extraction, one that mandates use of the A-focus form in case the target of extraction thematically outranks another argument; in the case of control, one that requires the highest-ranking thematic role to be linked to the target of control.

Notes

1. In the late 1980s and early 1990s, Christian Lehman introduced me to the study of both Yucatec Maya and syntactic typology. One of the most important lessons he taught me – perhaps not altogether intentionally – was that I was not cut out to become a syntactician. I hope he will nevertheless find the present attempt at dabbling in syntactic analysis useful or, as the case may be, entertaining. The bulk of the data presented in this paper was collected from eight adult native speakers of Yucatec – six men and two women – in Yaxley, Quintana Roo, Mexico in six field trips since 1999. I am greatly indebted to my Yucatec consultants and teachers. This research was supported by the Max Planck Society and the University at Buffalo. I would like to thank Jean-Pierre Koenig, Elisabeth Norcliffe, Judith Tonhauser, Robert D. Van Valin, Jr., Roberto Zavala Maldonado, and the editors of the volume for extremely helpful comments.
2. As far as I am aware, these are the only types of constructions that involve special linking patterns in Yucatec. There are no “matrix coding” or “raising” constructions in this language.
3. This generalization does not account for argument marking in imperatives, which are semantically perfective, but have an S=A pattern.
4. In fact, at least one Mayan language, Huastec, does appear to have developed inverse marking; cf. Zavala Maldonado (2007).
5. In the optimality-theoretic account of Skopeteas and Verhoeven (2005), what I present here as the “canonical” VOS = VUA order is optimal given harmonic alignment between thematic and topicality hierarchy, and what I treat as repair interpretations are analyzed as alternative orders favored by non-harmonic alignment. These views are equivalent except that I assume a categorical framework; however, I do so primarily for the sake of ease of exposition.
6. The term “extraction” is used henceforth as shorthand for constructions involving relativization or focussation by clefting – put differently, for the formation of an open sentence that semantically functions as a predicate. I consider the term “extraction” a metaphor – I do not assume a movement account.
7. There appears to be a strong discrepancy here between my data and those of Skopeteas and Verhoeven (2005), who did not find humanness, as opposed to animacy, to be a factor influencing topicality ranking. The source of this discrepancy will have to remain the subject of future research.
8. A topic, in the broad sense in which the term is understood here, does not need to correspond to an argument of the clause; cf. section 3. The topic serves to constrain the set of alternatives introduced implicitly or explicitly in context by eliminating all those that involve some entity, time, place, etc., other than the topical entity in the same role (see Büring 1997). A sentence

can have more than one topic; however, no more than one argument referent can be topical. The question of whether it is possible in certain contexts to introduce a new discourse referent with a bare cross-reference marker – as per the central cell of the bottom row of Table 1 – has to remain open here. One occasionally encounters examples that suggest as much; however, I have yet to probe the properties of such examples with consultants in the field.

9. The possession constraint presumably derives from the semantics of the possessive construction making it impossible for the possessum to outrank the possessor in topicality or prominence. The constraint thus has a semantic motivation; but that does not make it a semantic constraint. In any case, possession would be difficult to place on (15) since A and U cannot be independent in topicality, definiteness, and, with certain exceptions, humanness and animacy if they stand in a possessive relation.
10. The preposition *tumèen* ‘because of’ is – at least etymologically – analyzable as a combination of the generic preposition *ti* ‘and’ and some form of the root *mèen* ‘do’, ‘action’, ‘deed’ carrying the third-person set-A clitic *u=*. When interpreted thus compositionally, the complement of *tumèen* is actually the argument of *mèen* cross-referenced by the set-A clitic. Hence, the free 3rd-person pronoun *leti* ‘he’ is merely used for emphasis in (18).
11. The common denominator across the various constructions that feature “extraction” in Yucatec has been argued to be that focus constructions, including content questions, are clefts and that the subordinate clause in Yucatec clefts is a headless relative clause (Bricker 1979; Bohnemeyer 2002: 116–129) (for an alternative account based on the idea that relative clause constructions are embedded focus constructions, see Tonhauser 2003, 2007).
12. The transitive subjunctive suffix *-eh* only appears in absolute clause-final position.
13. The participants were given a scenario in which the fictional speaker had seen the person who robbed the addressee. They were then prompted with various sentence fragments which they had to complete with relative clauses referring to the robber. These scenarios and stimuli were interspersed with others targeting other arguments, obliques, and adjuncts. In all instances involving A-extraction, all of the participants produced the A-focus form. It is thus clear that the A-focus form is usually preferred with A-extraction – but is it obligatory? Gutiérrez Bravo (ms.) and Elisabeth Norcliffe (p.c.) argue otherwise.
14. A Google search produces 587 hits for the phrase *the one who robbed you*, compared to exactly zero for *the one by whom you were robbed*, *the one who you were robbed by* and *the one you were robbed by*. With a more frequent verb, such as *hit*, the results are 7,790 hits for the active version and zero for three passive versions of the same construction.
15. In keeping with the traditional ergative analysis of extraction in Mayan, this pivot might be considered absolutive (S=U). However, as mentioned above,

- obliques can likewise be extracted without a special voice form; these extractions would have to be analyzed as involving special constructions if extraction is indeed restricted to an absolutive pivot.
16. I assume here subordination and embedding, as opposed to other “nexus” types (cf. Van Valin and LaPolla 448–454), for these cores without discussion. Bohnemeyer (2002: 91–101) has details of this analysis.
 17. The U-argument of the matrix is the embedded core in this case. Several sources of evidence support this analysis. In any case, the U-argument of the matrix cannot be coreferential with – and thus cannot be the controller of – the S-argument of the gerundive: if the latter refers to a speech act participant, a coreferential U would be identifiable by the set-B marker on the matrix verb; sentences with this property are, however, unanimously rejected.
 18. In (51c), the “shared” argument is realized by a nominal that is a constituent of the matrix. In (51d), which is judged equally acceptable by consultants, the nominal is either a matrix constituent as well, in which case the lower core is centrally embedded, or the nominal is a constituent of the lower core, as indicated by the tagging. I do not think that either analysis should be excluded a priori; hence, I assume that both are compatible with the known facts.
 19. Like the motion-cum-purpose construction, the gerundial construction occurs with matrix verbs of change of position and change of location. In contrast to the motion-cum-purpose construction, the lower core appears always in the incompletive and the set-A marker is retained. Whereas the motion-cum-purpose construction entails that the location change precedes the event described by the lower core (if the latter is realized at all), the gerundial construction encodes overlap between the two events (cf. Bohnemeyer 2002: 100–101).

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B.2 Formal Typologies

Areal typology of tone-consonant interaction and implosives in Kwa, Kru, and Southern-Mande

Firmin Ahoua

1. Problems¹

Is the development of tones from consonant a genetic or an areal phenomenon? The question may presuppose that languages in general might have tones originally in order to exhibit tone and consonant interactions. However, there are languages with no tones originally, but which developed tones from laryngeal features of consonants. For instance, non-tonal proto-Afroasiatic, to which Semitic and Berber belong, developed tones in Chadic (Wolff 1983). In Indo-European languages, tones developed from consonants in Punjabi (Haudricourt 1972) while in Scandinavian tones seem to have developed from prosodic factors like vowel length, stress, and boundary tones (Lorenz 2000). The present paper focuses on the tone-consonant interaction and doesn't endorse the current view, highly covered by press, of a possible biogenetic correlation with tonal development from genes. Recently Dediu and Ladd (2007) have claimed that two genes involved in brain development (ASPM and Microcephalin variants or "derived" alleles) correlate with the geographic distribution of tonal languages. Their argument is based on statistics rather than on experimental trials. Since the core argument is statistical correlation, it should not necessarily relate to causality, a Humean view that is well accepted in statistics. The present paper is modestly relevant to this issue as I shall argue that the role of particular structural properties (i.e. segmental environments) and geographic diffusion still provide with an adequate explanation of the occurrence of tones without necessitating the recourse to biogenetic properties of the populations at issue.

Regarding Niger-Congo (NC) languages, it is so far undisputed that they originally had tones. Since the tone inventory in this phylum varies from two (e.g. Baule-Anyi, Ga, Igbo, Efik, Mende) to five (Dan, Ashuku), one may rather wonder where does tonal proliferation or tonal splitting come from. Related questions in that respect are whether the latter may be caused by some interaction of consonants and tones during diachronic development or, whether they are developed from language contact or geo-

graphic diffusion. The general goal of the paper is to examine a set of evidence of correlations between tone-consonant interaction in the “Sudanic belt” (Clements and Rialland 2008) from a comparative perspective, covering Subsahara, in a way that may be extended to Central, Southern Sudan and part of East Africa. The specific goal is to analyze the role of the implosives in tonal development in a few representative West African languages in which tones historically did develop from consonants. The hypotheses that we shall examine are whether implosive consonants always correlate with tones at all (a candidate for a universal), and whether implosives necessarily correlate with tonal proliferation and complexity, that is increase in tone inventories (as typological generalization). As the answers to these questions are empirical, I would like to survey a few typical cases of tone-consonant interaction in Kwa (Potou, Yoruba, Ega and Gbe), Kru (Guere, Wobe), Southern-Mande (Yowle, Guro) in detail and attempt to falsify these hypotheses. The central thesis of this paper is that implosives may historically develop higher tones, a generalization that is generally understated in the literature, while voiced obstruents are largely admitted to historically develop low tones, contributing to tonal proliferation. Indeed geographic contiguity may suggest diffusion and contact. For the sake of presentation, I first analyze the data in section 2 language internally and across related dialects from a historical comparative perspective proceeding from Kwa, Mande to Kru, and then discuss the implications in section 3.

2. Areal and genetic typology of languages

Niger-Congo (NC) languages, with about 1436 languages, are assumed to have developed from a two-tone system and constitute beside Asia the major location of tonal languages (cf. Williamson 1989).

In the NC language phylum, there are languages that have from two to five tones as mentioned above. The question that naturally emerges is how do languages acquire, innovate with tone proliferation or how do they lose tones? How do we explain that South East Asian languages display contour tones systems and African languages have register tone systems? Possible factors of tonal innovation due to downstep, downdrift, floating tones caused by deletion of morphemes or segments should be added to the overall picture (cf. Ahoua 2007). It can be deduced from the areal distribution of languages in the world that African languages are mainly tonal just as Asian languages, while Indo-European languages are mainly non-tonal.

The traditional prosodic typology reflects the types tonal versus stress languages. Asian languages have unitary tones, while African languages have composed tones, downsteps, and terracing as areal characteristics. A survey of the prosody of the world's languages indicates that more than 30% of the languages of the world are tonal, though one may question the boundaries between tonal and non-tonal languages, as modern theories regard non-tonal languages, that is, intonation languages, as having tonal targets (Liberman and Pierrehumbert 1988). The question now arises as to how many or which languages precisely exhibit consonant-tone interactions? From the areal and genetic typological view, the question is to establish the correlations with respect to geographic location, the language families, and to search for explanation.

Thus the systematic difference between African (Niger-Congo) languages (that are tonal) and European languages (that are accentual), can be located at two levels: At the structural level (that is paradigmatic vs. syntagmatic), the logical possibilities of lexical tonal differences per syllable in tone languages are higher than in stress or pitch accent languages. In pitch accent languages, there is only one High tone per morphological unit. In stress languages, prominence (marked by duration, intensity, and segmental cues such as aspiration, and not necessarily by a High pitch) is also as limited as in pitch accent languages. At the functional level, tonal difference involves change in lexical meaning or in grammatical function whereas in stress and pitch accent languages, this is not the case.

2.1. Obstruents depressors as factors in tonal proliferation

Genetic-historical research has made clear that the situation on the origins and development of tones is not as clear as it would seem from the first sight. It is quite widely accepted that non-tonal languages may develop tones from consonants and laryngeal features thus become tonal, while tonal languages may also lose their tones. A classical example is the earliest erroneous language classification by which Vietnamese was assigned to the Tai family and not to the Mon-Khmer family (to which it actually belongs) because the latter family is non-tonal and Vietnamese is tonal, ignoring that Vietnamese developed tones from consonants during history (Haudricourt 1972). The tonal criteria have been dismissed since Haudricourt's proof. A related question to this complex issue is whether tonal proliferation or tonal splitting may be caused during diachronic develop-

ment by the interaction between consonants and tones. Synchronically, the consonant-tone interaction has been reported in numerous studies on African languages. According to Bradshaw (1997) and recent studies, the languages often cited with tone-consonant interaction are: in Afroasiatic Ngizim, Bade, Ouldeme, Mulwi; in Niger-Congo Kordofanian, languages with tone-consonant interaction are Adamawa-Ubangui with Suma, Gbaya, Kwa with Gbe and Ewe, Central Togo Siya, Benue-Congo with Narrow Bantu Makaa, Bantu with Nguni (Zulu, SiSwati), Xhosa with Phuti, Lesotho, Mijikenda with Digo, Chonyi, Duruma, Dzihana, Kambe, Kauma, Rabai, Rihe, Giryama and Shona (Ikalanga). In all these languages, the lowering effect of voiced obstruents has been recognized. Little has been said so far on the possible raising effect of some consonants, especially of implosives, for reasons to be discussed in section 2.2.

2.2. Implosives and tone-consonant interactions

Implosives in the “Sudanic belt”, and may be in all Niger-Congo languages, are realized with an ingressive airflow, often with negative intra-oral pressure, larynx lowering, sometimes with and mostly without glottalization, and are generally voiced and have similar phonological distribution as, or alternate with the class of sonorants. They are generally classified as lenis stops. Lenis stops may have an “uplifting”, pitch raising effect, a feature which Painter (1978: 251) was among the first to notice and to address in careful experimental work, especially with regard to bilabials. Lenis are opposed to plain obstruents, the fortis class. The latter, especially the voiced ones, belong to the set of so-called depressors, because of the lowering effect on tones. Both segment classes may contribute to tonal proliferation. These segments first cause pitch perturbations that at the end phonologize. Thus, the latter take over the phonemic property of the consonants when these consonants lose their laryngeal feature (generally voicing). We assume that a strong correlation between implosives and tones exist (based on language areal typology), which is accounted for by the principle of preservation of complex segmental contrasts (Hagège’s principle of “maintien”). So, the principle in action is that of (trans)phonologization of tones preserving a phonemic or phonological distinction at different levels after sound shift. The general principle is that sound shifts are generally motivated, and that there is no sound loss.

Tone realization and very likely tonal development is dependent on the configuration of the laryngeal activity and the aerodynamic mechanism. For *fortis* consonants, at least whenever breathiness is involved, the vocal cords are not closely adducted, and thus the Bernoulli force should be weak (cf. Hombert 1978: 91). The fortis consonants have a lowering effect on pitch and generally belong to the class of so-called “Depressor Consonants”. *Lenis* consonants, generally including sonorants and implosives, may involve a lowering of the larynx for implosives with a quick air rate, creating a positive Bernoulli effect and therefore a raising of the pitch. Catford (1982: 108) explains the correlation of pitch raising with implosives as follows:

In a voiced glottalic suction stop, such as [ɓ], the sudden downward larynx movement may enlarge the supraglottal cavity so much that the transglottal pressure difference is actually *increased*, leading to a *higher* frequency (a “raised tone”) in the adjacent vowel.

If Catford’s (1982) explanation is valid and can be extended to all implosive segments, we may conclude that the lenis consonants have a function opposite to that of the fortis one: they may raise the tones before and after them. This may motivate their classification as “Anti-depressor consonants”. Beside that uplifting property, lenis also behave very often as transparent segments (in contrast to depressors which are opaque to tone assimilation or spreading). This is the case in Ega and comparative Cama-Yoruba development where implosives are merely transparent, do not block tone spreading or affect tones at all as opposed to depressors.

Consonants effects and tonal development are now illustrated in details in NC as exemplified by Potou (a subgroup of Kwa), Mande and Kru located in the Ivory Coast and neighboring countries (Liberia, Mali and Guinea).

2.2.1. Depressor consonants in Cama

Potou is the Kwa lower branch for lagoon languages to which Nghwla and Cama (also called Ebrié) belongs. Cama has the following synchronic consonants consisting of fortis and lenis obstruents as illustrated in (1):

(1)	voiceless	Fortis	p ^h		t ^h		c ^h	k ^h
		Lenis	p	f	t	s		
	voiced	Fortis	b	v	d	ʃ	g	gb
		Lenis	ɓ	l	j			w
	nasal		m	n	ɲ	ŋ		

Cama has four phonetic tones (High [´], Mid [ˊ], Low[ˋ] and Extra Low [ˋˋ]), which are conditioned by the nature of the consonants. Voiced fortis consonants lower all tones including phonological Low tones whereas lenis consonants are transparent to tone rules or maintain the tone level:

(2)	áp ^h è	‘calebash’	ábè	‘paddle’
	ápà	‘mud’	ádè	‘palm tree’
	áɓwè	‘utterance’	ájì	‘palm nut’
	áfè	‘deer’	ágù	‘beard’
	át ^h à	‘war’	ágbà	‘cold’
	éñù	‘mushroom’		
	ási	‘place’		

Morphophonologically, the lenis implosives are transparent to rightward High tone spreading from the prefix while voiced obstruents are opaque:

(3)	Singular	Plural	Gloss
	k ^h ù	ék ^h ùmá	‘flies’
	lè	énēmá	‘chenilles’
	c ^h ràlá	éc ^h ràlá	‘pangolins’
	ɓ̀̀bó	ém̀̀bó	‘termites’
	kwèkwè	ékwékwè	‘lamantins’
	lèp ^h à	énép ^h à	‘persons’
	làlàb̀̀	énàlàb̀̀	‘ducks’
	gò	égòmə	‘buffalos’
	dù	édùmá	‘snakes’

The data in (3) illustrates the synchronic situation in Cama. However, the potential of the lenis stops to raise tones appear in comparative work. Thus Maddieson’s (1974) set of correspondences between Yoruba and Cama implosives exhibits striking effects of tone raising after lenis stops, suggesting an uplifting property, an issue that we shall mention to exist in the genetically closely related Nghwla language.

(4)	Cama			Yoruba	
	underlying	phonetic	gloss	phonetic	gloss
	ǎbú	ńmó	'arm'	lá	'dream'
	ḃá	ḃá	'come'	wá	'come'
	ḃō	ḃō	'take'	mú	'take, grasp, etc.'
	āḃī	āḃī	'excrement'	īmí	'faeces'
	bḥ	bḥ	'be rotten'	bū	'go mouldy'
	bè	bè	'belch'	bī	'vomit'
	ḋá ḋḋá	lá ńná	'sleep'	lá	'dream'
	ḋḋuḣ	ńńó	'palm oil'	ērú	'palm oil'
	ḋḋá	ńńá	'animal'	ērān	'animal, meat'
	ḋī	lí	'eat'	jē	'eat'
	ḋḋù	ḋḋù	'water'	ōḋò	'river'
	āḋū ḃē	adu ḃe	'river'	ōḋò	'river'
	dū	dū	'snake'	ējò	'snake'
	adūdū	adūdū	'rainy season'	òjò	'rain'

From the sample of data in (4) of which I report the most significant ones with respect to all points of articulations, Maddieson (1974: 214) explicitly expresses the generalization on tones and consonants interaction emerging roughly as follows: all the Yoruba forms corresponding to Cama lenis consonant show either High or Mid after lenis and not low tone. All the Yoruba forms corresponding to Cama fortis consonant show either a High or a Low tone and not Mid tone. These observations suggest that the development of tones in Yoruba from the protolanguage (Proto-Potou-Niger-Congo?) may have been triggered by the consonants. In Nghwla, Grassias (1974) note an exceptional frequency of High tones following the implosives and sonorants in their corpus, and the reverse for Low tones following voiced obstruents. In a comparative short list presented by Bole-Richard (1984: 34), one can observe that all Low tones in Proto-Potou developed to Mid or High tones after (innovated) implosives in Nghwla. These findings independently confirm the distant reconstruction between Cama and Yoruba.

2.2.2. *Implosives and tone-consonant interaction in southern Mande: Guro and Yowle*

Guro and Yowle are Southern-Mande languages, a subgroup of Mande. First of all, Guro and Yowle have the consonant system in common presented in (4), with a regular set of sonorants including a bilabial implosive:

(5)	p	f	t	s		kp kw
	b	v	d	ʃ	g	gb gbw
	ɓ	l	j			w
	m	n	ɲ		ŋ	ŋw

In Guro, Halaoui et al. (1983) and Hopkins (1982: 15) have observed that High tones and Higher Mid tones are found *only* in the environment of voiceless obstruents or sonorants, a class including implosives. This is a crucial observation as to the uplifting effect of implosives. As a contrast, Low tones and Lower Mid tones are found only with voiced obstruents. Since Low tones never occur before sonorants, we should conclude that sonorants have a pitch raising effect, pointing to the role of sonorants in the development of tones. The hypothesis is confirmed in comparative data from Southern-Mande Guro and Yowle illustrating the tone-consonant interaction. At this point, the present result may seem to contradict those of Maddieson (1984) who assume that sonorants are often depressors which apparently differs from his (1974) analysis. However, one possible explanation for the difference may be due to the fact that the sonorants under the present investigation are often derived from implosives or belong to the same natural class and therefore maintain the phonation property mentioned by Catford (1982) above.

In the small comparative set in (6) below, it is easy to observe that the sonorants (including implosive ɓ) in Guro correspond to higher tones in Yowle. In contrast voiced consonants in Guro correspond to a voiceless segment in Yowle with an innovation of a Low tone on the following tone bearing unit:

(6)	Guro	Yowle	
	bēlī	pèlì	‘night’
	dū	dù	‘buffalo’
	zé	sè	‘suffering’
	gɔ̃nɛ̃	kɔ̃nɛ̃	‘man’

(7)	tǔrǔ	túrú	‘tooth gum’
	kǔlǐ	kūlū	‘tortoise’
	ǒú	óú	‘mother’
	lálí	lálí	‘poison’
	wólé	wélé	‘bone’

Now we turn to the Kru languages located in the Ivory Coast that show the most obvious innovation of a lexical Low tone after Depressor consonants while maintaining Higher tones after implosives or sonorants.

2.2.3. Implosives and tone-consonant interaction in Kru

In this section we examine the We languages, a subgroup of the Kru language family, with a focus on the dialects that are spoken in Bangolo (Guéré dialect), Kouibly (Wobe dialect), Toulepleu (Nidrou). According to Bole-Richard (2006) they constitute closely related dialects and exhibit regular sound correspondences. These dialects share the following consonants system with a set of sonorants (implosives):

(8)	p	f	t	s	kw	kp kpw
	b	v	d	ʃ	gw	gb gbw
	ɓ	l (ɗ)	j	(ʄ)	(ɠ)	w (gɓ)
	m	n	ɲ		ŋ	ŋw

When we compare the initial consonants in these dialects, we observe the shift from voiced to voiceless consonants with a reflex of word-initial low tone in Wobe and Nidrou. Guere has retained the voicing of the latest Common Ancestor (Common We). Kru dialects make use of 3 to 4 tones levels (according to the dialects we may find 5 as in Guere and 7 types of glides that combine in relationship with consonants types. The tone-bearing unit is the mora. The notation is 1 for the Highest tone, 2 for Mid-High, 3 for Mid, and 4 for the very Low tone. The correspondences are summarized in (9) and (10) illustrating every point of articulation (DEP = Depressors, N-DEP= Non-Depressors):

(9)		depres- sors	common We	Guere	Wobe	Nidrou	gloss
a.	DEP	*ba ¹	ba ⁴¹	pa ⁴¹	pa ⁴		‘aid’
b.	DEP	*Di ²	Di ⁴²	Ti ⁴	TU ⁴⁴		‘buffalo’
c.	DEP	*ji ³	ji ⁴³	ci ⁴³	ci ⁴³		‘panther’
d.	DEP	*giɛ ³⁴	giɛ ⁴³⁴	kiɛ ⁴³⁴	kɛ ³		‘egg’
e.	DEP	*gwuo ³¹	gwuo	kuo	wuo		‘stomach’
f.	DEP	*gbei ³¹	gbei ⁴³¹	gbei ⁴¹			‘camp’
g.	DEP	*vɛ ³²	vɛ ⁴³²	fɛ ⁴	fɛ ⁴		‘beard’
h.	DEP	*zɛ ²	zɛ ⁴²	sɛ ⁴	sɛ ⁴		‘hunchback’

As we can see in (9), there is a strong correlation between the historical development of depressor consonants as Low tones and their synchronic realization in the present stage of the languages. The data demonstrate that a loss of a voicing feature correspond to a phonologized Low tone. Let us examine the non-depressors tabulated in (10):

(10)	N-DEP	*ɕiE ²¹	ɕiE ²¹	ɕiE ²¹	ɕiE ²¹	‘hole’
a.	N-DEP	*de ¹	de ¹	dei ²¹	de ²	‘younger brother’
b.	N-DEP	*fre ²⁴	fre ²⁴	fre ²⁴	fre ²⁴	‘black chimpanzee’
c.	N-DEP	*wlu ³	glu ³	wlu ³	wulu ²²	‘language’
d.	N-DEP	*Tu ³	Tu ³	Tu ³	Tu ²	‘tree’
e.	N-DEP	*cu ²	cu ²	cu ²	cu ²	‘moon’
f.	N-DEP	*Kao ¹⁴	Kao ¹⁴	Kao ¹⁴	Kao ²¹⁴	‘water source’
g.	N-DEP	*kpau ³¹	kpau ³¹	kpau ³¹	kpau ³³	‘maize’
h.	N-DEP	*puɔ ³²	puɔ ³²	puɔ ³²	puɔ ³³	‘wind’
i.	N-DEP	*Fuu ⁴¹⁴	Fuu ⁴¹⁴	Fuu ⁴¹⁴	Fuu ²¹⁴	‘sponge’
j.	N-DEP	*su ³	*su ³	*su ³	*su ²	‘arm’

In (10) we can observe that Kru does not innovate a lexical High tone with sonorants and implosives but does maintain or reinforce the Higher tones.

3. Conclusions and discussions

One strong source of tonal proliferation in the investigated area is the influence of consonants on tones: Implosives generally tend to correlate with tonal preservation or tonal raising, while non-implosives or non-liquids correlate with tonal depression or low tone innovation. Ega, Nghwla, Guro,

Yowle are languages that encode higher tones with implosives in specific domains. Cama has higher tone correspondences with some cognates in Yoruba, despite the remote relationship. Gbeto (2007) notes the same uplifting correlation with implosives in Gbe languages, also a subgroup of the Kwa languages pointing to a possible diffusion phenomenon. With regard to language universals, two questions emerge: a) Is there a universal correlation between implosives and tonal complexity? b) Does tonal development correlate with implosives? Maddieson's statistical data of a large range of world's languages provides a negative answer to the first question and a positive answer to the second.

From the UPSID data among 49 African languages with *implosive consonants* in their inventories, of these 24 are shown with basically 2-level tone systems, 15 have 3-level systems, 5 are reported as having 4 or more levels, and for 5 of them. Thus, for the languages with implosives and with at least some data on tone patterns the proportion of languages with more than two-tone levels is higher than it is in African languages taken as a whole. Therefore a coincidence between complex tones and complex consonant types may be random. In a database of 526 languages for which Maddieson (p.c.) has coded information on both their tone system and the type of glottalized consonants they have, if any, there are 132 languages (25%) with "simple" tone systems (usually this means just H and L as basic tones), and 88 (17%) with "complex" tone systems. The rest (58%) are non-tonal (in the classical sense). There is an association between having implosives and being tonal – only 12 languages with no tones have implosives, whereas they occur in 59 of the tonal languages, in 29 of those with complex tone systems and in 30 with simple tone systems. So there are 71 languages with implosives, or 13.5%. Multiplying the independent probabilities together predicts finding only 12 languages having a complex tonal system and implosives, 18 with simple tone system and implosives, and 41 non-tonal languages with implosives. *So tones and implosives tend to occur together.* Here again the relationship between implosives and complex tones is not established. If we just restrict our attention to the universe of tonal languages (220 in the database), then 27% have implosives and the ratio of simple to complex tone systems is 60% to 40%. We would there predict from these probabilities that there should be 35 languages ($225 \times 0.6 \times 0.27$) with implosives and simple tone systems and 24 with implosives and complex tone systems. The actual numbers of 30 and 29 are too close to this random classification to conclude that there is any special association between complex tone systems and implosives.

These statistical data on the correlation between implosives and tonal complexity are apparently contradictory to Clements and Rialland (2008: 32), who observe that the “Sudanic” belt is where the most tonally loaded languages with three to five tone levels are located. They also report that 46% of these languages use implosives (N=100), as opposed to the 3.8% of non-African languages (N=350 in their samples), though they accept other arguments such as tonal multiplication due to segmental attrition, tendency to monosyllabicity beside the frequent phonologization of consonantal effects on tones.

We conclude on the basis of the correlation of implosives and tones in the “Sudanese belt” by suggesting that tonal proliferation is an areal phenomenon. Given that there are implosives without tones, and tones without implosives, we leave open the issue of whether the heavy correlation between implosives and tones can be viewed as a phonetically motivated language universal (despite biases) or an areal typological tendency.

However a legitimate question that arises from the present discussion is the possibility of speculating now on the origins of tones in NC with respect to segmental environments. Indeed Stewart (2002) and Williamson (2003) have proposed the existence of implosives and tones in proto-NC and that there would be presumably no need to suggest that tone result from implosive. Nevertheless, one could still raise the question of tonogenesis triggered by other sources of phonation which are not only present in implosives but also in ATR vowels and which function as a redundant feature for enhancing contrast. With regard to our limited knowledge and reconstruction of tonal data of NC, we may not settle the issue by now.

Notes

1. This paper is a small sign of recognition to Christian Lehmann who raised my interest in language typology and universals, as a teacher and as a friend. I am grateful to the editors and to Bruce Connell for helpful comments. All errors are mine.

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The internal structure of adpositionals

Silvia Luraghi

1. Introduction

The aim of this paper is to discuss the relation that holds between adpositions and nouns in languages in which the same adposition can occur with different cases, as for example in German:

- (1) a. *Ich fahre in der Stadt.*
'I drive inside the town (dat.).'
- b. *Ich fahre in die Stadt.*
'I drive into town (acc.).'

In German, case variation with prepositions as shown in (1a) and (1b) contributes to specifying the semantic role of prepositional phrases.¹ This fact is at odds with current definitions of government. Usually, the relation between an adposition and its complement is considered a typical example of government. The problem with examples such as (1a) and (1b) comes from the occurrence of different cases, since the definition of government implies that on the side of the governed element there is no possible variation of form that can also convey different meanings: so for example the definition of government in the linguistic dictionary of Lewandowski (1985: 835) reads as follows: "Rektion: 1) Bestimmung des Kasus eines grammatisch-syntaktisch abhängigen Wortes durch ein übergeordnetes Wort; ... 2) Einseitig gerichtete Abhängigkeitsbeziehungen zwischen Verb und notwendige Ergänzungsbestimmungen;... 3) Die Relation der Dependenz. Das Regens regiert seine Dependenzien".

In the present paper, I would like to elaborate on the notion of government, in connection with the occurrence of different cases with the same preposition (case variation) in some Indo-European languages.² I will argue that case variation in examples such as (1a) and (1b) can be accounted for by using a scalar and multifactorial definition of government, connected with our knowledge about grammaticalization processes and language change. I will also show that not all instances of case variation actually represent the same phenomenon, even within the same language, and that

cases may have functions that are not typical of their category. In such instances, it is not the notion of government that needs to be modified, but rather the definition of the (putative) cases involved.

2. Government and modification

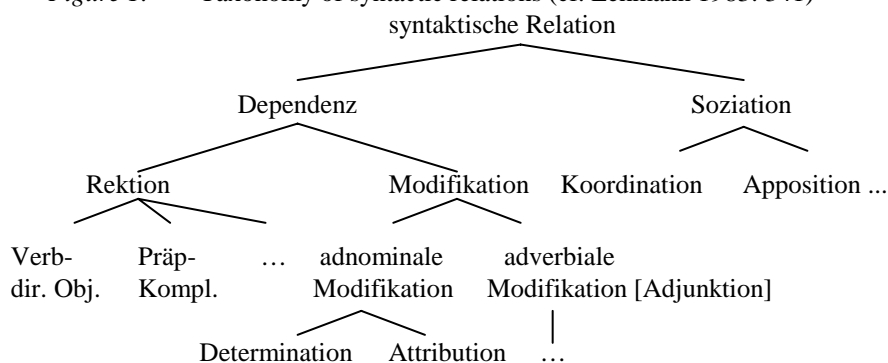
Christian Lehmann devoted various papers to the nature of syntactic relations. According to his classification, given below in Figure 1, dependency relations are divided into two types: government and modification (see further Lehmann 1985a). Lehmann describes the development of adpositions as follows (Lehmann 1999):³

- (2) X = body part > local noun > relational noun > adposition

Examples of this development are easily available from numerous languages; cf. the English word *front* in the expression *in front of*, and similar developments of its cognates in the Romance languages.⁴

One must note further that, at least in the Indo-European languages, X is from the beginning on the head of the phrase, but at the stage represented by *body part noun* it is modified by its dependent. In other words, the phrase at that stage is endocentric: The dependent can be left out, much in the same way as the modifier of a noun phrase. Body part nouns (or relational nouns of different origin)⁵ that undergo the process outlined above develop into adverbs, which can still head endocentric phrases if they can occur alone. Only when the adverbs become adpositions and must obligatorily take a complement the phrase changes from endocentric to exocen-

Figure 1. Taxonomy of syntactic relations (cf. Lehmann 1983: 341)



tric. If we consider the example of *in front of*, we find that the nominal origin of the expression is still clear, in the occurrence of the preposition *of*, that indicates nominal dependency, but in fact the phrase headed by *in front* is exocentric, because the complement is obligatory and *in front* cannot occur alone.⁶

Case variation with adpositions has been variously approached by scholars within different theoretical frameworks; besides, this phenomenon is often described for one or another Indo-European language by specialists who have little knowledge of the pertinent literature on other languages. The combination of these two tendencies makes the issue very complicated; in my paper, I offer a partial discussion and a possible solution regarding the notion of government, but I am well aware of the fact that the issue would deserve a wider and more systematic treatment than what I am going to offer in the following pages.

While I am not going to discuss possible semantic motivation of case variation in German exhaustively,⁷ I would like to mention that, beside discussing variation between the dative and the accusative as in examples (1a) and (1b), Di Meola (2000) also points out that variation between the dative and the genitive with some German prepositions, such as *entlang* 'along', is connected with linguistic registers, rather than conveying information relative to the semantic role of the PP (or some other type of semantic difference). This remark is important because it shows that case variation with adpositions can have different motivations, and that this can happen even within the same language. Furthermore, not being connected with a change in the function of the PP, this type of alternation does not create problems for the definition of government: simply, the preposition *entlang* governs the dative in certain register and the genitive in another, more formal one. I will come back to this point in section 5.2.2.

Among possible answers to the question what notion of government must be used to describe case variation with adposition, scholars have suggested that the two occurrences of *in* in (1a) and (1b) should be considered as representing two different (homophonous) prepositions, or that the preposition and the case ending must be regarded as parts of a discontinuous morpheme.⁸ I will discuss these two hypotheses in sections 3.2 and 3.3. I won't consider another possible solution, namely that there are no prepositions with case variation in German at all.⁹

Because the existence of homophones has been set up in order to explain double behavior of certain lexical items that can function as adposi-

tions and as adverbs, I will briefly discuss the categorial status of such words in the next section.

3. Adverbs, adpositions, and cases

3.1. The Indo-European preverbs

Preverbs are a peculiar lexical class of Indo-European; even in the oldest written records they also have adpositional usage. The possibility for the same adposition to occur with different cases is also typical of the Indo-European languages.¹⁰

The Indo-European case system included four cases that could occur with adpositions: locative, accusative (which could function as an allative), ablative, and instrumental.¹¹ In Old Indic, for example, one can observe a dependency relation by which a nominal modifier is added to the adverb/adposition as an apposition, as in (3):

- (3) *è 'ntáh* 'in the mouth, inside' (with the locative)
yā́d antáh 'out of (the interior of) the mouth' (with the ablative)
 (adapted from Delbrück 1893: 673).

In the above phrases, the noun is a modifier of an adverb, rather than a complement of an adposition; evidence is provided by the fact that the noun alone could express the same spatial relation (i.e. can occur alone and mean 'out of the mouth'). The adverb, which is not obligatory, denotes a spatial region; the case ending adds information as to the specific semantic role of the phrase (e.g. locative or ablative, as in (3)). The same adverbs can also take a genitive modifier, thus behaving as a noun, as in (4):¹²

- (4) *antár sárvasya* 'inside the world' (*antár* and *antáh* are forms of the same adverb; from Delbrück 1893: 673).

The categorial status of the Indo-European preverbs has often been considered problematic: it is not clear whether they are adverbs or adpositions; besides, they can also be prefixed to verbs. Note that this peculiarity is preserved in some modern Indo-European languages in spite of the loss of morphological case, as shown in the following English examples:

- (5) a. *We met over lunch.* (preposition)
 b. *The next town over.* (adverb)
 c. *Hand it over.* (verb particle)¹³

Adverbial and adpositional behavior on the side of the same linguistic item has also been explained resorting to homophony, much in the same way as the occurrence of different cases with the same adposition. Resorting to homophones may be a convenient solution, but there are other facts that should make us suspicious about the need for homophones: for example, many other adverbs, of later origin, and which cannot be reconnected to the Indo-European preverbs, also share this ambiguous behavior, as we will see in section 3.3. I will suggest that double behavior derives from the existence of a continuum between the lexical categories adposition and adverb, and that homophones should be set up only in cases in which there is clear historical and semantic evidence for their existence.

3.2. Discontinuous morpheme

3.2.1. *Prepositions and cases in the Indo-European languages according to Kuryłowicz*

Kuryłowicz devoted a number of studies to cases in Indo-European. His suggestion with respect to the use of cases with prepositions is that the case ending and the preposition together constitute a discontinuous morpheme:¹⁴

- (6) extra /urb/ em (Kuryłowicz 1949: 134).

This solution, which is also argued for by Touratier (1978), raises a number of problems. In the first place, there is little support from diachrony. Historically, adpositions do in some cases develop into case affixes, but this is not the case for prepositions in the Indo-European languages: I will come back to this issue below, in the discussion of the data in (6).

It can further be remarked that commonly occurring discontinuous morphemes are constituted by (sub-)morphs that do not express a compositional meaning and mostly cannot occur alone. A typical example of a discontinuous morpheme is the morpheme of the German past participle, which also shows that even the particular allomorph of the stem often cannot occur alone: *ge-sung-en* can be analyzed as such, but there are neither

an independent **gesung* nor an independent **sungen*.¹⁵ The analysis in (6) implies that a certain case ending, e.g. *-em* of the accusative, should be viewed as a complete morpheme when it occurs without prepositions, and only a part of a bigger morpheme when it occurs within a prepositional phrase.

3.2.2. Coalescence of affixes in agglutinative languages

A partly similar position is argued for in Beard (1995). Beard mentions the following examples from Serbo-Croatian, where we find the typical Indo-European situation in which the same preposition takes two cases, based on the motion/rest opposition:

- | | | | | |
|-----|----|---------------------------------|-----|-------------------------------|
| (7) | a. | <i>lež ati pod kamen-om</i> | a'. | <i>ići pod kamen-Ø</i> |
| | | 'lie under the rock-INST' | | 'go under the rock-ACC' |
| | b. | <i>lež ati nad kamen-om</i> | b'. | <i>ići nad kamen-Ø</i> |
| | | 'lie over the rock-INST' | | 'go over the rock-ACC' |
| | c. | <i>lež ati za kamen-om</i> | c'. | <i>ići za kamen-Ø</i> |
| | | 'lie behind the rock-INST' | | 'go behind the rock-ACC' |
| | d. | <i>lež ati pred kamen-om</i> | d'. | <i>ići pred kamen-Ø</i> |
| | | 'lie in front of the rock-INST' | | 'go in front of the rock-ACC' |

Beard compares Serbo-Croatian with Lezgian, an agglutinating language, in which the same affix that expresses location relative to a referent can be followed by other affixes, that express locative, allative, and ablative:

- | | | | | |
|-----|----|--------------|-------------------------------|------------------------------|
| (8) | a. | Locative II | <i>sevre-x^h</i> | 'behind the bear' |
| | b. | Ablative II | <i>sevre-x^h-aj</i> | '(out) from behind the bear' |
| | c. | Goal II | <i>sevre-x^h-di</i> | 'to the bear' |
| | d. | Locative III | <i>sevre-k</i> | 'under the bear' |
| | e. | Ablative III | <i>sevre-k-aj</i> | '(out) from under the bear' |
| | f. | Goal III | <i>sevre-k-di</i> | '(to) under the bear' |
- (Beard 1995: 265f.)

Beard argues that:

The interesting aspect of this [i.e. the Serbo-Croatian] paradigm is that the Case but not the preposition changes with the function. It is difficult to claim that the preposition governs the Case in these instances since the P does not change with the Locus-Goal functions. Either cases determine preposition selection or some third factor controls both the Case ending and preposition. In the current framework, ..., the P + Instrumental ... expresses [Locus [x-essive]], while the P + Accusative ... expresses [Goal[X-essive]]. The cleanest account of these P + Case relations, then, is that the primary spatial functions, Locus and Goal, select the Locative [sic] and Accusative Case, respectively, while the secondary functions, Subessive, Superessive, Posterior, and Anterior, select the preposition. In other words, function determines Case endings and prepositions alike but independently. (Beard 1995: 265)

and reaches the conclusions that (a) adpositions are grammatical morphemes and not lexemes, and (b) adpositions are functional markers in a class with inflectional endings and not function assigners (Beard 1995, chap. 10, 11).

The parallel between Indo-European and Lezgian only seemingly holds true. In some agglutinative languages the Lezgian situation can be reconstructed, but the affixes are no longer clearly separate, as in Finnish and Hungarian:

(9) Finnish:

inessive	<i>talo-ssa</i>	< *-s-na	adessive	<i>katto-lla</i>	< *-l-na
elative	<i>talo-sta</i>	< *-s-ta	ablative	<i>katto-lta</i>	< *-l-ta
illative	<i>talo-on</i>	< *-s-en	allative	<i>katto-lle</i>	< *-l-le-k

(10) Hungarian:

inessive	<i>ház-ban</i>	elative	<i>ház-ból</i>
superessive	<i>asztal-on</i>	delative	<i>asztal-ról</i>
illative	<i>ház-ba</i>	sublative	<i>asztal-ra</i>

The above examples point toward coalescence of two formerly distinct suffixes, no longer analyzable as separate affixes. So Beard's theory appears to apply to Finnish: note however that there is no historical evidence for it in the case of prepositions in the Indo-European languages. Indeed, in many of the Indo-European languages cases have either disappeared (as in Romance) or they have been reduced (as in Germanic), but there are no

examples of coalescence with prepositions. In particular, in languages such as Latin and Romance, case variation became redundant inside prepositional phrases, and then disappeared so that only the prepositions were left, as I will show in section 3.3.2.

Even in the Slavic languages, in which cases have a wide semantic use, they cannot occur freely and express the same spatial relation expressed by prepositional phrases.¹⁶ With respect to the examples in (7), one must remark that (a) neither the instrumental nor the accusative have local function outside prepositional phrases, and (b) with most prepositions that allow case variation, the opposition rest/motion is marked by the locative and the accusative, the occurrence of the instrumental with rest being conditioned by the occurrence of the some specific prepositions.

Maybe owing to their position, since they are not adjacent to case endings,¹⁷ the Indo-European adpositions display little tendency toward coalescing with their complement, and even at advanced stages of grammaticalization they mostly remain adpositions, rather than become affixes, while the number of cases that can appear within prepositional phrases tends to be reduced.¹⁸

3.3. Homophones

3.3.1. *Adverbs or adpositions*

As already mentioned in section 3.1, the same element can behave, within the same language and at the same time, as an adverb or as an adposition. Let us consider the following set of Italian examples:

- (11) a. *Vado dentro.*
 ‘I go inside.’
 b. *Vado dentro alla stanza.*
 ‘I go into the room.’
 c. *Vado dentro, nella stanza.*
 ‘I go inside, in the room.’
 d. *Vado all’interno della stanza.*
 ‘I go in the inside of the room.’

In (11a) *dentro* is an adverb, but in (11b) it is a preposition, because it determines the choice of the other preposition *a* (one could not replace (11b)

with *vado alla stanza*). In (11c) *dentro* is again an adverb, modified by an apposition, the PP *nella* (*in* + det.) *stanza*, which expresses the same semantic relation as *dentro*. Diachronically, this is the earliest type of construction, and it was already attested in Latin, where the adverb *intro* mostly occurred alone:

- (12) *ferrum intro clam in cubiculum ferre*
 ‘bring the weapon secretly inside, in the bed room’ (*b. Afr.*)

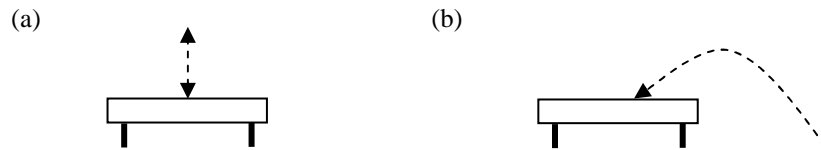
Otherwise, the Italian adverb could have a modifier with the preposition *di* that expresses nominal dependency. In Italian this mostly happens with adverbs of recent nominal origin; *dentro* does not take adnominal modifiers with *di* but see *interno* in (11d), which still has nominal nature.

I mentioned the case of *dentro* because, to my knowledge, nobody has ever suggested that *dentro* in (11a) and (11b) represents two different but homophonous words. However, this would be the consequence of setting up rigid borders between lexical categories. Of course, one cannot rule out the possibility that homophones exist (and in fact, languages have plenty of homophones), but there should be some positive evidence that two items with related (or identical) meanings are indeed different lexical items, on account of partly different syntactic behavior; note further that, in the case of prepositions with case variation, the two putative lexical items do not even belong to different word classes.

In the sections 3.3.2 and 3.3.3 I will discuss an example in which diachronic data do not support the hypothesis of homophony, and one in which they could be taken as pointing indeed toward creation of homophones.

3.3.2. Adpositions with different cases and the same meaning: Latin

In Latin, there are three prepositions, *in* ‘in’, *sub* ‘under’, and *super* ‘on’, ‘over’, that allow case variation. If they were homophones, one would not expect them to have merged after the loss of morphological case. But indeed they have: in Italian, for example, one can say *salto sul tavolo* and mean either the configuration in Figure 2 (a) or the configuration in Figure 2 (b).

Figure 2. *Salto sul tavolo* 'I jump on the table'

In Latin the configuration in Figure 2 (a) would require *super* plus an NP in the ablative, while the configuration in Figure 2 (b) would require *super* and an NP in the accusative: but the diachrony of this preposition does not point in the direction of two homophonous and separate lexical items, as it would if, after the disappearance of cases, the prepositions had split into two different outcomes, or if it had lost one of the two meanings.¹⁹

3.3.3. *Adpositions with different cases and different meanings: Greek*

The latter change is possibly attested in Greek. In Luraghi (2005) I suggested that the preposition *metá* in Classical Greek might have represented two different homophonous lexemes for the speakers, on account of its meaning ('with' with the genitive and 'after' with the accusative, see example (13a)) and because the data from its diachrony point in this direction. In Modern Greek, all prepositions take the accusative; Classical Greek *metá* corresponds to two different prepositions, *me* 'with', and *metá* 'after', as shown in (13b):

- (13) a. *metà Sōkrátous* 'with Socrates' (gen.); *metà taûta* 'after these events' (acc.)
 b. *me ton patéra* 'with (one's) father'; *metá tis eniá* 'after nine o'clock'

The origin of the semantic split between *metá* with the genitive and *metá* with the accusative can be traced back to Homeric Greek, in which the partitive genitive started to be used with prepositions (see Luraghi 2003: 244–255, and 2005). In Homer, the meaning of *metá* was 'among', and the accusative occurred with continuous landmarks, while the genitive occurred with discrete ones (see endnote 23 for this terminology). When the spatial meaning of the preposition was lost, semantic motivation for case variation also disappeared, and the two different meanings associated with case variation may have led to the creation of homophones. I will come

back to the function of the partitive genitive with prepositions in section 5, where some examples will be discussed.

3.3.4. The categorial status of adpositions

As was said in section 3.1, homophony has not only been invoked in order to explain case variation with adpositions, but in order to motivate double or triple syntactic behavior of certain adpositions that can also function as adverbs or preverbs (verb particles). Such a solution is typical of the tendency to postulate pre-existing categories, rather than set up categories empirically, based on the actual linguistic data (see Haspelmath 2007). Indeed, an historical development such as the one outlined above for Latin *in* points in the opposite direction, i.e. that there has always been a single lexeme *in*, so one should look for a different solution. Similarly, the evidence of Italian *dentro* and other former nouns that have undergone grammaticalization and have become adverbs and adpositions indicates that there must be a stage at which the same item displays at least double behavior: grammaticalization is an ongoing, continuous process, and does not proceed by jumps (see section 4).

Historical evidence, and the existence of grammaticalization processes itself purport to conceive of word classes as being structured as prototypical categories. Prototypical categories have no clear cut boundaries between each other, but are separated by a continuum, on which items are located that display features of both categories. Such items may have as their typical feature multi-categorial status, as do the Indo-European preverbs, or they can most often share the behavior of one of two bordering categories, and only occasionally display non-prototypical function, as Italian *dentro* (most often an adverb, only occasionally used as preposition).

4. Synchrony and diachrony of government

Diachronically the occurrence of different cases with the same adposition is easily explained by keeping in mind that government often derives from modification. In a diachronic perspective, one can see a motivation for the occurrence of different cases with the same adposition: NPs start out as dependents of adverbs and develop from modifiers into complements. At

an advanced stage of grammaticalization the case marker on the NP only indicates that the NP is the complement of a preposition:

... the more a case affix is grammaticalized, the more it comes to express ... just these syntactic relations. This is the relation of the nominative to the subject relation, ... and of the oblique grammatical cases to the preposition-complement relation. The attraction of an NP into the valence of its controller, so that it ceases to be a modifier, and the grammaticalization of the case suffixes are thus two processes that condition each other. ... Throughout the history of the Latin language, we observe a steadily increasing presence of government. The first step in this direction was the subordination of an NP to the adverb that accompanied it, and thus the creation of prepositional government. (Lehmann 1985b: 95f.)

Lehmann summarizes the differences between adverbs and adpositions in Table 1.

Table 1. Dependents of adverbs and adpositions (Lehmann 1999)

	adverb	adposition
(a) dependency relation	modified by dependent	governs dependent
(b) dependent	optional	obligatory
(c) case relator on dependent	freely chosen according to meaning	uniquely determined by superordinate element

In the light of the above criteria, an interesting example of the development from body part noun to adverb is the English word *ahead*, which can occur either alone, or with a dependent *of* phrase. *Ahead* represents a less grammaticalized stage than *in front of*, discussed in section 2, because its dependent, being optional, can be viewed as a modifier (from this point of view the phrase headed by *ahead* is endocentric), but, according to criterion (c) above, it is a complement, since *ahead* uniquely determines the occurrence of the preposition *of* in the dependent phrase. So one can say that *ahead* constitutes a counterpart of German *in*, and governs its dependent according to criterion (b), but raises problems if one considers it in the light of criterion (c).

So far I have described a situation where either property (b) or property (c) holds. In order to build a scale by which we can say that we have instances of more or less prototypical government we need an independent definition of government. Such definition can be given in purely syntactic terms. Moravcsik (1995: 708) defines government as follows:

- (14) Constituent A governs constituent B if the syntactic function of B depends on A.

The syntactic function of the noun phrases *der Stadt* and *die Stadt* in (1a) and (1b) is determined by the preposition *in*:²⁰ the syntactic function of the two NP's is: complement of a preposition; as such they cannot occur alone (as they could do if their relation to their head were e.g. appositional, as in Figure 1) in sentences such as (15a-b). The verb *fahren* cannot take an NP, but only a PP.

- (15) a. **Ich fahre der Stadt.*
b. **Ich fahre die Stadt.*

With PPs that are syntactically adverbials, the case is slightly different by this criterion. Let us examine an example with *ahead*. As we have already seen, *ahead* requires its dependent to be marked by the preposition *of*. Even when a PP with *of* cannot substitute a PP with *ahead* (+ *of* ...), if the expression is an adverbial we can find another PP, as in:

- (16) a. *Mary came ahead of time.*
b. **Mary came of time.*
c. *Mary came on time.*²¹

On a scale of prototypicality prepositions which meet all the above criteria (as e.g. German *zu*, which only takes the dative) score the highest; a preposition as German *in* constitutes a case of less prototypical government, while the relation between *ahead* and its dependent in (14), while also displaying a feature of government, is closer to modification.

5. A case which is not (only) a case: the partitive

5.1. The Ancient Greek genitive with prepositions

In this section, I will briefly summarize some aspects of case variation with Ancient Greek prepositions,²² especially in connection with the partitive genitive. Let us start by reviewing some well known facts about Greek.

Ancient Greek had five cases: nominative, vocative, accusative, dative, and genitive. Leaving aside the nominative and the vocative, all other cases could occur with prepositions:

- (17) a. prepositions with one case: *antí, apó, ek, pró* (genitive), *eis* (accusative), *en, sún* (dative)
 b. prepositions with two cases: *diá, katá, hupér* (genitive and accusative)
 c. prepositions with three cases: *amphí, aná, epí, metá, pará, prós, hupó*

Let us now focus on the function of the genitive. In the other ancient Indo-European languages, the genitive could occur with adpositions limited to cases in which it originated from a modifier of an adverb, as in example (4) from Old Indic. In Ancient Greek, the genitive partly replaced the Indo-European ablative, which had disappeared on account of case syncretism:²³

- (18) a. *parà nēòs* ‘from the ship’ (gen.)
 b. *parà nēusì* ‘near the ships’ (dat.)

Example (18) is parallel to Old Indic (3): Greek lost both the ablative and the locative, which merged with the genitive and the dative.

Most frequently, however, the Greek prepositional genitive does not represent the ablative. Consider the following examples:

- (19) a. *stê d’ ár’ hupèr kephalês*
 stay:AOR.3SG PCL then over head.F:GEN
 ‘he took his stand above (his) head’ (*Il.* 2.20 and *passim*)
 b. *met’ állōn léxo*
 among INDEF.GEN.PL.M lie:IMP.AOR.MID.2SG
hetaíron
 comrade.M:GEN.PL
 ‘lie with the rest of your comrades’ (*Od.* 10.320)
 c. *mé ... è halòs è epì gês*
 not either see:GEN either on earth:GEN
pêma pathóntes
 pain.N:NOM/ACC.PL suffer:PART.AOR.NOM.PL
 ‘that you do not suffer evil anywhere on sea or on earth’ (*Od.* 12.27)

In the above example we find a number of prepositional phrases with the genitive: *hupèr kephalês* ‘over (his) head’, *met’állōn hetaíron* ‘with the other comrades’, *epì gês* ‘on earth’. In such occurrences, the genitive does not add ablative meaning to the preposition, as it does with *pará* in (18), and the function of the prepositional phrases is rather to express locative. Note that the genitive alone can function as a locative in Homer, as shown by the occurrence of *halós* ‘on sea’ in example (19c), in which the semantic role is not even indicated by the verb (*halós* is an adverbial).

The above occurrences can be understood by carefully contrasting similar passages in which the accusative occurs instead of the genitive. Often the meaning of the prepositional phrase is the same, and case variation points toward a different conceptualization of the landmark. Compare (19b) with (20):

- (20) *toîsi* *dè* *thumòn* *enì* *stéthessin*
 DEM.DAT.PL.M PCL soul:ACC in breast:DAT.PL
órine *pâsi* *metà* *plēthún*
 stir:AOR.3SG all:DAT.PL.M among crowd:ACC
 ‘he moved the soul of everyone in the crowd’ (*Il.* 2.142–143)

As remarked in section 3.3.3, the genitive is used for discrete landmarks (in (19b) a plural count noun), while the accusative is used for continuous ones (in (20) a collective noun).²⁴ The nature of the landmark also determines the type of trajectory along which a trajector can move within the landmark, as shown in:

- (21) *autàr* *ho* *bê* *dià*
 but DEM.NOM.M walk:AOR.3SG through
dôma *polútlas*
 hall.N:NOM/ACC.PL much.enduring:NOM.SG
dîos *Odusseûs.* *óphr’* *híket’*
 goodly:NOM O:NOM until reach:AOR.3SG.MID
Aréteñ *te* *kai* *Alkínoon* *basíleā*
 A:ACC and and A:ACC king:ACC
 ‘but the much-enduring goodly Odysseus went about in the hall ...
 until he came to Arete and to Alcinous the king’ (*Od.* 7.139–141)

- (22) *bàn* *d’* *iénai* *protérō* *dià*
 walk:AOR.3PL PCL go:INF.PRS forwards through

dṓmatos, hêos híkonto Tḗlémakhon
 hall:GEN until reach:AOR.3PL.MID T:ACC
 ‘they walked through the hall, until they reached Telemachus’ (*Od.*
 15.109–110)

Motion denoted by *dià dôma* (acc.) in (21) must be understood as wandering around and changing direction, while motion denoted by *dià dṓmatos* (gen.) in (22) follows a straight path across the landmark.²⁵ In a discrete landmark, a trajector can move along a trajectory which can be traced down, and has a precise direction (unidirectional path); inside a continuous landmark, instead, a trajector can move around, but its motion is random (multidirectional path).

5.2. Partitivity and definiteness

5.2.1. Partitivity and definiteness in Finnish and in Basque

As well known, the partitive occurs as a separate case in a number of Finno-Ugric languages, for example in Finnish, where it is used as alternative to the nominative for partitive subjects (mostly with presentative verbs) and to the accusative for partitive objects. Indeed the occurrence of the partitive has several implications regarding some features of the referent: in the Balto-Finnish languages it normally denotes affectedness and definiteness, as in *kirja-t* ‘the books’ (nom.) vs. *kirjo-ja* ‘books’, ‘some books’(part.).²⁶

Basque, too, has a partitive case, which can be used for subjects of intransitive verbs or for patients of ergative verbs. Its meaning is similar to the meaning of the Finnish partitive, even if Basque shows a bigger connection of partitive with negation (see Laka 1993).

Both in Finnish and in Basque, the partitive is morphologically realized as a case marker, besides, historical evidence shows that the Finnish partitive derives from the ablative case. For these reasons, it is considered a case in reference grammars. However, at a closer look, the fact that the partitive can be used for both subjects and objects indicates that it adds some type of information that is not completely coherent with the category case. Indeed, if we assume the function of morphological case to be “marking dependent nouns for the type of relationship they bear to their heads”

(Blake 1994: 1) the partitive not only does not fulfill this function, but it also partly hides the specific relation.

The peculiar features of the partitive have led several scholars to suggest that it should not be considered a case, but rather a determinative. For example, Laka (1993: 158) suggests that “what is referred to as ‘partitive case’ in Basque is a polar determiner, much like English *any*”, and further notes that the partitive is in complementary distribution with all other determiners. A similar suggestion, in a GB theoretical framework, is formulated in Asbury (2006) with regard to the Finnish partitive.

Interestingly, the Finnish partitive can also be used with adpositions. With some of them, it alternates with the genitive. The semantic difference is similar to the difference between the accusative and the partitive genitive in Homeric Greek:

- (23) a. *lelu-t* *o-vat* *keskellä* *lattia-a*.
 toy-PL.NOM be.PRS-3PL in.the.middle.of floor-PART
 ‘The toys are in the middle of/all over the floor.’
 b. *lelu-t* *o-vat* *lattia-n* *keskellä*.
 toy-PL.NOM be.PRS-3PL floor-GEN in.the.middle.of
 ‘The toys are in the middle of (lit: at the centre of) the floor.’
 (from Lestrade 2005)

The difference borne about by case alternation does not concern the semantic role of the adpositional phrase. Much in the same way as in (21) and (22), the difference rather lies in the specificity of the relation between the trajector and the landmark. In Finnish, the partitive, having an indefinite value, triggers a less definite meaning of the preposition.

5.2.2. Partitivity and definiteness in Romance

Other languages with grammaticalized means for partitive also show that partitive does not have the same function of grammatical case (or of its equivalents, e.g. adpositions). In French, for example, we find a highly grammaticalized partitive article, built with the preposition *de*, with a distribution which is different from the distribution of other primary prepositions:

- (24) *je suis venu avec les amis / je suis venu avec des amis*
 ‘I came with my (lit.: the) friends / I came with some friends’.

The last example, where *des* co-occurs with the preposition *avec*, demonstrates change of lexical category. Indeed, French *de* is generally considered a determiner, even if it derives from the preposition that has taken over the functions of the genitive. Interestingly, the preposition *de* in Latin means ‘from’, i.e. it has an ablative meaning: the source for the partitive determiner in French is the same as the source for the partitive ‘case’ in Finnish.

5.2.3. *Partitivity and definiteness in Homeric Greek*

Much in the same way, the Greek genitive in examples (19b-c), and (22) bears a type of information (again, partitivity) which goes beyond the information normally conveyed by morphological case. This construction is normal in French, where the partitive is highly grammaticalized, and very widespread in Italian, where it is gaining ground even in the more conservative written language. It shows that a partitive construction does not functionally correspond to a morphological case.

If we now go back to the Greek examples, and in particular to example (19c), one can remark with Ruijgh “...ou bien quelque part dans la mer ou bien quelque part sur la terre” “...*epì gês*, originellement ‘quelque part sur la terre’, a fini par obtenir le sens moins spécifique de ‘sur la terre’”, Ruijgh (1994: 148). In other words, in the beginning the prepositional partitive did not specify a semantic role as the other cases did (examples (3) and (18)): the locative meaning of the prepositional phrase was expressed by the preposition, and the genitive expressed indefiniteness, as the partitive can do in Finnish.²⁷

Limited to the accusative and the partitive genitive, case variation as described in this section should not be viewed as a problem for the notion of government: the prepositions involved do in fact govern their dependents in the strictest sense, since case variation is connected with definiteness.

The partitive genitive in the occurrences shown in this section does not fulfill a function homogeneous with the functions of the category case. In this sense, the partitive is not a real case. Note that case variation involving the partitive ends up being similar to variation between the genitive and the dative with German *entlang* (section 2), in the sense that in both instances morphological case fulfills a function that is not of the type one would expect. The analogy ends here, because in the case of *entlang* case varia-

tion points toward different stylistic registers, while in the case of the Greek partitive it expresses different values of definiteness.

One may wonder why the partitive function of the genitive in Greek did not become fully grammaticalized, as with the Balto-Finnish partitive. The problem is that, contrary to Finnish, Greek did not have a separate partitive; furthermore, the genitive had also taken over the function of the ablative case (as in example (18)). Possibly, this was the reason why the incipient extension of the partitive to prepositional phrases did not develop further in Greek. After the partitive meaning of the genitive became no longer relevant with prepositions, the difference between (19b) and (20) and (21) and (22) was no longer felt, the local meaning was lost at least in part, and the resulting situation was the one described in section 3.3.3 for Classical Greek, in which the preposition *metá* in association with different cases acquired two meanings that could not easily be thought of as manifestations of polysemy.

6. Summary and conclusions

In my paper I have addressed a number of issues connected with the use of cases with adpositions, and, more specifically, case variation with the same preposition. In the first part of the paper, I have discussed the notion of government, showing that in languages where the same preposition takes two (or more) cases it is useful to view government as a prototypical notion, which defines a continuum between government and modification. By referring to such a continuum one can also gain insight on the problem of the categorial status of words that can be used both as adpositions and as adverbs, without having to resort to homophones.

In the second part of the paper, I have shown that case variation must not always be connected with variation in semantic roles. In particular, describing the use of the partitive genitive as prepositional case in Ancient Greek, I have shown that the fact that there is a choice between the accusative and the genitive does not mean that prepositions do not govern their dependents.

The occurrence of the partitive with prepositions in Greek raises the interesting question of how wide is the variety of functions that morphological case can fulfill within prepositional phrases, apart from the function of expression semantic roles. It can be added that case alternation with adpositions in Finnish also involves the partitive: this is an issue that would certainly be worth pursuing further.²⁸

Notes

1. German prepositions that allow case variation are sometimes called ‘two-way’ prepositions, see e.g. Langacker (1999). Case variation with German prepositions is extensively treated in Di Meola (2000). Various theories on this issue are discussed in Zwarts (2006), which also contains extensive references. I will come back to this type of case variation below, endnote 29.
2. Case variation with adpositions is also known from non-Indo-European languages, but I will limit my discussion to (some) Indo-European languages in this paper (but see section 6 on Finnish).
3. For a more detailed account of the development of adpositions, see Lehmann (1995: 74–79), with examples of relational nouns from various genetically unrelated languages.
4. In Spanish we find the adverb *enfrente* from *en* + *frente*, that can occur alone or with a PP with *de*, and *frente*, that can still be used as body part, or take a dependent with the preposition *a*. In Italian the word *fronte* is grammaticalized in the adverb *difronte*, that can either occur alone or with a dependent PP with *a*; in the latter case it behaves as a preposition, rather than a noun, see below, the discussion of *dentro* in section 3.3.1.
5. In general, the Indo-European primary preposition (i.e. those that also function as preverbs, see section 3.1) cannot be traced back to body part nouns (an exception is *+h₂ent-* ‘in front of’). On various origins of German prepositions, see Lehmann (1998).
6. Or it can occur alone only in elliptical expressions, cf. Lehmann (1995: 76).
7. See above, endnote 1 for reference on this matter; I will briefly come back to it below, endnote 29.
8. These two theories do not exclude each other: it can be thought that two homophonous adpositions are parts of discontinuous morphemes involving as their other part two different case endings.
9. This position is argued for in Abraham (2001).
10. Traditionally it is said that adpositions have been ‘added’ to cases when the latter were no longer able to express a certain ‘concrete’ meaning. This interpretation implies the existence of a stage at which Proto-Indo-European had no adpositions, because cases alone could express all semantic functions. That such a stage can be reconstructed is questionable, as pointed out by various scholars (see Dunkel 1990). Hittite, the oldest attested Indo-European languages, is sometimes said to have lacked adpositions at its most ancient stage. I have argued elsewhere that this does not represent the original Indo-European situation, see Luraghi (2001).
11. On these and other Vedic adpositions, see Delbrück (1893) and Macdonell (1916: 208–210).

12. Adpositions can be pre- or postposed in Vedic; in Classical Sanskrit they are mostly postposed.
13. See Brugman (1988) for a discussion of the categorial status of *over*.
14. Kuryłowicz (1964:176) also outlines a development of the relation between prepositions and cases: “1. The whole syntactic group (preposition + noun) determines the verb, the preposition representing either a reinforcement or a specification of the ending of the noun. 2. If more than one case-form occurs with the same preposition *the ending of the case-form functions as a determinant of the preposition*, thus rendering its value precise. The shift from 1. to 2. is the crucial phenomenon”. How this shift actually happens, and what exactly is the structure of the group preposition + NP with case at the two different stages is not further explained; apparently, at stage (1) cases have a meaning within PP’s that is similar to the meaning that they can express alone, while at stage (2) the difference in meaning appears to hold only within the PP. Unfortunately, in the discussion that follows the above quote, Kuryłowicz (1964: 176–178) mostly gives examples of prepositions at stage (1).
15. I owe this observation to Ch. Lehmann.
16. In other words, the relation between cases and prepositions is not modification, as it is in examples (3) and (4) from Old Indic.
17. This partly depends on the fact that in most Indo-European languages we find prepositions, rather than postpositions, and partly depends on free word order even in the languages that mostly have postpositions.
18. The Indo-European languages have sporadic examples of coalescence of a postposition with an inflectional ending; the only systematic case of creation of new case morphemes out of postposition is Tocharian, see Krause and Werner (1960).
19. See Luraghi (1989) for more examples and discussion.
20. A different position can be found in Abraham (2001).
21. In (15a-b) the substitution of the SN in the dative or accusative with a SN in another case, say the genitive, would not result in a grammatical structure.
22. From now on I use the word ‘preposition’, rather than ‘adposition’, with reference to Greek, because these items virtually all ended up being preposed in Classical Greek, even if postpositional usage was frequent in Homeric Greek.
23. See Luraghi (1987) and (2003).
24. I use the terms ‘continuous’ and ‘discrete’ as they are used for example in Talmy (2000: 21–96) to refer to the ‘state of Dividedness’ of entities. Discrete entities are formed by a collection of separate items (they are “conceptualized as having breaks” according to Talmy, 2000: 55), while continuous ones do not display an analyzable internal structure. Nominal number can be a hint to the way in which we conceive of the internal structure on an entity: according to Langacker (1987: 294) “the grammatical differences between plurals and

underived mass nouns reflect the greater individuation of plurals wrought by their compositionality”.

25. See Luraghi (2003). Apparently, in Homer a free genitive with local reference had more chances of being taken as a locative, than as an ablative. Indeed, the partitive genitive could occur in an array of functions, including direct object, subject, adverbial of time, and adverbial of space as in (24) (see Luraghi 2003: 60 for the relevant examples).
26. See Sulkala and Karjalainen (1992) for the use of the partitive in Finnish; on definiteness and the Balto-Finnish partitive see further Barbera (1999).
27. With this meaning the genitive built an opposition with the accusative, which expressed complete affectedness: the opposition was based on definiteness, and not on semantic roles.
28. Various scholars have pointed out that variation between the dative and the accusative in German cannot simply be explained by the opposition between locative and allative, and have argued that in this language, too, case variation provides information as to the way in which the landmark is conceived, as an unbounded entity which contains the trajector (dative) or as a bounded entity crossed by a trajectory (accusative; see among others Smith 1995). Note however that German does not provide cases of complete identity of semantic roles, as does Greek, for example in (22) and (23a). Apparently, case variation in German provides both types of information at the same time, i.e. semantic role and boundedness of the landmark.

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On the form of complex predicates: toward demystifying serial verbs

Masayoshi Shibatani

1. Introduction*

As the recent volume edited by Aikhenvald and Dixon (2006) indicates, interest in verb serialization or serial verb constructions (SVCs hereafter) persists. Indeed, the question of how serial verbs differ from other types of complex predicates such as converbal complex predicates and verb compounds, as well as other multi-verb constructions like coordination and subordination, remains one of the outstanding questions in both formal and typological studies. This paper, by critically examining the widely held current characterizations of SVCs, attempts to remove some of the misconceptions surrounding serial verbs. In particular, we focus on the similarities between serial verbs and converbal complex predicates containing a non-finite marker, and argue that they are not distinct types of complex predicate, contrary to the claims made in the recent literature on SVCs. While space limitation prevents us from developing it further, our discussion of SVCs, in particular the functional aspect of the predication of these constructions, benefits greatly from some of Christian Lehmann's earlier work (e.g., Lehmann 1989) on the typology of clause linkage. I thus find it fitting that I contribute this paper as a token of the great admiration that I hold with regard to Christian's many seminal works in modern linguistic typology.

As seen in the following characterization of SVCs by Aikhenvald (2006), the current definitions of SVCs such as Foley and Olsen (1985), Bisang (1995), and Bril (2004) typically refer to the four defining properties summarized in (1) below:

[An SVC] is a sequence of verbs which act together as a single predicate, without any overt marker of coordination, subordination, or syntactic dependency of any other sort. Serial verb constructions describe what is conceptualized as a single event. They are monoclausal...SVCs may also share core and other arguments. Each component of an SVC must be able to occur on its own right. (Aikhenvald 2006: 1)

- (1) a. There is no intervening conjunction, linker, or a non-finite marker between two or more verbs.¹
 b. Each of the serialized verbs occurs in its “own right” in non-serial context.
 c. Serialized verbs form a single predicate of a single clause.
 d. Serialized verbs typically share arguments.

SVCs with these properties are said to form “a clearly recognizable, robust construction type” (Dixon 2006: 338), but are generally thought to be somewhat mysterious, hence attracting so much attention in the field. If serialized verbs satisfied property (1b) and (1c) above simultaneously, they would indeed form an unusual construction because these two properties are contradictory (see section 3 below).

Shibatani and Huang (forthcoming), to the best of our knowledge, is the first attempt to critically examine the defining properties of SVCs in an effort to unravel some of the myths surrounding SVCs. In the first place, they have shown that property (1a) does not hold in SVCs of certain Formosan languages. For example, while SVCs in the Wulai dialect of Atayal do not have a linker, those in the Mayrinax dialect do in the form of *li*, as shown in (3) below:

- (2) Wulai Atayal
m-wah=ku? m-ita? yaya?=su?
 AF-come=1SG.NOM AF-see mother=2SG.GEN
 ‘I came to see your mother.’
- (3) Mayrinax Atayal
wah-an li? m-itaal ni? yumin li? yaya=nia?
 come-LF LK AF-see GEN Yumin NOM mother=3SG.GEN
 ‘Yumin came to see his mother.’

Paiwan and Changpin Amis are two other Formosan languages that include a linker in their SVCs – obligatorily in the former and optionally in the latter. Shibatani and Huang (forthcoming) arrive at their conclusion that these constructions with a linker are indeed SVCs on the basis of the fact that they obey the same syntactic restrictions that govern SVCs without a linker. The relevant restrictions include the following:

- (4) a. Focus marking in the second verb is either default AF (actor focus) or harmonizing with that of the first verb.²
- b. The second verb does not host a pronominal clitic.
- c. The second verb cannot be negated.
- d. The second verb cannot be marked for mood.

These properties of the second verb (and others following the initial one) of SVCs distinguish serial constructions from other multi-verb constructions such as coordination and subordination, where these restrictions do not hold.

2. Converbal complex predicates

The conclusion by Shibatani and Huang (forthcoming) that SVCs may contain a linker leads to the question whether converbal complex predicates seen in Japanese, Korean, and Altaic languages at large are also SVCs. These complex predicates appear at least functionally similar to the regular SVCs, as the parallel expressions below indicate:

- (5) a. Asante SVC³ (Niger-Congo)
ɔfa-a huma=no bra-a ha
 3SG-take-PST book=DET come-PST here
 'He brought the book here.'
- b. Japanese converbal complex predicate
Kare=ga koko=ni hon=o mot-te ki-ta.
 he=NOM here=DAT book=ACC take-CON come-PST
 'He brought the book here.'
- (6) a. Mandarin Chinese SVC
tā zǒu qù le.
 she walk go ASP
 'She went walking.'
- b. Korean converbal complex predicate
Kunye=nun kel-e ka-tta.
 she=TOP walk-CON go-PST
 'She went walking.'

In the Japanese grammatical tradition, the converbal ending *-te*, glossed as CON above, is treated as a conjunctive particle since it also conjoins two clauses as below:

(7) Japanese

- a. *Taroo=ga gitaa=o hii-te,*
 Taro=NOM guitar=ACC play-CON
Hanako=ga utat-ta.
 Hanako=NOM sing-PST
 'Taro played the guitar and Hanako sang.'
- b. *Yuki=ga hut-te, kion=ga*
 snow-NOM fall-CON temperature-NOM
saga-ru sooda.
 drop-PRS HERESAY
 'They say that it will snow and that the temperature will drop.'

While these constructions above clearly involve two clauses, there is evidence that the constructions in (5b) and (6b) are monoclausal, indicating that the two verbs connected by the converbal ending (Japanese *-te* and Korean *-e/-ko*) form a single complex predicate similar to serialized verbs. For example, whereas biclausal conjunctive structures of the type seen in (7) obey Ross's constraint against extracting an element from one conjunct of a coordinate structure, those with a converbal complex predicate do not (see Shibatani (2007) and Shibatani and Chung (2007) for more evidence and further discussions on this point). Observe:

(8) Japanese

- a. *Taroo=wa tegami=o kai-te, gakkoo=ni it-ta.*
 Taro=TOP letter=ACC write-CON school=DAT go-PST
 'Taro wrote a letter and went to school.'
- b. **[Tagoo=ga Ø kai-te, gakkoo=ni it-ta] tegami*
 Taro=NOM write-CON school=DAT go-PST letter
 (lit) 'the letter that Taro wrote and went to school'

(9) Japanese

- a. *Taroo=wa tegami=o kai-te it-ta.*
 Taro=TOP letter=ACC write-CON go-PST
 'Taro went away having written a letter.'

- b. [Taro=ga Ø kai-te it-ta] tegami
 Taro=NOM write-CON go-PST letter
 (lit) 'the letter that Taro wrote and went away'
 'the letter that Taro wrote and left behind'

Converbal complex predicates are formally different from the typical SVCs in having an intervening non-finite marker. The characterizations of SVCs and converbs by Bisang (1995) below point to what appears to be a more substantive difference between the two types of complex predicates under discussion.

Verb serialization is the unmarked juxtaposition of two or more verbs or verb phrases (with or without subject and/or object), *each of which would also be able to form a sentence on its own*. (1995: 139; emphasis added)

[Converbs are] verb forms that are specialized for the expression of adverbial subordination, but cannot form a sentence on their own, i.e. *they do not occur as main predicates of independent clauses*. (1995: 141; emphasis added)

Along the similar line, Aikhenvald (2006) tells us that:

Serial constructions are different from complex predicates and other multi-verb sequences which are syntactically combined, but where neither component can function on its own, especially if one of them is a dependent or a nominalized form...Along similar lines, converb constructions...are not serial verb constructions. (2006: 5)

Others also point out the lack of lexical autonomy of converbs and other non-finite forms as a way of distinguishing them from SVCs. In the words of Bril (2004: 3), "[l]exical autonomy is a prerequisite for serialization, excluding non-autonomous coverbs and nonfinite forms, as well as co-lexicalized compounds".

Converbs indeed do not function as predicates of independent sentences indicating that converbal endings mark non-finiteness or dependency of the relevant verb forms. Thus, from (9a) above, we obtain only one well-formed sentence. A similar pattern is seen in converb expressions in Korean and other languages.

(10) Japanese

- a. Taro=ga it-ta.
 Taro=NOM go-PST
 'Taro went.'

- b. **Taroo=ga* *tegami=o* *kai-te.*
 Taro=NOM letter=ACC write-CON
 (lit) 'Taro having written a letter'

According to Bisang (1995) and others quoted above, this is in sharp contrast to the verbs involved in SVCs, each of which is said to function as a predicate of independent sentences. Take the Mandarin example in (6a). The serialized verbs in this example do appear to individually function as a predicate of independent sentences, as shown below:

(11) Mandarin Chinese

- a. *tā* *zǒu* *le*
 he walk ASP
 'He has walked.'
- b. *tā* *qù* *le*
 he go ASP
 'He is gone.'

Our point in this paper is that the contrast seen above between converbs and serialized verbs is only apparent. In particular, we argue that only one of the serialized verbs can function as an independent predicate and that the other verbs in the series do not have the lexical autonomy of an independent verb. To see this point, take the two verbs in Asante SVC (5a) above. While the first verb can form a sentence, the second by itself cannot in the way the first verb can since it lacks a pronominal clitic.

(12) Asante

- a. *ɔ̃fa-a* *huma=no*
 3SG-take-PST book=DEF
 'He picked up the book.'
- b. **bar-a* *ha*
 come-PST here
 '(He) came here.'

Indeed, lack of a pronominal clitic on the second verb is one of the language specific defining properties of SVCs in many languages, as noted for the Formosan Atayal language above (see (4b)). Compare Asante SVC (5a) with the coordinate structure of the language, in which the second verb

requires a pronominal clitic. In contrast to the verbs in SVCs, each verb in this type of structure can function as an independent predicate.

(13) Asante

ɔ-fa-a *huma=no, ná ɔ-bra-a* *ha*
 3SG-take-PST book=DEF and 3SG-come-PST here
 ‘He picked up the book, and he came here.’

Thus, despite the fact that serialized verbs may show certain formal finiteness features such as focus marking in Formosan languages and a tense marker as in Asante SVCs, there is in fact only one verb that functions as a finite verb; the other verbs are functionally non-finite, and as such they cannot function as independent predicates outside the SVC context. One may say that an Asante verb like *bra-a* ‘come-PST’ does function as a predicate if it is morphologically adjusted to include a pronominal clitic. Such morphological adjustment, however, is nothing but conversion of a non-finite form into a fully finite verb form. Converbs too can function as independent predicates once a morphological adjustment such as tense marking has been applied to them; e.g., by changing the converbal *-te* ending to the past *-ta* ending in (10a). This possibility distinguishes serial verbs and converbs, both of which can be turned into a fully inflected form, from so-called coverbs, seen, for example, in the languages of northern Australia, which cannot be made into an inflected form, and accordingly their independent occurrence is limited (see McGregor (2002: 105) for the contexts in which these forms, referred to as U(ninflecting) V(erb) by him, occur independently). Similar forms are called “verb adjuncts” (e.g., [*dad ms amun-a-k*] ‘carrying outside go-3S-PST’) in Pawley’s (in press) study of the Papuan language Kalam, which he characterizes as occurring “only, or primarily as the partner of one or a very few verb roots to form a complex predicate.” Before turning to the issue of the functional non-finiteness of serialized verbs, let us note that many languages allow verb roots to be serialized, as in the following examples:

(14) Budai Rukai (Formosan; Huang 1997)

madalan-aku *alupu*
 like.ACT-1SG.NOM hunt
 ‘I like hunting.’

- (15) Kalam (Papuan; Lane 2007: 54)

Bin pataj ogok amyg pak dad
 woman young these go dig hit carrying
ap-elgp-al...
 come-PST.HAB-3PL
 'Young women used to go and dig and hit and bring back (these animals)...'

- (16) Paameese (Oceanic; Crowley 2002: 43)

Inau nau-vaa tooni atute navule
 1SG 1SG:REAL-go miss place Navul
 'I went past (the village of) Navul.'

These root verbs seen above certainly do not function as independent verbs in other contexts. Bisang (1995) may distinguish them (as root serialization) from others in which serialized verbs show finiteness features, but we shall argue below that serialized verbs with certain finiteness features are also functionally non-finite as the root verbs above are.

3. Non-autonomous nature of serialized verbs

Serialized verbs may show formal finiteness features such as tense marking and verb agreement, but these verbs in the series, except one, are not fully autonomous in the sense that they are neither formally nor functionally finite.⁴ In the first place there are formal restrictions on serialized verbs such that usually only one verb in the series has the potential of displaying the full range of formal finiteness features. We noted in the introduction that SVCs in Formosan languages, whether they have a linker or not, place severe syntactic restrictions on the second and other verbs following the initial one. In contrast to autonomous verbs, these serialized verbs cannot choose focus marking freely, and they cannot host a pronominal clitic. They can be neither negated, nor can they be marked for mood. We have also noted that in Asante SVCs the second verb cannot host a pronominal clitic. Although the second verb in Asante SVCs is marked for tense, it is dependent on the tense of the first verb such that tense marking throughout serial verbs shows concord. Thus, while (17a) below is grammatical, (17b), where a past tense form is combined with a future tense form, is not.

(17) Asante (Morrison 2007: 14)

- a. Yaw *fa-a* *ɛduane=no ma-a* *ne jire*.
 Yaw pick.up-PST food=the give-PST his wife
 ‘Yaw picked up the food and gave it to his wife.’
- b. *Yaw *fa-a* *ɛduane=no bɛ-má* *ne jire okyina*.
 Yaw pick.up-PST food=the FUT-give his wife tomorrow
 ‘Yaw picked up the food and will give it to his wife tomorrow.’

Asante also exhibits negative concord such that if the first verb is negated, the following verbs in the series must also be negated, as in the following example:

(18) Asante (Morrison 2007: 15)

- Bɛna=no n-nanti n-nanti n-hwɛhwɛ ɛdwiane*.
 man=DET NEG-walk NEG-walk NEG-find food
 ‘The man doesn’t walk for a long time to find food.’

Similar observations on the dependency of serialized verbs have been made elsewhere. For example, Crowley (2002) notes a number of restrictions on serialized verbs in Paamese, which also has SVCs in which the second verb displays a number of formal finiteness features, as in the following example:

(19) Paamese (Crowley 2002: 55)

- Inau ni-uasi vuasi hee-mate*.
 1SG 1SG:DIST.FUT-hit pig 3SG:DIS.FUT-die
 ‘I will hit the pig to death.’

First, the second verb under serialization cannot have its own subject, according to Crowley. If it did, the sentence would be interpreted as a non-serial coordinate construction, as below:

(20) Paamese (Crowley 2002: 55)

- Inau ni-uasi vuasi (kaa) kai hee-mate*.
 1SG 1SG:DIS.FUT-hit pig and 3SG 3SG:DIS.FUT-die
 ‘I will hit the dog and it will die.’

Crowley (2002) also points out that other formal finiteness properties such as clitics and mood marking are severely restricted in their distribution in serial verbs. In his own words:

In the case of serial verb constructions, there is no independent choice of clitics for the two verbs in a serial construction. (2002: 56)

In the case of serial verb constructions, there is a close dependence between the mood and polarity categories that are marked on the first verbs in the series, and the categories which are marked on the second verb. (2002: 57)

Bisang (1995: 144) points out the high degree of indeterminateness or “coolness” of the verb “with regard to Tense-aspect-mood, and the techniques of the dimension of PARTICIPATION” in isolating languages such as Chinese and Thai. Isolating languages typically lack verb morphology for these grammatical categories, and it is indeed difficult to distinguish between finite and non-finite verbs. But the above observations on inflectional languages also show that formal finiteness marking can be deceptive in that even those that mark verbs for certain categories may not be fully autonomous and may be dependent upon another verb with regard to the finiteness features. Even in isolating languages it is a matter of discovering properties distinguishing between finite and non-finite verbs. Matthews (2006), for example, notes that in Cantonese serialization, only the second verb takes the experiential morpheme *gwo*³. If this morpheme is attached to the first verb, a serial interpretation does not obtain. With the assumption that all independent (finite) verbs in the language take this experiential morpheme, we can consider the verb *joek*⁶ ‘to have a date’ in (21a) to be non-finite with regard to this property.

(21) Cantonese (Mathews 2006: 73)

- a. *ngo*⁵ *joek*⁶ *keoi*⁵ *tai*¹-*gwo*³ *lil* *tou*³ *hei*⁶
 I date 3SG watch-EXP this CLF show
 ‘I’ve seen this movie with her (on a date).’
- b. *ngo*⁵ *joek*⁶-*gwo*³ *keoi*⁵ *tai*² *lil* *tou*³ *hei*⁶
 I date-EXP 3SG watch this CLF show
 ‘I’ve arranged with her to see this movie.’

To the extent that converbs by definition never display finiteness features, they are different from some of these serialized verbs that may show certain finiteness features. But I consider such difference to be trivial (see below on a related issue). There is more substantive similarity between converbs and serialized dependent verbs. Namely, neither of them is functionally finite – i.e., neither converbs nor serialized dependent verbs make a separate predication. The illocutionary act of asserting, questioning, ordering, etc. constitutes the major function of predication, which may be

modulated by certain verbal categories, such as modality and evidentiality, contributing to the finiteness. Non-finite verbs such as converbs suspend the predication function of a verb. Our point is that serialized verbs do not individually perform the predication function either (and as such they cannot occur as independent verbs in their own right). That is, in both converbal complex predicates and serial verbs, the relevant verbs jointly make a single predication. It is through the finite verb that a predication is performed, and the formal finiteness features help ground a proposition in a specific speech context so that a proposition can be given a truth value and the speaker can be held accountable for his speech act.⁵ Tense marking, for example, situates the content of a proposition with regard to the time of the speech event. Serialized verbs, even if they may display certain finiteness features, do not perform these functions individually, just as non-finite converbs do not. Careful reading of some of the current definitions of serial verbs reveals an internal logical contradiction. Take the following quotes from Bril (2004) and Aikhenvald (2006):

1) Verbs and Verb phrases (or predicates or nuclei) constitute one single predication referring to aspects of a single event;

7) Lexical autonomy is a prerequisite for serialization, excluding non-autonomous coverbs and nonfinite forms, as well as co-lexicalized compounds. (Bril 2004: 2-3; numbering hers)

[SVCs] are monoclausal...and they have just one tense, aspect, and polarity value.

Each component of an SVC must be able to occur on its own right.⁶ (Aikhenvald 2006: 1)

If serial verbs constitute one single predication, as in Bril's characterization, the individual verbs shouldn't be able to function autonomously because they do not make predication separately. If SVCs, as Aikhenvald says, have just one tense, aspect, and polarity value, which is correct, then some verbs in the series cannot occur in their own right, for they lack specifications for tense and other categories or their specifications are dependent on another verb, as we saw in Asante and Paamese above.

The characterization of serial verbs in terms of their ability to individually function as independent predicates is based on two kinds of observation; 1) serial verbs may display certain formal finiteness features and 2) they, accordingly, show superficial resemblance to independent finite verbs. We have shown above that serial verbs are typically dependent on one of the verbs in the series in their formal properties relating to catego-

ries such as focus (in Austronesian focusing languages), person, tense, mood, and polarity. As such they are unable to occur in an independent context where there is no determining finite verb. This is exactly the same as the situation with converbs, which must occur in construction with a determining finite verb. Indeed, such dependency of serial verbs and converbs is prerequisite for the single joint predication that they make together with a finite verb, the central characteristic shared by serial verbs and converbal complex predicates.

A “single joint predication” by the relevant complex predicates is a functional correlate of the observation that serial verbs “together act like a single verb” (Durie 1997: 290; see also Aikhenvald 2006: 1). Thus, the formal study of complex predicates must explicate what it means to say that “serial verbs act together like a single verb”. This task, however, has proven very challenging because of the wide variety of formal properties that SVCs exhibit across languages and because of the lack of a comprehensive theory of argument structures for complex predicates. In the balance of this paper, we shall outline the relevant issues that must be addressed in dealing with the formal aspects of complex predicates in general and serial verbs (including converbal complex predicates) in particular.⁷

4. The wordhood of complex predicates

In dealing with complex predicates or in ascertaining what is meant by “serial verbs acting together like a single verb”, we must distinguish at least three senses of the technical term “word”. Complex predicates vary considerably in terms of phonological wordhood. Some form a unit of phonological word, as in the case of Alamblak cited in footnote 4, while others, like the Paamese root or nuclear serialization exemplified earlier in (16), where verbs may occur successively without an intervening NP, do not form a phonological word. In fact, Crowley (2002: 60) uses this as a criterion for distinguishing serial verbs from verb compounds; in the former each verb maintains phonological autonomy, while in the latter component verbs are subject to a variety of phonological adjustment such as vowel reduction so the whole unit would conform to the phonological pattern of a single word.

In converb languages simple juxtaposition of a converb with a finite verb does not tell us whether the combination is a complex predicate or a reduced form of clausal or VP coordination. For example, the Japanese

form in (22a) below can be analyzed in two ways depending on how the form is pronounced.

(22) Japanese

- | | | |
|----|--|---------------|
| a. | <i>kat-te</i> | <i>yat-ta</i> |
| | buy-CON | give-PST |
| b. | <i>kat-te</i> | <i>yat-ta</i> |
| | H L | L H |
| | '(I) bought (something) and gave (it to someone).' | |
| c. | <i>kat-te</i> | <i>yat-ta</i> |
| | L H | H H |
| | '(I) bought (someone something).' | |

(22b), in addition to a slight pause between the two verbs, has a pitch contour of two phonological words with each verb having a pitch contour H(igh)-L(ow) or L-H of a single (phonological) word. In (22c) the entire phrase has a pitch contour of a single word with a single series of high pitched moras, indicating that Japanese converbal complex predicates form a unit of phonological word. In Japanese the criterion of phonological wordhood, accordingly, does not distinguish converbal complex predicates from verb compounds, which also form a phonological word.

Japanese complex predicates, however, are different from verb compounds in terms of the notion of morphological wordhood. Morphological words exhibit the property of lexical integrity such that internal parts of a word are not susceptible to morphological and syntactic processes – e.g., they do not inflect, cannot be modified, and do not form referential relations with an external element. Morphological integrity obtains in typical compounds of both nominal and verbal type. But this is not the case with many serial verbs, where each verb may inflect, despite the fact that inflectional possibilities are constrained to a greater or lesser extent. Japanese converbal complex predicates are not morphological words either. They allow the second verb to interact with such morphological processes as honorific conversion and suppletion, which cannot affect the second member of a verb compound. Observe the contrast below, where compound verbs do not allow their parts to be morphologically altered, whereas converbal complex predicates show no morphological integrity:⁸

(23) Japanese verb compounds

- a. *hon=o* *moti-kae-ru* →
 book=ACC carry-return-PRS
 **hon=o* *moti-o-kaeri-ni* *naru*
 book=ACC carry-HON-return-ADV become
 ‘bring back a book’
- b. *kako=o* *kaeri-mi-ru* →
 past=ACC return-look-PRS
 **kako=o* *kaeri-goran-ni* *naru*
 past=ACC return-look.HON-ADV become
 ‘look back the past’

(24) Japanese converbal complex predicates

- a. *hon=o* *mot-te* *kae-ru* →
 book=ACC carry-CON come-PRS
hon=o *mot-te* *o-kaeri-ni* *naru*
 book=ACC carry-CON HON-return-ADV become
 ‘bring back a book’
- b. *kako=o* *hurikaet-te* *mi-ru* →
 past=ACC turn.back-CON look-PRS
kako=o *hurikaet-te* *goran-ni* *naru*
 past=ACC turn.back-CON look.HON-ADV become
 ‘try reflecting upon the past’

Japanese converbal complex predicates are, thus, phonological but not morphological words, whereas verb compounds are words in both phonological and morphological senses.

The most challenging task in dealing with serial verbs is explicating their nature as syntactic words. The general consensus that serial verbs act together as a single verb – despite their variability in the dimensions of phonological and possibly morphological wordhood – alludes to their syntactic wordhood. In the following I shall focus on two related issues concerning the syntactic wordhood of serial verbs. The first issue has to do with the questions of whether SVCs are monoclausal and whether they express a single event – kin notions with the idea that serial verbs act together as a single verb. The general consensus in the field here is that SVCs are monoclausal and that they express a single event, as obvious from some of the characterizations of SVCs quoted earlier.⁹ The second,

more difficult problem has to do with the nature of argument structures associated with serial verbs.

We have already shown that Japanese converbal complex predicate constructions are monoclausal (see (9)). While the syntactic monoclausality and the conceptualization of the multifaceted event as a single event are generally thought to go hand in hand in SVCs (see Aikhanvald's characterization of SVCs in the introduction), there are actually situations where these two do not coincide. The case in point involves causative expressions. In serializing languages causative situations may be expressed in the form similar to serial verbs. Compare the following Asante forms:

(25) Asante

- a. *m-mɛna=no* *piã* *m-mofra=no* *tɔ* *fɛm*
 PL-men=DET push PL-child=DET fall ground
 'The men push the children down.'
- b. *m-mɛna=no* *ma* *m-mofra=no* *di* *nkɥain*
 PL-man=DET CAUS PL-child=DET eat soup
 'The men make the children eat soup.'

(25a) is a cause-effect serial verb construction, while (25b) is a periphrastic causative. Asante periphrastic causatives show the major hallmarks of monoclausality sharing with SVCs of the language such properties as tense-aspect-mood and polarity concord (Yoon 2007). Now, Morrison (2007) shows that while there is a strong tendency for the cause-effect SVC in (25a) to be understood as expressing a unitary event, the causatives such as (25b) clearly express distinct sub-events. In (26a) below it is likely to be understood that the women also push the children down, while (26b) allows two different readings – either the women also make the children eat the soup, or they eat the soup, where the caused event is isolated.

(26) Asante (Morrison 2007: 12)

- a. *m-mɛna=no* *piã* *m-mofra=no* *tɔ* *fɛm*
 PL-men=DET push PL-child=DET fall ground
ná *m-maa=no* *nso* *yɛ* *saa* *ara*
 and PL-woman=DET also do the same
 'The men push the children down and the women also do the same thing.'
- b. *m-mɛna=no* *ma* *m-mofra=no* *di* *nkɥain*
 PL-man=DET CAUS PL-child=DET eat soup

ná m-maa=no nso yε saa ara
 and PL-woman=DET also do the same
 'The men make the children eat soup and the women also
 do the same thing.'

Yoon (2007) also shows that the scope of adverbial modification is different between SVCs and causatives such that in the former the entire event comes under the scope of an adverb – e.g., both pushing the children and their falling down take place at the same time, say 3 pm –, but in the latter the caused event can be isolated and be put under the adverbial scope independently from the causing event – e.g., only the children's eating soup takes place at 3 pm, with the understanding that the causation act takes place prior to this time.

Whether or not SVC-looking causatives are SVCs is controversial (see Durie 1997: 333), but if the expression of a unitary single event is a defining criterion of SVCs (see footnote 9), causatives expressing indirect causation of the type seen above are certainly not SVCs despite their superficial formal resemblance to true SVCs and despite their sharing some crucial syntactic properties characterizing monoclausality.¹⁰

5. The argument structure of complex predicates

As noted above, the issues surrounding the nature of argument structures of serial verbs are most challenging in the treatment of serial verbs. In the remainder of this paper, we can only hope to simply identify one outstanding problem in this area that awaits a systematic treatment. This problem has to do with the central feature of SVCs, namely the property of argument sharing and its syntactic consequences. In (25a) above, for example, the argument *m-mofra=no* 'the children' is the patient with regard to both *piã* 'push' and *tɔ* 'fall'. Argument sharing results from the integration of separate sub-events into a unitary macro event at a conceptual level. Durie (1997) offers some preliminary attempt to formally represent this conceptual unification after critically examining Baker's (1989) syntax-based approach to the problem. Rather than offering my own critical reviews of these approaches, I shall content myself by presenting some data that seem to demand a systematic solution in whatever approach one takes in dealing with the problems of argument structures of serial verbs.

First, a couple of semantically-based phenomena indicative of unified argument structures of SVCs are observed in Japanese. One has to do with the difference in the implied meaning between a converbal complex predicate form and its clausal subordination counterpart, as observed in pairs such as the following:

(27) Japanese

- a. *Hanako=wa kodomo=o toire=ni ture-te it-ta.*
 Hanako=TOP child=ACC toilet=DAT take-CON go-PST
 ‘Hanako took the child to the toilet.’
- b. *Hanako=wa, kodomo=o ture-te, toire=ni it-ta.*
 Hanako=TOP child=ACC take-CON toilet=DAT go-PST
 ‘Hanako went to the toilet taking the child along.’

The difference in meaning between these two sentences is that (27a) implies that the child had to go to the toilet to relieve himself, whereas (27b) implies that Hanako had to go to the toilet to relieve herself. If we assume that only the arguments of a verb can be associated with the conventional meaning of the verb (phrase), the above phenomenon suggests that *kodomo* ‘child’ in (27a) is an argument of the verbal complex of *ture-te iku* ‘take-CON go’ rather than simply being an argument of the converb *ture-te* ‘take-CON’, for it is in relation to the verb phrase *toire=ni iku* ‘go to the toilet’ that the conventional meaning of relieving oneself is engendered. Indeed, this conventional meaning is not associated with *kodomo* ‘child’ in (27b), where it is solely an argument of the converb *ture-te* ‘take-CON’. The relevant meaning contrast is also seen in the accompanying English translations, and it underscores Durie’s (1997: 291) point that “a serial verb complex can often be best translated into a non-serializing language using a single, mono-verbal clause”.

The other phenomenon has to do with benefactive constructions. As shown in Shibatani (1996), benefactive constructions in general convey the intention of transfer of a concrete object to a beneficiary, as in (28a). However, some languages permit constructions with a metonymic interpretation of the type shown in (28b) and (28c), where it is not actually a book or a door that gets transferred – rather it is the content of a book in the case of (28b) and opening space in (28c) that come under the possessive control of the beneficiary.

(28) Japanese

- a. *Taroo=wa Hanako=ni hon=o kat-te yat-ta.*
 Taro=TOP Hanako=DAT book=ACC buy-CON GIVE-PST
 'Taro bought Hanako a book.'
- b. *Taroo=wa Hanako=ni hon=o yon-de yat-ta.*
 Taro=TOP Hanako=DAT book=ACC read-CON GIVE-PST
 'Taro read Hanako a book.'
- c. *Taroo=wa Hanako=ni to=o ake-te yat-ta.*
 Taro=TOP Hanako=DAT door=ACC open-CON GIVE-PST
 'Taro opened the door for Hanako.'

Now, the object argument of the individual verbs in (28b) and (28c) are not associated with the metonymic interpretation in the non-serial context. Neither *hon=o yomu* 'read a book' nor *hon=o yaru* 'give a book', for example, yields a metonymic sense that the content of a book was the object of the action of reading or giving. The metonymic transfer sense of (28b), for example, obtains only when the goal (to be construed as a beneficiary) and the patient/theme argument are linked to the complex predicate <*yon-de yaru*> 'read-CON GIVE' in the form of the unified argument structure <Agent (*Taroo*), Goal (*Hanako*), Patient/Theme (*hon*)>.

A clear piece of syntactic evidence that serial verbs form a unified argument structure is seen in the focus marking pattern in the Formosan language Atayal.

(29) Wulai Atayal

- a. *m-wah=ku m-ita? yaya?su?*
 AF-come=1SG.NOM AF-see mother=2SG.GEN
 'I come to see your mother.'
- b. *wah-un=mu m-ita? yaya?su?*
 come-PTF=1SG.GEN AF-see mother=2SG.GEN
 'I will come to see your mother.'
- c. **m-wah=ku? yaya?su?*
 AF-come=1SG.NOM mother=2SG.GEN
 'I will come to your mother.'
- d. **wah-un=mu yaya?su?*
 come-PTF=1SG.GEN mother=2SG.GEN
 'I will come to your mother.'

As discussed earlier, in Formosan SVCs the focus marking of the second verb is limited such that either it is default AF (actor focus) or it harmonizes with the first verb. In Wulai Atayal, the focus marking on the second verb is default AF. The interesting point of the above data is that in (29b) the first verb *wah* ‘come’ focuses on the patient *yayaʔ=suʔ* ‘your mother’ of the second verb. The verb *wah* ‘come’ in isolation does not take a human as a goal, let alone the possibility of focusing it with PTF marking – see the ungrammatical forms in (29c,d). The pattern above, thus, indicates that *yayaʔ=suʔ* ‘your mother’ in (29a,b) is functioning as a patient of the verbal complex <*wah itaʔ*> ‘come see’ and that it triggers PTF marking in the first verb.

The benefactive constructions seen above, however, present some interesting problems for the view of the unified argument structure of SVCs. The verb *yaru* ‘GIVE’ in the Japanese benefactive construction functions exactly like benefactive applicatives in other languages that increase verb valency by one. The syntax of benefactive constructions of this type parallels the syntax of the basic “give” construction of the language, as shown in Shibatani (1996).¹¹ Compare the following patterns, where if the language has the direct object-indirect object pattern in the basic “give” construction, the benefactive construction follows the same pattern, as in Japanese, whereas if the language has the double object pattern in the basic “give” construction, the benefactive applicative construction also exhibits the double object pattern, as in Balinese.

(30) Japanese (DO-IO pattern)

- a. Basic “give” construction
Taroo=ga Hanako=ni hon=o yat-ta.
 Taro=NOM Hanako=DAT book=ACC give-PST
 ‘Taro gave Hanako a book.’
- b. Benefactive construction
Taroo=ga Hanako=ni hon=o kat-te yat-ta.
 Taro=NOM Hanako-DAT book=ACC buy-CON give-PST
 ‘Taro bought Hanako a book.’

(31) Balinese¹² (Double object pattern)

- a. Basic “give” construction
Tiang nge-maang anak=e cenik buku.
 I AF-give child=DEF male book
 ‘I gave the boy a book.’

- b. Benefactive applicative¹³
Tiang meli-ang anak=e cenik buku.
 I buy-APPL child=DEF male book
 'I bought the boy a book.'

The syntax of the Balinese suffixal benefactive applicative construction parallels the basic "give" construction in other respects. For example, either the first or the second object of these constructions can be patient-focused and be made a topic, as shown below:

(32) Patient-focus constructions for (31a)

- a. *Anak=e cenik baang tiang buku.*
 child=DEF male PTF.give I book
 'I gave the boy a book.'
- b. *Buku=ne baang tiang anak cenik.*
 book=DEF PTF.give I child male
 'I gave the book to a boy.'

(33) Patient-focus constructions for (31b)

- a. *Anak=e cenik beli-ang tiang buku.*
 child=DEF male PTF.buy-APPL I book
 'I bought the boy a book.'
- b. *Buku=ne beli-ang tiang anak=e cenik.*
 book=DEF PTF.buy-APPL I child=DEF male
 'I bought the book for the boy.'

Now, interestingly Balinese in addition has a benefactive SVC of the following form:

(34) Balinese benefactive SVC

- a. *Tiang meli buku=ne baang anak=e cenik.*
 I AF.buy book=DEF GIVE child=DEF male
 'I bought the book for the boy.'
- b. *Buku=ne beli tiang baang anak=e cenik.*
 book=DEF PTF.buy I GIVE child=DEF male
 'I bought the the book for the boy.'
- c. **Anak=e beli tiang buku=ne baang.*
 child=DEF PTF.buy I book=DEF GIVE
 'I bought the boy the book.'

Here the syntax differs markedly from that of the basic “give” construction or that of the benefactive applicative construction in such a way that the second object – the object of the second verb – cannot be focused and made the topic of the whole sentence.¹⁴ Compare this with the pattern exhibited by the Central Malayo-Polynesian language Sikka of Flores Island, which has the following two possibilities – (35a)-(36a) – with the benefactive SVC construction:

(35) Sikka benefactive SVC

- a. *Nimu boter payung beli ina nimun.*
 he buy umbrella GIVE mother his
 ‘He bought an umbrella for his mother.’
- b. **Ina nimun nimu boter payung beli.*
 mother his he buy umbrella GIVE
 ‘He bought his mother an umbrella.’

(36) Sikka benefactive SVC

- a. *Nimu boter beli ina nimun payung.*
 he buy GIVE mother his umbrella
 ‘He bought his mother an umbrella.’
- b. *Ina nimun nimu boter beli payung.*
 mother his he buy GIVE umbrella
 ‘He bought his mother an umbrella.’

The pattern in (36a) is not available in Balinese, a Western Malayo-Polynesian language, in which benefactive and other applicative SVCs appear less well-developed than in their Central Malayo-Polynesian sisters. Now, the Sikka PTF (patient-focus) construction simply moves a theme/patient nominal to sentence initial position. It turns out that while the goal/beneficiary of *beli* ‘GIVE’ of (35a) cannot be patient-focused, that in (36a) can, indicating that in the latter the *boter beli* ‘buy GIVE’ sequence form a unified argument structure in which the agent, theme/patient and goal/beneficiary nominals function as its arguments.

It thus appears that in the benefactive SVC of the form “buy X GIVE Y”, the argument structures of the individual verb are not fused at least in the syntax, in contrast to the SVC of the form “buy GIVE Y X” as seen in Japanese – see (30b) – and in one of the benefactive SVC patterns in Sikka shown in (36a), where the two verbs occur contiguously. Whether the contiguous verb pattern obtains or not seems to depend, at least to some extent,

on the OV/VO distinction, with the former favoring the contiguous verb pattern.¹⁵ Additional examples showing the contrasting pattern are given below for benefactive and instrumental SVCs.¹⁶

(37) Y X V₁ V₂ pattern / X Y V₁ V₂ pattern

- a. Alamblak (Durie 1997: 307 from Bruce 1988)
na yawyt yimam wikna-hay-më-an-m
 I dog people buy-give-REMOTE.PST-1SG-3PL
 'I bought a dog for the people.'
- b. Imonda (Durie 1997: 307 from Seiler 1986)
sa ka-m pɔ-ai-h-u
 coconut I-OBJ pick-give-REC-IMP
 'Pick the coconut and give it to me.'
- c. Barai (Durie 1997: 306 from Foley and Olsen 1985)
fu burede ije sime abe ufu
 he bread DEF knife take cut
 'He cut the bread with the knife.'

(38) V₁ X V₂ Y pattern

- a. Asante (Morrison 2007)
Ye-bɔ-tɔ bi a-ma mo
 1PL-FUT-buy some CONS-give 2PL
 'I will buy you some.'
- b. Mandarin Chinese (Shibatani et al. 1994: 464)
wǒ zuò fàn gěi hái zi
 I cook rice GIVE child
 'I cooked the child rice.'
- c. White Hmong (Durie 1997: 345 from Jarkey 1991)
mws muab riam txiav nqiaj qaib
 3SG take knife cut meat chicken
 'She cut some chicken with a knife.'

Assuming that the first pattern above has the flat ditransitive syntax of the Japanese benefactive SVC in (30b) and the second pattern the complex double VP syntax of the Sikka benefactive SVC pattern in (35a), the question remains as to how this distinction follows from the unified argument structure if such unification takes place in both types of construction. Durie (1997: 374), adopting Jackendoff's (1990) theory of lexical conceptual structures, offers the following fused conceptual structure for the instrumental SVC of the type exemplified by the White Hmong example in (38c).

$$(39) \left[\begin{array}{l} \text{AFF}^- ([\text{SHE}]_A, [\text{CHICKEN}]_A) \\ \text{CS}^+ ([\text{SHE}], [\text{INCH} ([\text{BE.CUT} ([\text{CHICKEN}]_A)])]) \\ \text{BY} \left[\begin{array}{l} \text{CS}^+ ([\text{SHE}], [\text{AFF}^- ([\text{KNIFE}], [\text{CHICKEN}]_A)]) \\ \text{AFF}^- (\text{SHE})_A, [\text{KNIFE}]_A \end{array} \right] \end{array} \right]$$

Durie (1997: 348) tells us that “in accounting for serial structures like [(38c)] it is possible to calculate θ -roles and a θ -hierarchy at two levels: at one level to determine the separate objects of individual verbs, and again at the level of the fused argument structure”. That is, KNIFE in the above conceptual structure is the patient of *muab* ‘take’ at the level of individual verbs, but it is construed as the instrumental of the overall fused argument structure. While this is an attractive analysis capturing an intuition behind a structure like (38c), the question is how the arguments of the fused argument structure are realized and how their syntactic behavior can be accounted for. That is, it remains to be explicated as to how the two benefactive SVC patterns in Sikka in (35)-(36), for example, are accounted for in terms of the representation like (39). The conceptual unification of the arguments in (35a) does not seem to automatically lead to a fused argument structure in syntax.

6. Conclusion

Shibatani and Huang (forthcoming) and this paper together constitute a challenge to some very basic current understandings of the nature of SVCs. The former has shown that the alleged property of SVCs listed in (1a) in the introduction, namely that SVCs do not have an intervening linker, dependency marker, or conjunction, excludes SVCs with a linker in some Formosan languages. This paper has strived to demonstrate that serial verbs do not have the lexical autonomy of independent verbs, and as such cannot function out of the serial context, contrary to the point made in (1b). The remaining properties in (1), namely that serial verbs form a single predicate constituting a simplex clause and that they typically share arguments, do not distinguish serial verbs from converbal complex predicates. Indeed, serial verbs are much like converbal complex predicates in that there is dependency between the component verbs and that each verb does not make a separate predication individually. While a number of outstanding problems remain, especially in the area of argument structures and

their realization, or what it precisely means syntactically to say that “serial verbs act like a single verb”, SVCs are not as mysterious as the current definitions appear to make them. Neither do they form a “robust construction type”, *pace* Dixon (2006: 338). The general point of this paper is that, while serialized verbs all show some kind of grammatical dependency among them, SVCs are not a unified phenomenon across languages or even within a single language.

Notes

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1. In his later work (1997: 382), Foley modifies his definition of SVCs slightly and recognizes the possibility of an intervening conjunction, such as the sequential marker *mpi* in Yimas, between serialized verbs. His new definition reads as follows: “Serial verb constructions may be defined as strings of juxtaposed verbs stems, *typically with no overt conjunctions*, which share at least one core argument...” (emphasis added)
2. In this paper I use the expressions “the first verb” and “the second verb” in reference to the verbs in the series. The former refers to the verb that has the full finiteness features. Such a verb may actually be initial, as in the Atayal examples here, or may be the last one in the verb series, depending on the language. The “second verb”, which may not actually occur second in place, refers to the verb that we claim is restricted in formal properties.
3. The Asante examples here and below are based on the class notes from the course Linguistics 407/408 “Linguistic Field Methods” at Rice University taught during the 2006-2007 academic year. I am grateful to Alex Aphiah, who helped the class as an Asante consultant. See Morrison (2007) for a fuller account of the Asante SVCs.
4. In SVCs of the following kind, where serialized verbs form a phonological word, it is not even accurate to talk about one verb being fully finite and the other(s) not: *Tat-noh-më-an-r* (hit-die-REMOTE.PST-1SG-3SM) ‘I killed him’ (Alamblak, Papuan; Durie 1997: 307 from Bruce 1988).

There is an interesting issue that needs to be further pursued here. In this paper we simply assume that the first, or one of the verbs, in the series takes on all the finiteness features and the other verb(s) showing only partial, if any, formal finiteness. It is possible that at the abstract level there is one finiteness functional head that governs all the verbs in a series. How the finiteness features are distributed over the serialized verbs depends on individual languages. In such a treatment, verbs in a series would play the predication function jointly (cf. a discussion below in the text), but none of them would be uniquely

associated with the finiteness and hence would be able to occur independently outside the serialization context.

5. See the recent paper by Anderson (2007) for a related discussion on the notion of predication and the finiteness of a predicate form.
6. Interestingly Durie (1996), one of the most thorough studies of verb serialization, does not ascribe this putative property to serial verbs.
7. See Durie (1997) for detailed and revealing discussions on the relevant issues from both formal and functional angles.
8. Japanese converbal complexes also allow insertion of particles such as *wa* (contrastive topic), *mo* 'even', and *sae* 'even' after the *-te* ending. Constructions with these particles typically form a concessive clause followed by a negative clause. Similarly, Korean benefactive converbal forms such as *yel-e-nun cwu-ess-ta-man* (open-CON-TOP GIVE-PST-IND-though 'though (I) opened the door (for someone)') and *mwun-ul yele-to cwu-ko, tat-a-to cwu-ess-ta* (door-ACC open-CON-also GIVE, close-CON-also GIVE-PST-IND '(I) also opened and also closed the door (for someone)') are possible with the intervening topic particle *nun* and the adverbial particle *to*.
9. Cf. Durie (1996: 291): "a single serial verb complex describes what is conceptualized as a single event: this is repeatedly reported to be a clear intuition of native speakers, and can be demonstrated through semantic analysis. It follows from this that a serial verb complex can often be best translated into a non-serializing language using a single, mono-verbal clause."
10. Yoon (2007: 18) points out a couple of syntactic differences between SVCs and periphrastic causatives in Asante. One of them has to do with the distribution of pronominal clitics. As mentioned earlier, SVCs do not permit a pronominal clitic on the second verb, but in causatives the causee NP may appear in a nominative clitic form; cf.

- a. *bɛma=no ma-a no di-i nkwain=no*
man=DET CAUS-PST 3SG.ACC eat-PST soup=DET
'The man made him eat the soup.'
- b. *bɛma=no ma-a ɔ=di-i nkwain=no*
man=DET CAUS-PST 3SG.NOM=eat-PST soup=DET
'The man made him eat the soup.'

Whatever the relationship between (a) and (b) above may be, the points that Morrison and Yoon make with regard to Asante causatives obtain with regard to the (a) type of construction, which resembles true SVCs in form. The monoclausality and the single eventhood do not generally go hand in hand in productive morphological causatives, e.g., Japanese *aruka-se* 'walk-CAUS', if they express indirect causation with the causee acting as an agent. They express two distinct events – the causing and the caused event – even though they may show syntactic monoclausality (see Shibatani and Pardeshi 2002).

11. For example, unlike some other ditransitive verbs, which permit passivization centering on either object, the main verb *yaru* 'give' does not permit neither object to become a subject of a passive clause. Neither do *V-te yaru* SVC forms even if the first verb by itself allows passive formation.
12. The Balinese data below have been provided by Ketut Artawa of Udayana University. The Sikka data further below were collected during my fieldwork in Flores Island in eastern Indonesia in the summer of 2008.
13. Foley (1997: 392) argues that the argument structures of SVCs and those involving morphological applicative affixes differ fundamentally. The parallelism between the Japanese benefactive SVCs and the Balinese benefactive applicative constructions casts doubt on this assumption, while it is true that the two types of benefactive in Balinese show sufficiently different syntax to warrant different treatments (but see the Sikka data below).
14. See Li (1991) and Manfredi and Laniran (1988) for this kind of "object asymmetry" between the object of the first verb and that of the second verb in SVCs in other languages.
15. The correlation between the double-object pattern and word order mentioned here is only suggestive. I do not have sufficient data to confirm the correlation.
16. Stewart (2001: 234ff) would not consider these instrumental constructions as SVCs. His discussion, however, centers mostly on those instrumental constructions in which the first verb has been grammaticalized to a considerable extent.

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Conjunctive coordination in Amharic: some typological approaches

Dieter Metzing and Saba Amsalu Teserra

1. Introduction¹

This chapter is related to different research contexts: research in language typology, formal language theory and grammar as well as in computational language processing. (1) Research in language typology is especially focused on lesser studied languages (cf. the DOBES program, started in 2000); it is oriented towards broader empirical bases (different types of corpora) as well as towards (computational) language documentation (cf. Lehmann 2001; Gippert, Himmelmann and Mosel 2006; Oflazer and Nirenburg 2003; Metzing and Pönningshaus 2007). (2) Current theories of natural language syntax and semantics like Lexical Functional Grammar, Head-Based Phrase Structure Grammar or Multi-Modal Combinatory Categorical Grammar (MMCCG) make universal claims about natural language to be tested empirically by analysis of typologically distinct languages. (3) Societies whose official language belongs to so-called lesser studied languages have a vital interest in using information technology for their own purpose, and there is evidence also that language technology can profit from formal representations developed for typologically distinct languages (cf. Frank 2003).

The language chosen for our contribution is Amharic, a Semitic language, in Ethiopia the working language of the government, and the second most spoken Semitic language. The linguistic phenomena chosen are conjunctive coordinating constructions. There are significant correlations between coordination and basic word orders of languages; coordination has become an object of study in language typology and a very prominent one in formal theories of syntax and semantics. Coordination (and ellipsis) are key features of natural language, and a system of natural language processing must be able to process coordinated and elliptical sentences. The formal theory chosen is Multi-Modal Combinatory Categorical Grammar (MMCCG), for which efficient implementations and processing components have been developed (as to coordination cf. White 2006). Language technology approaches to Amharic have started (cf. Amsalu 2006a, 2006b,

2007; Amsalu and Gibbon 2005; Alemayehu and Willett 2002; Bayu 2002; Alemu 2002; Bayou 2000), however, there are only a few syntactic parser prototypes, and a semantic parser is still a research goal.

2. Conjunctive coordination in Amharic: types of coordination

Coordination in European languages has been intensively studied, but the range of variation found in the languages worldwide has just started to be discovered (cf. Haspelmath 2004, based on Haspelmath in press; cf. also Lehmann 1988). Conjunctive coordination is part of Amharic grammars (cf. Leslau 1995; Leslau 2000), but it has not yet been analyzed according to detailed cross-linguistic parameters of coordination. Since our short description of conjunctive coordination of Amharic will be based on categories of (Haspelmath in press), we will introduce these categories at first.

According to Haspelmath, “the term coordination refers to syntactic constructions, in which two or more units of the same type are combined into a larger unit and still have the same semantic relations with other surrounding elements”. Haspelmath distinguishes the following dimensions: (1) types and positions of coordinators, (2) contrastive coordination, (3) types of coordinands, (4) semantic sub-types of coordination, (5) special strategies of conjunction, (6) ellipsis in coordination, and (7) delimitation of coordination. For our purpose aspects in (1), (3) and (6) will be particularly relevant.

In general, the coordinating elements, coordinators, may be particles or affixes. The units combined, conjuncts or more generally coordinands, may be words, phrases, subordinate clauses or full sentences. The coordinators are placed either prepositive preceding their coordinand or postpositive following the coordinand, and they are combined either with one coordinand (monosyndetic coordination) or also with the second coordinand (bisyndetic coordination); however, a coordination without overt coordinators is also possible (asyndetic coordination).

- *Adam and Eva*: particle as coordinator, prepositive, monosyndetic;
- *both Adam and Eva*: particle, prepositive, bisyndetic;
- *sugar, pepper, salt are on the list*: asyndetic coordination.

In the case of multiple coordinands there is either the full pattern or there are language-specific patterns of omission.

As to ellipsis in coordination, the ellipsis is placed either at the beginning of coordinands (catalipsis; backward gapping) or at the end (analipsis; forward gapping). There are languages which allow one type or the other or even both types (e.g. Amharic). Since ellipsis in coordination is significant with respect to typological differences and with respect to basic word orders, more distinctions will be introduced later. Amharic data² of conjunctive coordination will be presented below³.

Types of coordination

I. in sentences: monosyndetic; particle: *dägmo*

- (1) *ela t'ätt'a-c, sara dägmo bälla-c.*
 ela drank.PF-3.SG.F, sara COORD ate.PF-3.SG.F
 'Ela drank whereas Sara ate.'

Dägmo is placed after the first phrase of the second conjunct. Sometimes it may have a slight adversative connotation. When both sentences are semantically related (e.g. causally), the coordinator *-im* is also used.

II. in nominal phrases: (a) asyndetic

- (2) *k'äw bärbäre gäzza-hu*
 salt pepper bought.PF-1.SG
 'I bought salt and pepper.'

The NPs are understood as one conceptual unit (*natural conjunction*).

(b) monosyndetic; affix *-nna*, postpositive on first coordinand

- (3) *wämber-u-nna t'äräp'ezä-w.*
 chair-DEF.M.SG COORD table-DEF-M-SG
 'the chair and the table'

(c) bisyndetic; affix *-m*, postpositive

- (4) *k'äw-m bärbäre-m gäzza-hu.*
 salt-COORD pepper-COORD bought.PF-1.SG
 'I bought salt as well as pepper.'

In this case the NPs are not seen as a conceptual unit (accidental conjunction).

The conjuncts should be of the same type. Verb phrases, adjective as well as adverbial phrases have similar structures of coordination.

With respect to the typological patterns of coordination described in (Haspelmath in press) there are the following patterns of conjunctive coordination (co) in Amharic:

- monosyndetic: 'A B-co' postpositive on second coordinand (*dägmo*, *-im* (causal coordination)) for sentences, ellipses;
'A-co B' postpositive on first coordinand (*-mma*) for phrases;
- bisyndetic: 'A-co B-co' postpositive (*-m ... -m*);
- multiple coordinands: to the 'A-co B' pattern corresponds:
'A-co B-co ...N', no coordinator on last coordinand;
to the 'A B-co' pattern corresponds:
'A B-co C-co ...', no coordinator on the first coordinand;
- coordinator omission pattern: to the 'A-co B' pattern corresponds:
'A B ... M-co N' or
'A-co B ... N' all but the first one are omitted.

It has been observed (cf. Stassen 2003: 775) that the order of conjunctive coordinators correlates with basic word order patterns of a language (verb argument order): languages with postpositive coordinators tend to have verb-final word order. Amharic follows this general tendency.

3. Ellipsis in coordination

At least three types of ellipsis in coordination have been distinguished: Gapping, i.e. verb removal in one coordinand, Right Node Raising, i.e. removal of rightmost part of one coordinand and Conjunction Reduction, i.e. removal of subject of one coordinand. According to Ross (1970) there are cross-linguistic generalizations concerning the relationship between basic word order parameters and constraints on deletion or gapping under coordination, generalizations which have been reformulated later on in terms of surface constituent order in the Combinatory Categorical Grammar framework. There are clear tendencies between basic constituent order and direction of gapping (leftward or rightward):

- (a) SOV: SO & SOV; *SOV & SO
- (b) VSO: VSO & SO; *SO & VSO
- (c) SVO: SVO & SO; *SO & SVO

If a language has a relatively free word order, there are more complex gapping patterns, for example in Turkish or in Amharic:

- (5) (SO & SOV)

<i>sara</i>	<i>shurab</i>	<i>zofi</i>	<i>dägmo</i>	<i>suri</i>	<i>gäzz-u.</i>
sara	pullover	zofi	COORD	trousers	bought.PF-3.PL

‘Sara bought pullover and Zofi trousers.’
- (6) (SOV & SO)

<i>sara</i>	<i>shurab</i>	<i>gäzz-ac</i>	<i>zofi</i>	<i>dägmo</i>	<i>suri.</i>
sara	pullover	bought.PF-3.SG.F	zofi	COORD	trousers
- (7) (OS & OSV)

<i>shurab-u-n</i>	<i>sara</i>	<i>suri-w-n</i>
pullover-DEF-ACC	sara	trousers-DEF-ACC
<i>dägmo</i>	<i>zofi</i>	<i>gäz-ac-cci-w.</i>
COORD	zofi	bought.PF-3.SG.F.OBJ
- (8) (OSV & OS)
shurab-u-n sara gäzz-ac suri-w-n dägmo zofi.

Note that the verb tends to be plural marked when located at the end (coordination agreement) (cf. (5) vs. (7)).

There is evidence that the following gapping patterns exist in Amharic: SO & SOV, SOV & SO, OS & OSV, OSV & OS, and are excluded: *SO & OSV, *SOV & OS; however, some non-parallel constructions are apparently possible: OSV & SO (if object – first or second one or both – is definite, i.e. known in context) and equally: SOV & OV (if V expresses a sequence of actions) and SOV & SV. An asymmetry in gapping has been reported, backward gapping being more restricted (cf. Kracht and Sportiche 2003 for a discussion of this aspect). As to Amharic, backward ellipsis in non-parallel constructions seems to be excluded.

The gapping patterns of a language can only be explained in a theoretical framework. Different approaches have been developed, structural (e.g. Ross 1970) and functional approaches (e.g. Kuno 1976). In the MMCCG approach there is no ‘underlying word order’, patterns of gapping originate

from the lexicon rather than the grammar (cf. Baldridge 2002; Bozsahin 2000; Steedman 2000). There is an interaction between a small universal set of rules of combination and specifications in the lexicon controlling rule application, word order and in the end : aspects of linguistic diversity.

A typological approach to elliptical coordination has been developed in (Sanders 1977). Ross' analysis is criticized in detail, and the new typology is based on six reduction types, formed in the following way: each coordinand consists of an initial part, a middle and a final part. This leads to the following structure of coordination ABC & DEF and to six different reduction types in elliptical coordination: (A*)BC & DEF (A); A(B*)C & DEF (B); AB(C*) & DEF (C); ABC & (D*)EF (D); ABC & D(E*)F (E); ABC & DE(F*) (F). According to a typology based on these reduction types Amharic belongs to a type of language in which the positions C>D>E>F can be eliminated in elliptical coordination ('Russian-type'):

A B C	&	D E F
S O --		S O V
S O V	&	S O --
S O V	&	-- O V
S O V	&	S -- V

Sanders postulates an 'implicational hierarchy': "For any natural language L, L does not permit coordinate ellipsis in position x unless it also permits ellipsis in all positions easier than x." (Sanders 1977: 266) Each of the possible ranges of coordinate ellipsis constitutes a continuous subsequence, e.g. there should not exist a reduction type in which positions C E F may be eliminated but not D.

Note that this approach does *not* distinguish grammatical functions but only surface elements that may be eliminated at certain positions. Consequently elliptical coordination is not explained with respect to grammatical restrictions but with respect to functional requirements of communication (efficiency, economy vs. clarity, decodability). We will come back to this view on elliptical coordination in the final section.

In the next section we will analyze Amharic conjunctive coordination in the MMCCG framework. Coordination and especially ellipsis in coordination has been an important topic in the CCG literature, for coordination reveals constraints on basic word orders of a language and cross-linguistic constraints (cf. Ross 1970; Steedman 2000; Bozsahin 2000). E.g. (9a) is an acceptable coordination of a typical SVO language, but not (9b):

- (9) a. *Peter eats pears and Fred bananas.*
 b. **Fred bananas and Peter eats pears.*

Notice that the second coordinand of (9a) is not a constituent in the usual sense of the term.

Arguments about the adequacy of (MM)CCG have been built also on facts about coordination and on their analyses. As to Amharic, we claim that research on Amharic coordination can profit from the (MM)CCG research context. Efficient implementations and language technology tools available (cf. OpenCCG; Baldridge et al. 2007) may contribute to computational linguistic and information technological approaches to Amharic. Besides English, aspects of several typologically distinct languages have been analyzed within the (MM)CCG framework: Basque, Dutch, Dyirbal, Icelandic, Inuit, Japanese, Tagalog, Toba Batak, Tzotzil and most intensively Turkish (cf. Baldridge 2002; Bozsahin 2002; Bozsahin and McConville 2005), also an SOV language with forward and backward gapping, and objects may precede subjects.

4. Conjunctive coordination in Amharic: the Multi-Modal Combinatory Categorical Grammar approach

Multi-Modal Combinatory Categorical Grammar (MMCCG, Baldridge 2002) is an extension of Combinatory Categorical Grammar (CCG, Steedman 2000), which has been an extension of Categorical Grammar. The universal claim of MMCCG has been expressed in the following way:

“Although Multi-Modal CCG has the same set of rules as standard CCG, its improved resource-sensitivity enables it to have a universal rule component. It places all cross-linguistic variation in the lexicon, leading to a typological perspective on grammar that not only describes, but can also make predictions about, syntactic structure: Multi-Modal CCG provides a new view on how a typological perspective can be incorporated in a lexicalized, non-transformational setting.” (Baldridge and Kruijff 2003)

Since lexical information plays a central role, the organization of this information is crucial. Given the impact of unification-based grammars, lexical and morphological information is represented as feature structures in an efficient way (cf. OpenCCG site). The role of syntactic information is primarily the incremental construction of semantic representations.

A categorial grammar associates a functional type or category with all grammatical entities (cf. Steedman and Baldridge 2003 for a state-of-the-art introduction). A universal set of semantically and syntactically motivated combination rules (cf. endnote 5.) applies to these categories. For example transitive verbs of English are in the lexicon associated with the following category:

sees: = $(S \backslash NP) / NP$

This may be phrased as: this category ‘sees’ an NP to the right; if found, the result is indicated to the left of the last slash and is equivalent to the category of an intransitive verb; this category $S \backslash NP$ ‘sees’ an NP to its left; if found, the result, indicated to the left of the slash, is S. The result of applying the rules of forward and backward application is shown in the following derivation:

<i>Peter</i>	<i>sees</i>	<i>Susan</i>
NP	$(S \backslash NP) / NP$	NP
	----->	
	$S \backslash NP$	
-----<		
S		

Note that given our Amharic data, some affixes (e.g. *-nna*) should also be associated with categories controlling the process of syntactic and semantic composition (cf. Bozsahin 2002).

In the MMCCG approach lexical control has been extended: slashes are typed and associated with modes⁴ corresponding to types of combination rules. So lexical specifications influence the applicability of these rules and thereby licence certain syntactic structures or not. The roots of syntactic diversity and of typological variation lie in the lexicon of a language.

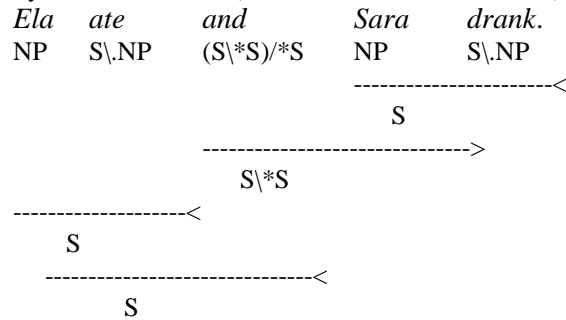
In the following we will focus upon the tight connections between rules of a universal rule component and lexical information, based on Amharic data.

(10) *Ela ate* and *Sara drank*. (cf. example (1) above)

Rules: ($>$) $X /* Y \rightarrow X$ (forward application)
 ($<$) $Y X \backslash /* Y \rightarrow X$ (backward application)

Lexical information (partial): *Ela*: NP; *Sara*: NP; *ate*: $(S \backslash . NP)$; *drank*: $(S \backslash . NP)$; and: $(S \backslash /* S) /* S$ (more generally: $(X \backslash /* X) /* X$)⁴

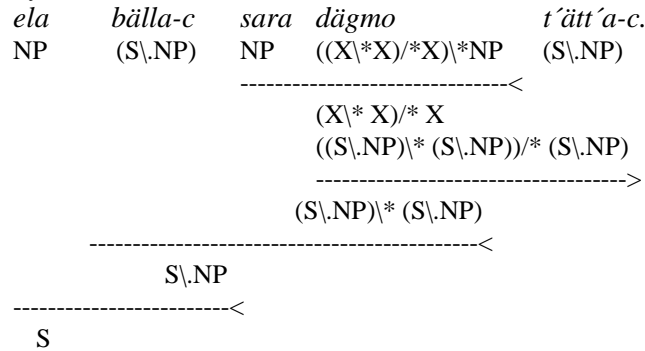
Syntactic derivation (without semantic information):



(11) *ela bälla-c sara dägmo t'ätt'a-c.*

Lexical information: dägmo: ((X/*X)/*X)* NP

Syntactic derivation:



Elliptical coordination: backward gapping

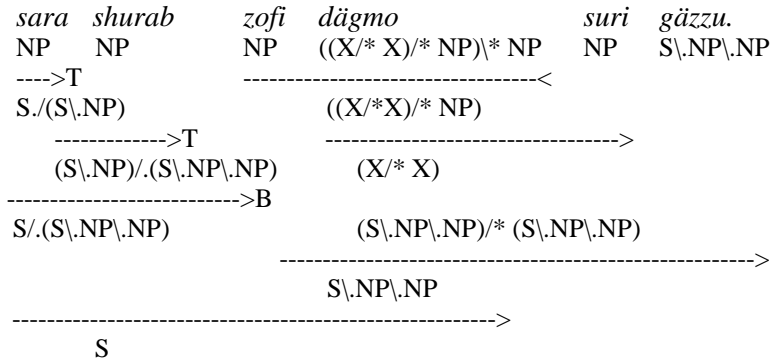
Rules:

(>B) $X/\diamond Y \quad Y/\diamond Z \quad \rightarrow \quad X/\diamond Z$ (forward composition)⁵
 (>T) $X \quad \rightarrow \quad (T/i(T/iX))$ (forward type raising)⁶

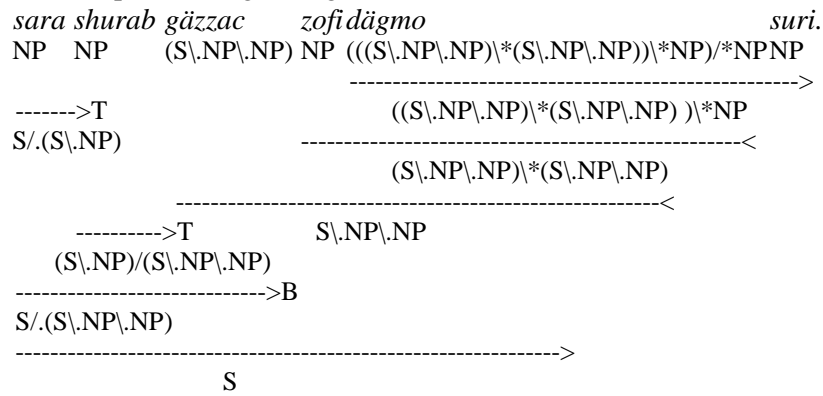
$T \in \{ S, S\NP, S\NP\NP, S\NP\NP\NP \}$

Lexical information: dägmo: ((X/*X)/*NP)* NP

(12) cf. example (5) for glossing

Elliptical coordination: forward gapping⁷Lexical information: *dägmo*: (((S\NP\NP)*(S\NP\NP))*NP)/*NP

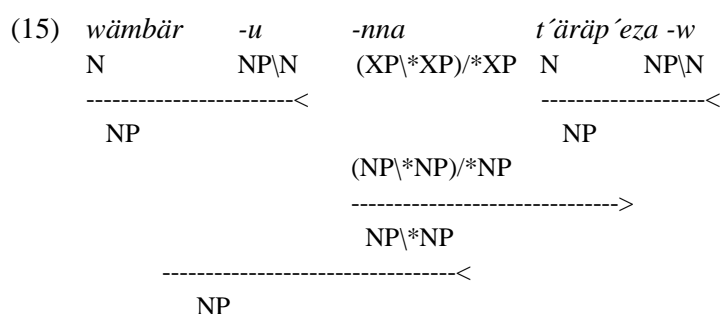
(13) cf. example (6) for glossing

(14) [*sara shurab*]s\NP\NP [*gäzzac*]s\NP\NP [*zofi*]NP *dägmo* [*suri*]NP

Note that the analysis proposed for (13) requires a new type of semantics with greater flexibility and expressivity than the λ -calculus-based semantics, a semantics, distinguishing lexical predications, semantic features and dependency relations, called Hybrid Logic Dependency Semantics (cf. Kruijff 2001) and applied in (White 2006) for efficient natural language generation, coordinate structures included. This approach, combining very specific lexical definitions (syntactic types) with rather language-independent semantic representations, has several advantages in our con-

text: It shows how detailed lexical specifications may determine the basic word order of a language (cf. (14)). Typological differences between languages may also be compared on that level, e.g. with respect to the syntactic role of coordinators in different languages and their semantic representation. Furthermore, this approach permits the coordination of ‘unlike categories’ and does not require the introduction of virtual conjuncts (‘decomposition rules’) which has been criticized in the literature (as an early example cf. Lobin 1993: 74–76).

Coordinators in Amharic may be particles or affixes like *-nna*, and some affixes have lexical specifications controlling the process of composition as in the following example (cf. (3) above):



In the case of asyndetic or bisyndetic coordination syntactic patterns have to be checked before and then the analysis will proceed as in the case of *-nna*.

- (16) Conjunctive coordination: lexical information⁸
- a. *dägmo*: ((X* X)/* X)* NP (sentence coordination)
 - b. *nna*: (XP* XP)/* XP (phrasal coordination)
 - c. *dägmo*: ((X/* X)/* NP)*NP
(elliptical coordination: backward gapping)
 - d. *dägmo*: (((S\NP\NP)*(S\NP\NP))*NP)/*NP
(elliptical coordination: forward gapping)

The lexical categories of the coordinators, the lexical rules (e.g. for type raising) and the set of multi-modal universal rules of combination control the wellformedness of word orders also in: coordinated phrases, sentences as well as in ellipsis in coordination; this is the case in Amharic as well as in other languages. The source of typological differences and of linguistic

diversity on the level of basic word order structures is supposed to be located in the lexicon. This observation is highly relevant for the development of language-specific processing components.⁹ However, besides the lexicalized word orders there are also influences of discourse context, as has already been pointed out in (Steedman 2000: 197). This aspect will be considered in the last section.

5. Topics for future research

Conjunctive coordination has been described from the point of view of cross-linguistic parameters of coordination, followed by a typology for ellipsis in coordination, and finally as part of a typological perspective on formal grammar (Multi-Modal Combinatory Grammar) and its approach to coordinated structures. Explicit comparisons, e.g. with related languages like Turkish or Yaqui¹⁰ (cf. Fabián 2006), would be a topic for future research. To conclude we would like to point out some topics of research if coordination and ellipsis in coordination in Amharic is related to current discourse-oriented approaches.

Ellipsis in coordination has been analyzed from the point of view of cross-linguistic variation as well as from the perspective of information structure, and the overt realization of information structure is also a topic of typological research. Information structure determines the amount of material to be expressed, or deleted, according to the different approaches, e.g. to ellipsis. The focus and background structure of the first conjunct determine the elements to be expressed (or deleted). The position of the focus is constrained by the type of language.

In Kuno (1976) discourse functions were associated with constraints on gapping. In Keller (2001) Kuno's observations and conjectures have been empirically tested and related to constraint approaches of (semantic) optimality theory. It remains to be seen to which extent the constraints found according to acceptability judgements of speakers of English are language-specific or cross-linguistically valid, applicable also to constraints on gapping in Amharic.

Amharic is considered to be a "strict discourse-configurational language where information structure and clause structure work in tandem"¹¹ (Aboh 2007: 223). The overt realization of focus by special grammatical means (prosody, morphology, syntax and their combinations) is subject to cross-linguistic variation. Focus and related constructions (e.g. wh-questions,

types of coordination, narratives) are a topic of current research. As to Amharic, focused vs. non-focused wh-phrases have been analyzed (Aboh 2007) as well as topics and topicalization in Amharic (Demeke and Meyer 2007). The relationships between types of coordination in Amharic and information structure are still to be explored.¹² As to MMCCG, “the dissociation between explanation of word order and information structure in MMCCG” has been criticized by Kruijff (Kruijff 2001: 278), a connection that has been explicitly worked out (in a CCG framework) in his dissertation. According to his ‘hypotheses for informativity’ the informational focus of ‘non-rigid verb-final languages’ should be “directly before the V wherever the V is placed” (2001: 210), hypotheses to be verified with respect to Amharic data.

In section 3 non-parallel constructions of gapping and conjunction reduction in Amharic were mentioned, acceptable only with a certain restricted meaning. Similar observations may be found in the literature (e.g. Hendriks and Spreneder 2005: 30–33), and they are taken as evidence that criteria of economy are insufficient as explanation; a ‘full form’ has not been ‘transformed’ into a reduced form to be produced with ‘less effort’. Ellipsis in coordination signals a special meaning, generated directly given a certain restricted meaning. Gaps in ellipsis in coordination are related to information contextually given, they are a means to establish coherence relations and have been analyzed with categories of information structure and discourse structure (Kuno 1976; Steedman 2000: 189; Féry and Hartmann 2005). In fact, there is broad evidence that information from different levels of description has to be combined in a more comprehensive analysis of coordinated constructions.¹³ In an approach of a (semantic) optimality theory coordination is seen as a ‘cross-modular process of optimization’ (Hoeks and Hendriks 2005). A multi-level documentation and description of Amharic corpus data seem to be desirable for such an approach.

Notes

1. We would like to thank an anonymous reviewer of a first version of this article for his helpful comments. We are especially grateful to Ronny Meyer, expert in the linguistics of Amharic, for his comments on our Amharic data; however, we are responsible for the remaining imperfections.
2. Corpora of modern Amharic texts are highly desirable. In its absence we relied on judgments of native speakers and on a small text corpus documenting a

greater variety and the use of coordinators in context. The data will be made accessible under ODIN (Online Database of Interlinear Text).

3. Amharic has its own syllabic writing system; for the sake of understandability we have transliterated the examples into the Latin system, including the phonemes that do not exist in English. The vowel /ä/ is more or less close to the [e] in *current*, the consonant /c/ is equivalent to /tʃ/ (German <tsch> as in *Deutsch*). Ejectives are written in letters with apostrophe: /p'/ (bilabial), /ts'/ (dental/alveolar), /t'/ (alveolar), /tʃ'/ (post-alveolar), /k'/ (velar).
4. There are four modalities: * allows only the most basic applicative rules; \diamond permits order-preserving associativity; x allows permutation and . allows all rules to apply. The modalities are organized into a type hierarchy. The most limited modality * is the top of the hierarchy, the most permissive mode . inherits the properties of all the others. Categories defined with modality * are not able to serve as input to rules with modality x. The rules are in fact general rule schemata.
5.
 - a. Forward Application: $X/*Y : f \quad Y:a \rightarrow X : fa$
 - b. Backward Application: $Y : a \quad X/*Y : f \rightarrow X : fa$
 - c. Forward Composition: $X/\diamond Y : f \quad Y/\diamond Z : g \rightarrow X/\diamond Z : \lambda x.f(gx)$
 - d. Backward Composition: $Y/\diamond Z : g \quad X/\diamond Y : f \rightarrow X/\diamond Z : \lambda x.f(gx)$
 - e. Forward Substitution: $(X/\diamond Y)/\diamond Z : f \quad Y/\diamond Z : g \rightarrow X/\diamond Z : \lambda x.fx(gx)$
 - f. Backward Substitution: $Y/\diamond Z : g \quad (X/\diamond Y)/\diamond Z : f \rightarrow X/\diamond Z : \lambda x.fx(gx)$
 - g. Forward Crossing Composition: $X/xY : f \quad Y/xZ : g \rightarrow X/xZ : \lambda x.f(gx)$
 - h. Backward Crossing Composition: $Y/xZ : g \quad X/xY : f \rightarrow X/xZ : \lambda x.f(gx)$
 - i. Forward Crossing Substitution: $(X/xY)/xZ : f \quad Y/xZ : g \rightarrow X/xZ : \lambda x.fx(gx)$
 - j. Backward Crossing Substitution: $Y/xZ : g \quad (X/xY)/xZ : f \rightarrow X/xZ : \lambda x.fx(gx)$
6. Type raising is one of the universal lexical rules. T is a metavariable over categories. The slash index i may be read as : this category will have the same modality as the one the raised category is applied to.
7. The solution chosen adopts the approach developed in (White 2006; cf. Argument Clusters and Gapping) for efficient natural language generation.
8. Because of limited space case specifications have been omitted; they are needed in order to distinguish between well-formed and ill-formed gapping patterns (cf. *SO & OSV, *SOV & OS).
9. Cem Bozsahin has called the analysis of coordination “a great litmus test for setting up the skeleton for NLP (i.e. the verbal categories)”. (personal communication)
10. Yaqui belongs to the Uto-Aztecan family. Fabián (2006) describes properties of coordination very similar to Amharic, a special affix coordinator in interrogative utterances included.
11. E.g. The sequencing of the wh-phrases in the question determines a rigid ordering of the constituents in the answer.

12. There has been some research on coordinate ellipsis and information structure in typologically different languages (Chinese, German) in a project of the Centre for General Linguistics, Typology and Universals (ZAS, Berlin); cf. Schwabe (1997), (2000), Schwabe and Winkler (eds.) (2006).
13. Methodologies for multi-level XML-documents have been developed in several research contexts, e.g. in projects of the research unit “Texttechnological Information Modeling” (text-technology.de)

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Linguistic type and complexity: some remarks

Pierluigi Cuzzolin

1. Introduction

Despite the ever increasing amount of literature on typology, it is surprising that the notion of *type* itself has not been thoroughly discussed in recent years, or only sporadically. In some sense, in the typological literature very often the notion of type seems to be intuitively presupposed so that the label of type is applied to different linguistic objects pertaining to different conceptual domains. For this reason, for instance, languages have been described as belonging either to the agglutinative type or to the ergative type, or to the Balkanic type and so forth. It is easy to realize, however, that in the first case the principle according to which the type is established is morphological, in the second syntactic, in the third areal, all implying different theoretical perspectives. Clearly, the label type does not encompass all the differences mentioned and it should be employed in a more specific and coherent way.

In addition, in recent years the notion of complexity has received much attention, not only in the field of linguistics but as a general epistemological issue (see, for instance, Bocchi and Ceruti 2007). But, even though complexity is attracting attention in several fields of our discipline, in particular in the field of applied linguistics (translations studies, dubbing, etc.), it is all the more surprising that the issue of the relationship between the notion of *linguistic type* and *complexity* has not yet been explicitly addressed. Typologists seem to be, at least at the moment, paying attention to other matters.

In this contribution, whose honorand is one of the most rigorous and thorough linguists in exploiting all the tools by which we investigate language, I will make some comments on the notion of linguistic complexity, and will also try to show its relevance to the notion of linguistic type, which, however useful may it be, does not seem to be yet sufficiently worked out to establish itself as a commonly accepted tool of investigation to encompass all the cases occurring in real languages. Needless to say, only a few crucial points will be touched upon in order to sketch a tentative scenario for the relationship between the two concepts.

2. Can linguistic complexity be measured?

The issue of what linguistic complexity is and to what degree it can be measured has been seriously addressed only recently. It was sometimes discussed, even though very often only implicitly, especially during the Seventies and the Eighties, when the discussion generated by the fundamental paper by Greenberg (1966) was particularly lively. One of the major examples of that trend was the work of John Hawkins, who, in order to provide the Greenbergian universals with theoretically consistent foundations, ended up elaborating a typological theory based partly on the ease of processing the linguistic phenomena related to word order, and how this contributed to a linguistic theory altogether (see, for instance Hawkins 2004). But a specific attempt at bridging the gap between complexity and typology always remained out of the mainstream of the typological investigations. Why a serious typological enterprise cannot but integrate in its program one complexity theory will be clear below.

However, nowadays the issue on complexity has been reopened by McWhorter (2001), according to which creoles grammars are the simplest grammars. This proposal has raised not only a strong debate (two issues of *Linguistic Typology* have been devoted to McWhorter's articles and to eleven papers of comments on it) about creoles and pidgins but also – and as a consequence thereof – about how much complexity there is in a grammar. It must be noted, however, that McWhorter's proposal was primarily intended to “provide a metric of complexity which will serve the purposes of elucidating and rendering falsifiable my specific claim that Creole languages in general tend to be less complex than older languages” (2001: 134). Furthermore, it has been explicitly noted that: “... this metric does not stipulate that complexity is indexed with relative difficulty of production or processing” (2001: 134).

The metric proposed by McWhorter has been used as a starting point by other scholars (the ones invited to comment on McWhorter's article in the issues of *Linguistic Typology* mentioned above and Shosted 2006) to test its validity against different languages, and the two assumptions quoted above have been generally disregarded. It goes without saying that this metric is not the only one possible, and others can be worked out that include all the various linguistic domains. In this direction, a recent survey of the issue of complexity, strictly conjoined with the opposite notion of simplification, has been provided by Fiorentino (2007). In her contribution she broadens the perspective on the issue, taking into account other criteria for evaluating

complexity/simplification that have been employed in the discussion, i.e. cognitive processes and first language acquisition or loss: “la nozione di complessità, intesa come possibilità teorica di individuare e definire una metrica sulla base della quale confrontare lingue e stabilirne il grado di maggiore o minore complessità strutturale, si associa a temi centrali della linguistica generale quali la ricerca degli universali linguistici, l’acquisizione e la perdita del linguaggio” (Fiorentino: 2007). Obviously, things become much more complicated if criteria involving semantics or pragmatics are taken into account. On the one hand, in order to provide a framework within which the global complexity of a language whatever can be measured according to certain parameters, it seems to be self-evident that all the domains relevant to the grammar of that language have to be taken into consideration. Therefore, not only phonetics or morphology must be involved, as usually is the case, but even discourse strategies, which seem to be much more complicated to treat. On the other hand, however, it is at least equally self-evident that measuring complexity in phonology or phonetics crucially differs from the corresponding criteria if applied to pragmatics, for instance, and a different notion of complexity is necessary (a useful survey of the concept of *Markiertheit* ‘markedness’ as intertwined with complexity is Ludwig 2001; see also Glatz 2000: 34-38 and Lehmann 1989). Here I will only concentrate on the criteria concerning phonetics /phonology and morphology and their relationship to complexity.

3. Measuring linguistic complexity: McWhorter’s metric

The following criteria are the ones advocated by McWhorter:

1. “... a phonemic inventory is more complex to the extent that it has more marked members” (2001: 135);
2. “... a syntax is more complex than another to the extent that it requires the processing of more rules” (2001: 136);
3. “... a grammar is more complex than another to the extent that it gives overt and grammaticalized expression to more fine-grained semantic and/or pragmatic distinctions than another” (2001: 136);
4. “... inflectional morphology renders a grammar more complex than another one in most cases ” (2001: 137).

Some remarks are in order:

A. The metric proposed is heterogeneous. It is not clear whether the criteria suggested are only relevant to McWhorter's claim or whether they could serve as criteria to measure complexity in any language. In addition, whereas criteria, 1., 2. and 4., are structural and therefore measurable mathematically, the third criterion, referring to semantic/pragmatic distinctions, is qualitative rather than quantitative.

B. Complex/complexity are covers used in McWhorter' article, but the principles behind them are not always identical or consistent. McWhorter (2001: 160) accepts the idea, first set forth by Greenberg, that what is complex in phonology corresponds to what is marked, i.e. to what is less frequent. It has to be kept in mind that since Jakobson and in a definitive way with Greenberg, *complex* tends to correspond to, and in fact has been replaced by, *marked*, which in its turn is identical with *infrequent* (interesting remarks in Bruzzolo 2003). But what is complex or, in opposition, simple in a language is far from being the same phenomenon in another language and a warning is in order. This equivalence does not hold because it can lead to contradictory results. Let us have a closer look. We can imagine that two crucially different entities are involved: on the one hand, there is the linguistic element whose complexity has to be measured, i.e. syllable, word, etc.; on the other hand, there are the rules by which such linguistic elements can be combined. Just to give an example: it is generally accepted that the phoneme /b/ is more complex than /p/ because it has an additional feature [+voiced]. This is an intrinsic case of complexity measured according to the criteria provided by phonological features, which also imply additional articulatory effort. But the question arises: is the complexity of /b/ measurable also according to its capacity of being a member of a minimal pair? If we were to evaluate, for instance, the complexity of the phonological system of Classical Arabic or Modern Standard Arabic, where, as well known, there is no phoneme /p/, how should we deem this fact, if we take into account that what is more complex, and is the marked element of the pair, i.e. /b/ is also the more frequent (there is not even the minimal pair /p/ vs. /b/)? In this case, the two criteria of evaluation end up yielding contradictory results: in term of articulatory effort /b/ is the marked element, in term of frequency it is not. A solution could be either to assume that the virtual position of /p/ in the phonological system of Arabic is occupied by another phoneme, or to avoid equating complex with marked and, in its turn, marked with frequent, since these three labels refer to different notions which are only partially overlapping. Also, in the field of morphology

Corbett (2005) has convincingly shown that what is canonical (= unmarked) does not necessarily coincide with what is more frequent. In addition, in syntax if a pattern is complex, this could also mean that it refers to more than two terms (Dryer 1995: 1061). In order to measure pragmatic complexity as different from phonetic complexity, we should be able to draw a distinction between two kinds of complexities that in fact we are unable to draw thus far.

C. As correctly stressed by Gil (2001), in his comments on McWhorter's paper, one of the principles along which the metric proposed by McWhorter is structured is time. The typology that is conceived turns out to be a dynamic one and is only conceivable over time, whereas the other typologies are temporally independent.

4. Shosted's assessment on linguistic complexity

The issue on complexity has been taken up by Shosted (2006), who tried to reassess it explicitly within a typological framework. The main aim of Shosted's paper was to ascertain whether the claim is correct according to which, if a language is complex in phonology, then its morphology and syntax are less complex and vice versa. As pointed out by the author, this claim called the *negative correlation hypothesis*, is usually taken for granted in many handbooks and articles on linguistic theory but had never been tested previously against a sample of languages.

According to Shosted a linguistic object can be described as complex only by means of the intrinsic complexity the linguistic object itself displays; no cognitive or pragmatic criteria are invoked. It is therefore measured according to a given complexity metric, based on the one worked out by McWhorter (2001). Preliminarily, the investigation has involved the relationship between syllable structure and inflection, since "phonological and morphological complexity can be sampled in reasonable ways" (Shosted 2006: 5).

From the point of view of the method employed, Shosted has assumed the correctness of also counting elements *in potentia* and not only *in praesentia* (2006: 11–12), so that potential new types of elements, not occurring but virtually possible, could be integrated into slots already present in the system. However, it seems to me that this is a principle that obviously over-generates structures in whatever domain because it is too powerful. However, there are more fine-grained, abstract *relational* distinctions within the

set of the elements *in praesentia*, useful for some specific cases, and conceptually close to the elements *in potentia* that have to be taken into account. There are languages for which a correct and complete description of their inflectional system requires not only an explicit list of features associated with the different forms of the paradigms (such as {CASE, NUMBER, GENDER} etc.), but also additional features which are only retrievable from the effects they exhibit on the phonological environment. I refer to the example of the Celtic languages, for instance, probably the most famous case of languages where mutations with morphological function occur. In all the nominal paradigms of Old Irish, for instance, many declensional forms trigger a mutation, namely either a lenition or a nasal mutation, onto the immediately following word, when the required conditions are met. The most important condition is that the immediately following word had to start with a consonant that could undergo such a mutation: for instance, /m/ could undergo the lenition yielding /w/ (spelled <mh> in Modern Irish), whereas /n/ could not; /b/ could undergo the nasalization yielding /m/ (spelled <mb> in Modern Irish), whereas /m/ did not.

The crucial case is the one in which two identical words trigger a different mutation: the declensional paradigm of a word like *túath* 'tribe' (belonging to the *ā*-stem), for instance, had two identical forms, *túath* in the nominative case singular that triggered lenition onto the following word, and *túath*, absolutely identical with the former, but occurring in the genitive case plural, that triggered nasalization. Within the same paradigm there was also the form *túaith* in the accusative singular, triggering nasalization, identical with *túaith*, in the dative singular and triggering lenition. In the grammars of the Celtic languages these two pairs are traditionally, but effectively, cited as *túath^L* - *túath^N* and *túaith^N* - *túaith^L*, where the letters in capital characters L and N refer to lenition and nasalization, respectively. It has to be noted that different pairs are possible between different cases according to the various declensional classes. What is a useful notational system also turns out to be an intrinsically motivated notation: in fact, the paradigmatic forms of Old Irish are complex in the sense that they expand their domain beyond the morphological border. In this case, complexity is intended in a way different from the one usually ascribed to fusional languages, which cumulate at least two meanings on the same morph. In the case of Old Irish, the description of a paradigmatic form has to include the rule: "Lenite/nasalize the following word if the conditions required are met".

The question that obviously arises is the following: at what level of analysis does this instruction-like rule have to be set? It is obvious that the mutation phenomenon cannot be related to the phonological shape of the word, because it would otherwise be impossible to account for the different mutations triggered by an identical phonological string. The phenomenon cannot be set at the phrasal level either simply because the mutation triggered affects the following word, independently of its belonging to the same phrase in which the word that triggers the mutation occurs. Consequently, the phenomenon has to be set at the word level and entails some property of other features like {CASE}. Such phenomena seem to show that establishing a complexity metric includes not only counting but also (see the important contribution by Dahl 2004) rules connecting elements at the same level or also at different level. Rules of this type I envisage as the ones that have to be taken into account from now on in the new typology. Obviously, a more detailed analysis of the phenomena like the one considered here remains to be done.

Admittedly, the results achieved by Shosted's investigation do not support the claim that the negative correlation hypothesis is wrong, even though they do not confirm it either. But the last words of Shosted's paper are worth quoting (2006: 35): "the results of my research lead to the only possible conclusion at present: if there are indeed cognitive limits that determine the complexity of the components of a language, these limits are not, so far as we know, approached by existing languages".

5. Conclusion

At this point, it should be clear to the reader from my previous remarks that I am in favor of a reappraisal of a holistic perspective on typology. But within the framework of a holistic perspective the reason why typology has to combine with the complexity theory becomes nearly self-evident.

As claimed above, it is rather surprising that the notion of *linguistic type* has remained thus far rather unspecified even in typology. An *exposé raisonné* about the notion of type and the ways it has been employed in the literature are beyond the scope of these short notes. Some remarks, however, are in order.

Typologists have used, and still use, the label *type* in several different ways, but mainly envisaging one phenomenon as the representative of the *global* type. Just to give an example, it is frequent in literature that when-

ever a language shows an ergative-absolutive alignment it is referred to an ergative-absolutive *type*. Of course, one could object that this is simply a matter of labels: the problem disappears as soon as is stipulated that the label *type* is primarily referred to alignment. Not only does this inclusion not render the situation clearer, in fact such an inclusion is crucially misleading. The question, as far as I can see, is not whether one can use one label instead of another, but rather, what we are entitled to derive from the label we employ. However innocent it may appear, the real problem one faces is not given by the confusion between the two labels alignment and type, but rather by the fact that one could think that one is entitled to derive specific conclusions from false premises. The question now is: what are we entitled to draw from the fact that we know that a language belongs, let say, to the ergative type? Or that it exhibits a nominative-accusative alignment? Given such vague premises, the answer to this question is, in principle: nothing. One need only consider the differences between ergative languages like Basque and Yidin^y, for instance, to realize how different types and, ultimately, grammars one and same label can conceal. Of course, the notion of linguistic type does not coincide with the notion of alignment exactly as the notion of agglutinative language could hardly cover the notion of linguistic type *tout court*.

In the end, the ultimate goal of typology should be to be able to envisage as many types as possible, whose constitutive elements are *necessarily*, i.e. *implicationally* related to one another at any level.

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B.3 Discovering Function in the Identity of Form

Constituent questions and argument-focus constructions: some data from the North-Caucasian languages

Nina Sumbatova

1. North-Caucasian languages: introduction

The North-Caucasian family includes two distantly related language groups – West-Caucasian (Abkhaz-Adyghe) and East-Caucasian (Nakh-Daghestanian). Structurally, the two groups have very little in common: the East-Caucasian languages are agglutinating and dependent-marking, while West-Caucasian languages are polysynthetic and head-marking. Languages of both groups are usually characterized as ergative, but this feature manifests itself in two entirely different ways in the two groups: most Nakh-Daghestanian languages have very branched case systems where the ergative case encodes the agent of a transitive clause; West-Caucasian languages have very few or no cases; their ergativity mainly manifests through choice and position of personal prefixes within the polysynthetic predicate.

Another common feature found in many languages of both groups is direct morphosyntactic coding of elements of information structure. Many North-Caucasian languages directly mark the focused group (be it the verbal predicate or any other syntactic constituent) by the position of certain auxiliary elements (usually particles), which at the same time express their own grammatical meaning – tense, person, negation, interrogation, etc. (see, e.g., Kalinina and Sumbatova 2007). If the main verb of the sentence does not belong to its focused part, it is normally presented by a non-finite form – most usually, the one used in relative clauses (attributive), as in the following example from Dargwa (the dialect of Icari; Sumbatova and Mutalov 2003: 141):

- (1) *ih ɛibij c'il-di-q'al w-a^hr-un-ci u*
that Gibi later-2-but(PCL) M-go:PFV-PRT-PTCP you
'But you went to that Gibi LATER on.'

Here the focused constituent is the adverb *c'il* 'later', which is signalled by the position of two focus-marking clitics, i.e. the second person marker *-di*

and the particle *-q'al* (the latter marks sentence as known to both communicants). The main verb *wa'runçi* 'went' is in a participial form also characteristic of relative clauses.

In Adyghe (West-Caucasian) the focused group takes the position of the main predicate of the sentence, whereas the head predicate of the non-focused part also takes the form characteristic of relative clauses (see section 4).

2. Constituent questions and argument-focus structures

Constituent questions are used "to inquire which values (if any) instantiate the variables of an open proposition" (Siemund 2001). Their meaning includes (a) an open proposition, i.e. an expression with at least one free variable, and (b) this variable placed under the scope of an interrogative operator, cf. (2):

- (2) *Who came?* $Q(x)$ [x came]

This variable, expressed by the question phrase, is often treated as an analogue of the focused part of declarative sentences and frequently referred to as *question focus*.

Extending the analogy to the rest of the question evokes the idea that its open proposition is somewhat parallel to the presupposed part of a declarative, cf. Lambrecht (1994: 282): "the use of an information question is appropriate only if the open proposition resulting from removal of the question expression... from the sentence is pragmatically presupposed in the discourse". More than that, we tend to expect that the open proposition of a constituent question is *semantically presupposed*: when uttering a question, the speaker believes its open proposition to be a true statement. In (2), the speaker believes that the statement *somebody came* is true.

This approach presents constituent questions as parallel to argument-focus structures: both are viewed as a combination of a presupposed proposition (true or at least taken for granted) and a focused constituent, whose identity is either claimed or questioned:

- (3) a. *Who came?* [x came] + ($x = ?$)
 b. *It is John who came.* [x came] + ($x = \text{John}$)

The analogy of argument-focus structures and constituent questions is emphasized, or even grammaticalized in some languages, where the syntactic structure of constituent questions is frequently or obligatorily parallel to that of argument-focus structures (see Drubig and Schaffar 2001). The well known example of such similarity can be found in French where constituent questions are frequently structured as cleft constructions, cf. example 4 (title of a song by Joe Dassin):

(4) *Qu'est-ce que j'ai pu faire hier soir?*

However, the idea that the open proposition of a constituent question is pragmatically and semantically presupposed is not generally true. In particular, there are numerous constituent questions that easily allow negative answers: if the corresponding open proposition were presupposed, such answers would not be appropriate. A sentence like *Who wants coffee?*¹ differs from *Who brewed this coffee?* in that answering *Nobody* would be absolutely normal in the first case, but strange in the second one. The open proposition of the second question *x brewed this coffee* is strongly presupposed to be true, but the proposition of the first example, i. e. *x wants coffee*, has no presupposed truth value.

Though the similarity between (part of) constituent questions and argument-focus sentences is semantic, the structural parallelism between these sentence types is frequent, but far from being universal.

In this connection, it would be useful to check how often and to what degree the syntactic structure of constituent questions parallels that of declaratives with analogous information structure. A priori I would expect that parallelism should be observed in the languages that explicitly and consistently – obligatorily or at least very frequently (like French) – mark the focused part of the sentence. This paper makes some steps in this direction taking the data of some North-Caucasian languages. In section 3, two types of oppositions between different interrogation strategies are introduced. In section 4, constituent questions of Adyghe are discussed in more detail. The last section summarizes the observations made.

I express my sincerest gratitude to the colleagues who helped me in providing data; first of all to Timur Majsak and Solmaz Merdanova (Agul), to Yakov Testelet (Avar) as well as to Yury Lander who is always very helpful in our joint work on Adyghe; I am also indebted to Johannes Helmbrecht for careful reviewing and insightful comments.

3. Constituent questions and argument-focus structures

3.1. Avar: constituent questions as argument-focus structures

As mentioned in the previous section, many languages emphasize or even grammaticalize the analogy of argument-focus structures and constituent questions. In the North-Caucasian language group, this is the case of the Avar-Andi languages.

The simplest example is Avar. In most declarative sentences the predicate is part of the focus; in this case it is expressed by a finite form in Avar and cannot be expressed by a participle. If the predicate is out of focus (which is the case in argument-focus sentences), it must take the form of a participle. The same is observed in constituent questions: the predicate is expressed by a participle, cf. the following sentences (Kazenin 1997: 38–40):

- (5) a. *was-as mašina tunk-ana / *tunk-ara-b*
 boy-ERG car:ABS break-AOR / break-ATR-N
 ‘The boy broke the car.’
 b. *was-as-χa mašina tunk-ara-b / *tunk-ana*
 boy-ERG-FOC car:ABS break-ATR-N / break-AOR
 ‘It was the boy who broke the car.’
 c. *li-λa mašina tunk-ara-b / *tunk-ana*
 who:ERG car:ABS break-ATR-N / break-AOR
 ‘It was the boy who broke the car.’

In argument-focus sentences, the focused phrase is marked by the particle (in 5b, *-χa*); in constituent questions, the question word is not additionally marked. This strategy, which places the question word in the focus position, this is the only way of asking a constituent question in Avar.

3.1. Dargwa: two types of constituent questions

However, even the languages that consistently mark the focused phrase in declarative utterances do not always present them as argument-focus structures. In Dargwa, e.g., the focus-marking particles, which normally follow the focused phrase, may attach either to the question phrase (6) or to the

main verb of the question (7). Both examples are from the Icari dialect of Dargwa (cf. Sumbatova and Mutalov 2003: 38; 135).

- (6) *čina-b-ni di-la qati ?*
 where-N-Q I-GEN cap
 'Where is my cap?'
 (7) *murti duχ:u d-ir-an-ti-da-n nuš:a ?*
 when sensible 1/2PL-become:IMPF-OBG-ATR.PL-Q we
 'When shall we become sensible?'

So, Dargwa has two strategies of asking constituent questions: one parallel to argument-focus structures (below it is labelled as *focusing* strategy; example 6) and one parallel to predicate-focus declarative sentences (*non-focusing*, or *neutral* strategy; example 7). I have no representative statistics, but the texts from Akusha Dargwa (cf. van den Berg 2001), Kubachi Dargwa (cf. Magometov 1963), as well as my own field data from the Icari, Kunki and Amux dialects create an impression that the non-focusing strategy is much more frequent. However, we do not know by now if Dargwa makes any functional difference between the two question-asking strategies described in this section.

3.2. Agul: semantic opposition of question-asking strategies²

Like Dargwa, many languages have more than one strategy asking a constituent question. Below I shall try to show that some of them use oppositions of these strategies to encode functional differences of different question types.

For example, this is the case in Agul (Lezgian, Nakh-Daghestanian). The way of marking focus in Agul is similar to Dargwa: the focused phrase is accompanied by the copula, which plays the role of the focus marker; the non-focused predicate takes a participial (attributive) form, cf. (example from Majsak, Merdanova 2002):

- (8) a. *ča-f-as Hūni gul.u-ne dar.a-ʕ*
 we-APUD-ELAT cow lose.PFV-PF forest-INTER
 'We lost a cow in the forest.'

- b. *Hüni e ča-f-as gul.u-f dar.a-ſ*
 cow COP we-APUD-ELAT lose.PFV-ATR forest-INTER
 ‘What we lost in the forest was a cow.’

Agul has two possibilities of constructing a constituent question: in the first case, interrogativity is marked by a question word only (sentence 9a); in the second case, the question phrase is marked as the sentence focus: it is accompanied by the copula, whereas the main predicate of the sentence takes the form of a participle (9b, 10). The argument-focus structure is used when the speaker wants to stress the fact that the open proposition is true and that he/she has already known it:

- (9) a. *fī lix.a-a ge-wur.i ?*
 what build.IMPF-PRS that-PL:ERG
 ‘What are they building?’
 b. *fī e ge-wur.i lix.a-je-f ?*
 what COP that-PL:ERG build.IMPF-PTCP₂-NM
 ‘What (what exactly) are they building?’
- (10) *ha-mi-daHan gaf-ar fī-t:.i-? e*
 EMPH.DEM-this-so.much word-PL what-NM-INES COP
čun lik’.a-je-f ze ?
 you.PL write.IMPF-PTCP₂-NM my
 ‘Where (lit. ‘in what thing’) are you recording such a lot of my words?’ [about audio-recording of texts]

As in Dargwa, the non-focusing strategy in Agul seems to be less marked and more frequently used.

3.3. Abkhaz: syntactic opposition of question-asking strategies

Like other West-Caucasian languages, Abkhaz is a polysynthetic language with multiple prefixes in the predicate cross-referencing its basic arguments. Abkhaz has several strategies for asking a constituent question (Hewitt 1989, Chirikba 2003). Unlike all the language mentioned above, the structure of a constituent question in Abkhaz depends on the syntactic role of the questioned constituent. If we simplify somewhat, we can say

that questions asking for argument NPs are different from questions asking for adverbials.

The verbs in Abkhaz clearly oppose finite and non-finite forms, and this opposition is differently marked in two groups of tenses (Hewitt 1989: 199–204): the first group of tenses (Present, Aorist, Future I and II, Perfect) expresses non-finiteness by the absence of the finite morpheme; the second group (Imperfect, Past Indefinite, Conditional I and II and Pluperfect) marks non-finite forms by the suffix *-z*.

Constituent questions asking for an argument NP differ from corresponding declarative in three aspects: first, the questioned NP is substituted by the interrogative morpheme *-da* (human) or *-y/-zə-y* (non-human), which is added to the right edge of the verbal complex (see examples 11–13 below); second, constituent questions always use non-finite, and, more than that, relative forms of the main predicate: if the verb form belongs to the second group of tenses, the interrogative marker is followed by the non-finite marker; third, the syntactic role of the questioned constituent is signalled by the position of the relative prefix³: it is placed in the position of the personal prefix corresponding to the relativized argument, cf. examples (11)–(14) (Hewitt 1989: 10–15; glosses are mine):

- (11) *y-aa-da ?*
REL-come-Q(HUM)
'Who came?'
- (12) *yə-z-fa-c°a-x'a-da-z ?*
3SG-REL-eat-too.much-PF-Q(HUM)-NFIN
'Who had already eaten too much?'
- (13) *yə-co-zə-z ?*
REL-go-Q(NHUM)-NFIN
'What was going?'

In (11) and (13), the relative prefix is in the leftmost position of the verb form – this is the position of the prefix cross-referencing the S/O argument. In (12), the prefix corresponds to the transitive agent and is placed on the right of the S/O prefix.

An alternative possibility for questions asking for an argument NP is a relative form of the verb and an interrogative pronoun (instead of the interrogative morpheme)⁴:

- (14) *y-aa-z* *darban ?*
 REL-come-NFIN who
 'Who came?'

As in the East-Caucasian languages mentioned above, asking a constituent question in Abkhaz in certain cases implies relativization of its open proposition. These questions can be analysed as pseudocleft constructions where the position of the focus constituted is occupied by a question particle or question word: e.g., sentences (11) and (14) consist of a relative verb form (meaning 'the one who came') and the interrogative morpheme or question word pointing at the questioned constituent ('who?').

The situation is very different with temporal, locative and manner adverbials. In this case, the interrogative morpheme *-ba-* (*-pa-*) is inserted in the verbal complex immediately after the derivational morpheme introducing the corresponding adverbial. The verb takes the non-finite form of the appropriate tense, in the first group of tenses the interrogative suffix *-y* is added:

- (15) a. *d-an-ba-co-w ?*
 3SG.H-TEMP-Q-go-NFIN
 'When was he going?'
 b. *d-a-ba-ca-x'o-w ?*
 3SG.H-LOC-Q-go-PF-NFIN
 'Where has he already gone?'
 c. *də-ṣ-pa-ca-rə-y ?*
 3SG.H-MOD-Q-go-FUT1-Q
 'How will he go then?'

All strategies of asking constituent questions in Abkhaz imply that the verb takes a non-finite form. However, questions to NPs also imply relativization of the open proposition; syntactically, they are pseudocleft constructions with an interrogative particle or question word in focus. Questions to adverbials express interrogativity within the verbal complex, which looks like an extreme variant of an *in situ* question.

4. Constituent questions in Adyghe⁵

Like many East-Caucasian languages, Adyghe (West-Caucasian) is very consistent in marking the focus of the sentence. In Adyghe, the focused phrase is placed in the position of the main predicate of the sentence, the open proposition being relativized and taking the position of its absolutive argument. E.g., in (16a), the NP (*my*) *neighbour* is the absolutive argument of the verb ‘came’; in (16b), (*my*) *neighbour* is the main predicate of the sentence and the headless relative ‘one who came’ is its absolutive argument.

- (16) a. *s-jə-ḡəneḡ / ḡəneḡə-r* *qe-ḡə-a-ḡ*
 1SG-POSS-neighbour / neighbour-ABS DIR-go-PST
 ‘My neighbour / the neighbour came.’
 b. *s-jə-ḡəneḡ / ḡəneḡ* *qe-ḡə-a-ḡe-r*
 1SG-POSS-neighbour / neighbour DIR-go-PST-ABS
 ‘It is my neighbour (a neighbour) who came.’

The word order in Adyghe is free; the distribution of basic syntactic roles in (16) can be seen from case marking: the phrase marked by the absolutive morpheme is an argument⁶; the predicate is either unmarked (as in 16a and 16b) or bears some of the sentential markers, which can only be attached to the main predicate and are therefore used to identify it (sentential negation marker *-ep*, interrogative particle *-a*, the particle *-ba* ‘but’).

Like Dargwa, Agul and Abkhaz, Adyghe has more than one strategy of constructing a constituent question (cf. Zekox 2002). The focusing strategy presents the questioned constituent as the sentence focus. In this case, the question phrase takes the position of the main syntactic predicate of the sentence:

- (17) *xet(-a)* *qe-ḡə-a-ḡe-r ?*
 who(-Q) DIR-go-PST-ABS
 ‘Who came?’ (lit. ‘Who is the one who came?’)

The verb is relativized and accompanied by the absolutive marker *-r*, which means that it takes the position of the absolutive argument. In constituent questions of this type, the interrogative particle *-a* is optional; if present, it always accompanies the question phrase, as in (17), which also marks it as

the main predicate. Fronting of the question phrase is optional; its linear position is as free as the position of the predicate in a declarative.

A different, non-focusing, strategy leaves the question phrase *in situ*; the syntactic predicate of the sentence encodes the main predicate of the open proposition, the interrogative particle *-a* attaches to the predicate. These questions are structured as if the main predicate of the open proposition were focused:

- (18) *səd b-ʁe-hazərə-n-ew wə-faj-a ?*
 what 2SG-CAUS-be.ready-POT-ADV 2SG-want-Q
 ‘What do you want to cook?’

Unlike Dargwa and Agul, the focusing strategy in Adyghe seems to be less marked: when translating questions, the informants frequently produce it as the first or the only option; in the most detailed grammar of Adyghe (Rogava and Kerasheva 1966), the syntax of questions is not described, but most examples of interrogative sentences are those using the focusing strategy; the same tendency can be observed in the corpus of oral texts recorded in the RGGU field trips in 2003–2006.

The choice between the two strategies in Adyghe is influenced by several factors. In some cases, the opposition of the two strategies is similar to what Majsak and Merdanova observed in Agul: constituent questions presupposing that their open propositions are true tend to choose the focusing strategy; the non-focusing strategy is preferred when the speaker wants to show that he/she does not know whether the open proposition is true:

- (19) a. *murat tədə k̡a-ʁ-a ?*
 Murat where go-PST-Q
 ‘Where did Murat go?’ (the speaker is not sure whether Murat really has gone; ≈ ‘Did Murat go?’ + ‘If yes, where?’)
 b. *təd-a mwərat zə-de-k̡a-ʁe-r ?*
 where-Q Murat REL-LOC-go-PST-ABS
 ‘Where did Murat go?’

More than that, the non-focusing strategy often implies that the speaker believes the open proposition to be false, as in (20b). In (20a), the speaker presupposes that something has really happened, in (20b) he rather wants to convince the hearer that nothing serious has happened.

- (20) a. *ssəd-a qe-χə-βe-r ?*
 what-Q DIR-become-PST-ABS
 ‘What happened?’
 b. *dwənaɟə-r qəte-ž’ə-β-a šəw,*
 world-ABS break-RFC-PST-Q PCL
səd qe-χə-β-a ?
 what DIR-become-PST-Q
 ‘It’s not the end of the world, is it? What happened?’

Another factor influencing the choice of the question asking strategy is the syntactic position of the questioned constituent. In this respect, Adyghe is to a certain degree similar to Abkhaz. If the question phrase is a core argument of the predicate, the non-focusing strategy is obviously marginal and only used to stress the fact that the truth value of the open proposition is not known to the speaker (as shown above). However, the non-relativising strategy is frequent or even preferable if the question phrase is an adverbial, especially if this is an adverbial that typically belongs to the focused part of the sentence (e.g., a manner adverbial or a locative):

- (21) a. *xet ə-wəž wə-jə-t-a ?*
 who 3SG-after 2SG-LOC-stand-Q
 b. *xet-a zə-wəž wə-jə-t-ər ?*
 who-Q REL-after 2SG-LOC-stand-ABS
 ‘Who are you after in line?’ (in a queue)
 (22) a. *sədewəš’tew qəaje-r a-šə-r-a ?*
 how cheese-ABS 3PL-make-DYN-Q
 b. *sədewəš’tew-a qəaje-r zə-r-a-šə-re-r ?*
 how-Q cheese-ABS REL-MOD-3PL-make-DYN-ABS
 ‘How is cheese made?’

In both (21a) and (22a), the main predicate of the interrogative is the same as in the corresponding declarative; the interrogativity is signalled by the presence of a question word and the question particle, which is in this case placed at the right edge of the predicate. In (21b) and (22b), the predicate position is occupied by the question word, which is accompanied by the interrogative particle. The ‘former’ predicate is relativized and placed in the position of the absolutive argument of the question word/predicate: it is marked by the absolutive suffix and has a relative prefix *z(ə)-* in the slot corresponding to the position of the questioned constituent. The relativized

predicates in (21b) and (22b) can be literally translated as ‘the one you are after in line’ and ‘the way of making cheese’.

The focusing strategy remains possible, but creates a strong emphasis on the question phrase: such questions normally require a more concrete and more detailed answer:

- (23) a. *tawš'tew je-ǰ'e-r-a ?*
 how 3SG-read-DYN-Q
 ‘How does he learn?’ (≈ ‘Does he learn well or badly?’)
 b. *tawš'tew-a ze-r-je-ǰ'e-re-r ?*
 how-Q REL-MOD-3SG-read-DYN-ABS
 ‘How does he learn?’ (1. What is his method of learning?; 2. How exactly does he learn, what are his marks?)

There are questions whose open propositions are trivial and therefore obviously true. E.g., asking a question like *Where were you born?* the speaker can be sure that its open proposition ‘the hearer was born in place x’ is true. Such trivial truths in Adyghe do not need to be emphasized: the non-focusing strategy becomes acceptable without any additional semantics:

- (24) a. *təde wə-qə-š'ə-χoə-ɛ-a ?*
 where 2SG-DIR-LOC-become-PST-Q
 b. *təd-a wə-qə-z-š'ə-χoə-ɛe-r ?*
 where-Q 2SG-DIR-REL-LOC-become-PST-Q
 ‘Where were you born?’
 (25) a. *thapš wə-nəbž'-a ?*
 how.many 2SG-age-Q
 b. *thapš-a wə-nəbž'ə-r ?*
 how.many-Q 2SG-age-ABS
 ‘How old are you?’

It seems that the same mechanism allows the speakers to use the non-relativizing strategy in conventional questions uttered in everyday situations:

- (26) *sədew wə-š'ət-a ?*
 how 2SG-stand-Q
 ‘How are you?’

5. Conclusions

The results of our brief study are not very consistent. However (keeping in mind the fact that our data were far from being full), we can say that generally constituent questions are not encoded as argument-focus structures (an exception is Avar).

We observed two important semantic oppositions influencing the choice of the constituent question structure:

- questions semantically presupposing that their open proposition is a true statement vs. questions lacking this presupposition (Agul);
- questions addressed to core arguments of the predicate vs. questions to its adverbial modifiers (Abkhaz).

Adyghe shows a rather complicated interplay of these two and some other factors.

The “left” member of both oppositions implies a possibility or obligation to express the open proposition of the question by a relativization. Structurally, they are often parallel to a cleft, pseudocleft or another construction used in argument-focus sentences. The “right” opposition member shows a less marked structure characteristic of neutral (predicate-focus) sentences.

In the first case, the explanation seems to be obvious: questions that are semantically parallel to argument-focus declaratives, are more frequently encoded as argument-focus structures. The second opposition can be explained by the simple idea that less frequent information structures are encoded by more marked constructions. Focuses consisting of an adverbial and nothing else are quite usual (especially for certain adverbial types, like manner adverbials), which is not the case with core arguments (especially the agent). That is why non-focusing strategies can be more usual in questions to adverbials than in questions to core arguments.

Notes

1. This example was suggested by Barbara Partee (p. c.) and discussed in Kalina, Sumbatova 2007. Lambrecht (1994: 285) gives a similar example (*Who wants a cookie?*).
2. For the data of Agul I am indebted to Timur Maisak and Solmaz Merdanova.

3. The relative prefix is either *y(ə)-* (replaces the absolutive prefix) or *z(ə)-* (any other prefix).
4. With non-human arguments, there are also two alternative possibilities: (1) a simple non-finite (relative) form (with a special stress and prosody), like *yə-co-z* 'What was going?', can be used and (2) the interrogative morpheme can be placed after the non-finite marker, as in *yə-co-z-zəy*, with the same meaning.
5. The work on Adyghe was supported by the RGNF grant 06-04-00194a. The data have been collected in 2005–2006 in the village of Haqurinoahl (Adyghe Republic, Russia).
6. Certain NP-types (for example, NP with a possessive prefix, like *s-jə-ənək* 'my neighbour' in example 16) do not attach case markers when placed in an argument position. The syntactic role of such an NP is, however, clear, since it can be substituted by another NP with an overt case marker (like *ənəkər* 'neighbour-ABS').

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“A lot of grammar with a good portion of lexicon”: towards a typology of partitive and pseudo- partitive nominal constructions

Maria Koptjevskaja-Tamm

1. Partitive and pseudo-partitive nominal constructions: Introduction

The present paper has a threefold aim. First, it aims at outlining a synchronic typology of partitive and pseudo-partitive nominal constructions across the European languages. Bulgarian examples below illustrate partitive (1a, 1c) vs. pseudo-partitive (1b, 1d) nominal constructions:

- (1) Bulgarian (Ljuba Veselinova p.c.)
- a. *čaša ot tova vino*
glass from that wine
‘a glass of that wine’
 - b. *čaša vino*
glass wine
‘a glass of wine’
 - c. *buket ot moi-te rosi*
bouquet from my-DEF.PL rose:PL
‘a bouquet of my roses’
 - d. *buket rosi*
bouquet rose:PL
‘a bouquet of roses’

The synchronic perspective is further complemented by a diachronic one, whereby the paper suggests several grammaticalization processes for explaining the development of the different types of partitive and pseudo-partitive constructions. Finally, the paper aims at showing the relevance of this domain for lexical typology. This section will introduce, define and characterize partitive and pseudo-partitive nominal constructions.

Both partitive and pseudo-partitive (for the latter term see Selkirk 1977) nominal constructions are noun phrases involving two nominals, one of which (*čaša* ‘glass’, *buket* ‘bouquet’) quantifies over the other one, the “Quantified”. Quantification in the two cases proceeds in different ways. In

partitive nominal constructions, hence *PCs*, the Quantified refers to a definite, specific, or in one or another way presupposed set of items ('my roses') or to a definite, specific, or presupposed entity ('that wine'), and the nominal Quantifier indicates a *subset* or a *subpart* which is selected from it. In a pseudo-partitive nominal construction (*PPC*) the nominal Quantifier merely quantifies over *the kind of entity* indicated by the other nominal. The difference between the two constructions is illustrated in Fig. 1 below.



Figure 1. 'A glass of that wine' vs. 'a glass of wine' (Damberg 2002: 6–7)

Bulgarian clearly distinguishes between *PCs*, where the Quantified is marked with the construction marker *ot* 'from, of', and *PPCs*, where the Quantifier and the Quantified are simply juxtaposed to each other. In English, this distinction is somewhat blurred in that both *PCs* and *PPCs* use one and the same construction marker *of*, cf. *a glass of that wine* vs. *a glass of wine*, and *a bouquet of my roses* vs. *a bouquet of roses*.

A defining property of the phenomena considered here is the *nominal nature* of the Quantifier. *Glass* and *bouquet* are real nouns that share inflectional and syntactic behaviour with other nouns, as opposed to numerals (*five*), adjectives (*few*), etc. And in fact, the English examples look very much like prototypical constructions headed by nouns – possessive NPs (*a glass of my best friend*) or various other combinations of two nominals (*a map of England* or *a ring of gold*). In Bulgarian, on the contrary, neither *PCs* nor *PPCs* have any similarities with possessive NPs which involve the preposition *na*, e.g. *čaša na Ivan* 'Ivan's glass'. The construction marker in *PCs*, *ot* functions as a direction marker 'from' at a clause level or as a marker of material attributes within noun phrases ('a ring of gold'), while juxtaposition of two nominals is, on the whole, mainly restricted to appositional contexts ('my brother Ivan'). However, Bulgarian *PPCs* appear as structurally quite similar to constructions with typical quantifiers, such as numerals, that are normally juxtaposed to their complements. The cross-linguistic variation in the internal structure of *PPCs* and *PCs* stems from the general conflict between the origin and functions of nominal quantifiers schematically represented in Fig. 2:

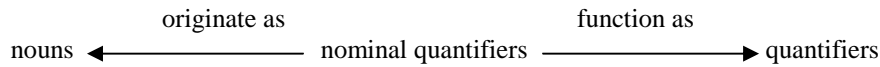


Figure 2. The origin and functions of nominal quantifiers

The Bulgarian-English contrast introduces the major points of cross-linguistic variation to be considered in this paper. I will focus on the means used to express the relationship between the Quantifier and the Quantified in PCs and PPCs across languages, primarily the absence vs. presence of an explicit construction marker and, in the latter case, on its origin or other uses. A couple of further clarifications are in place here and come immediately below. These concern, first, semantic contribution of nominal quantifiers and, second, structural, or at least syntagmatical delimitation of the Quantifier within (P)PCs.

It is often held that nominal quantifiers, in contrast to classifiers, “create” units to be counted for those entities that either do not come in “natural units” (like mass nouns), or come in “different units” (cf. *six bunches of carrots*). However, the class of quantifier nouns is semantically quite heterogeneous and includes, at least, the following major subtypes: *conventionalized measures* (“a litre of milk”), *abstract quantity nouns* (“a number of students”), *containers* (“a pail of apples”), *fractions / parts* (“a slice of bread”, “the majority of the students”), *quanta* (“a drop of milk”), *collections* (“a group of students”), and *forms* (“a pile of sand / bricks”). “Quantification” means therefore different things for different quantifier nouns: thus, while “litre” and “glass” create units that can be further counted, this hardly holds for “majority”, or “amount”. Lexical semantics of quantifier nominals and their selectional properties are to a large extent responsible for their preferences to be used in PCs or in PPCs and for their morphosyntactic behaviour (section 4).

In (1) the Quantifiers consist of one single word. However, already their English equivalents present certain problems for the definition of (P)PCs: what counts as the Quantifier – *glass* or *a glass*? And with numerals the questions of constituent structure become even more complicated, cf. the choice between *[three [bottles of wine]]* and *[[three bottles] of wine]*. There is an extensive theoretical literature dealing with the structure and semantics of PCs and PPCs in various languages (e.g. Jackendoff 1977; Selkirk 1977; Löbel 1986; Delsing 1993; Hoeksema ed. 1996; Vos 1999; Kinn 2001; Ormelius 2003; Stavrou 2003). Here I will try to minimize these complications by concentrating on the (P)PCs without numerals and, further, by not taking any stance on how much material, in addition to their lexical heads, is included in the Quantifiers.

The structure of the paper will be as follows. Section 2 deals with the typology of PCs and PPCs in the languages of Europe. Section 3 is devoted to the grammaticalization processes behind these types and to possible connections between (P)PCs and other constructions. Section 4 outlines several aspects of (P)PCs that make them an excellent domain for research within lexical typology.

2. Partitive and pseudo-partitive nominal constructions in the European languages: types and generalizations

Below I present the major types of PCs and PPCs found in the languages of Europe, mainly following my earlier cross-linguistic study (Koptjevskaja-Tamm 2001). The sample underlying the research is given in Table 1.

The parameter behind the classification is the absence vs. presence of an explicit construction marker relating the Quantifier and the Quantified and, in the latter case, its origin or other uses; hence we are dealing here with *construction-marking types*. These types lie behind several generalizations, which for the time being (in the absence of a corresponding world-wide study) will count as “Euroversals”.

Euroversal 1: PCs always involve an explicit marker (a case marker or an adposition) associated with the Quantified.

Two or three types of markers can be distinguished here, depending on their origin and / or on their use in other constructions:

- the *Separative type*: the PC marker originates and / or is used as a marker of ‘FROM’ / ‘SEPARATION’ (e.g., the ablative case, cf. (1a)), and
- the *Possessive type*: the PC marker originates and / or is used as a possessive marker (e.g., the genitive case), cf. (2) where the possessive NP and the PC share the peculiar Albanian pattern of marking the dependent with the syncretic genitive/dative/ablative case and introducing it with the attributive marker that agrees with the head in gender, number and case).

(2) Albanian (Alexander Rusakov p.c.)

a. a possessive NP

<i>got-a</i>	<i>e</i>	<i>këtij</i>
glass _F -DEF.SG.NOM	ATR:F.SG.NOM	this

- fshatar-i*
peasant-GEN/DAT/ABL.INDEF.SG
‘this peasant’s glass’
- b. a PC
got-a *e* *këtij*
glass_F-DEF.SG.NOM ATR:F.SG.NOM this
qumësht-i
milk-GEN/DAT/ABL.INDEF.SG
‘the glass of this milk’

Table 1. The European language sample used in the present paper

Indo-European	Baltic	Latvian, Lithuanian
	Slavonic	Bulgarian, Czech, Kroatian, Macedonian, Polish, Russian, Ukrainian
	Germanic	Danish, Dutch, English, Faroese, German, Icelandic, Yiddish, Norwegian, Swedish
	Celtic	Irish, Scottish Gaelic, Welsh
	Romance	French, Italian, Portuguese, Romansch, Rumanian, Spanish
	Greek	Modern Greek
	Albanian	Albanian
	Armenian	East Armenian
	Indic	Romani
Finno-Ugric	Finnic	Estonian, Finnish
	Sami	Eastern Sami, Northern Sami, Western Sami
	Ugric	Hungarian
	Finno-Permic	Komi, Mari, Mordvin, Udmurt
NE Caucasian	Daghestanian	Agul, Akhvakh, Avar, Bezhta, Budukh, Chamalín, Godoberi, Khinalug, Khvarshi, Kryz, Lak, Lezgian, Rutul, Tabassaran, Tzahur
NW Caucasian		Abkhaz
Kartvelian		Georgian, Mengrelian
Isolates		Basque
Afro-Asiatic	Semitic	Assyrian, Maltese
Altaic	Turkic	Turkish

The sample contains also a few languages where the PC marker both originates as a separation marker and is used as a possessive marker, e.g., *de* with variants in most of the Romance languages apart from Rumanian, *of* in English, *van* in Dutch and *von* in German. For these particular languages, the partitive uses seem to stem from the separative ones, but as I am not familiar with any systematic historical research, such examples can so far been viewed as the syncretic *Separative-Possessive type*.

PPCs show a greater degree of cross-linguistic diversity than PCs, occurring in two major types:

- the *Juxtapositional type*: the Quantifier and the Quantified are juxtaposed to each other, without any marker relating the two, cf. (1b), and
- the *Explicit-marker type*: a PPC involves an overt marker (a case marker or an adposition) associated with the Quantified), cf. (3) and the English examples in section 1.

(3) Lithuanian (Jurgis Pakerys p.c.)

stiklinė pien-o
 glass milk-GEN
 ‘a glass of milk’

Each of the types occurs in subtypes. Thus, the Juxtapositional type is attested both in case languages (i.e., in languages where nouns inflect for case) and in caseless languages (where nouns lack case inflection). In the majority of the sample’s case languages with the Juxtapositional type it is the Quantified that is treated as the “morphosyntactic locus” of the construction, whereby it receives the morphological case marker appropriate to the slot filled by the whole construction. Turkish (4) is representative for this group, as is evident from the Dative case marker on ‘milk’. A few of the case languages in the sample show other patterns, while for caseless languages like Swedish and Bulgarian the question of the morphological locus in juxtapositional PPCs does not make much sense.

(4) Turkish (Kari Fraurud p.c.)

Bir bardak süt-e bir kaşık bal ekle-n-ir.
 one glass milk-DAT one spoon honey add-PASS-AOR
 ‘To one/a glass of milk is added one/a spoon of honey.’

Most of the construction markers within the Explicit-marker type fall into the same three categories as the PC-markers – Separative, Possessive and

Separative-Possessive – with Comitative-based markers representing an alternative minor option in some languages (cf. section 3). Table 2 gives an overview of the PC and PPC types with examples of languages in which they occur.

Table 2. The types of partitive and pseudo-partitive nominal constructions with examples of languages in which they occur

types of PC	juxtapositional type			types of PPC		
	case on quantified	no case	others	separative	possessive	separative- possessive
separative	Turk. Hung.	Bulg. Swed.	Greek	Finnish Rum.	Irish	
possessive	Albanian				Lith. Russ.	
separative- possessive			Germ.		French	English

Word order is an additional parameter that could in principle be used for classifying PCs and PPCs across languages. Interestingly, in spite of the diversity of the construction-marking types manifested by the PPCs across languages, the data in my sample support the following generalisation:

Euroversal 2: In PPCs, the Quantifier (almost) always precedes the Quantified.

This tendency is particularly striking in the Baltic languages, where the Quantified attaches the genitive case marker and PPCs therefore belong to the possessive type. However, while genitive attributes normally precede their heads, as in (5a), the Quantified follows the Quantifier, cf. (5b). This word-order preference is relevant only for PPCs: in PCs the Quantifier can both precede or follow the Quantified, cf. (5c).

- (5) Lithuanian (Jurgis Pakerys p.c.)
- a. *mokytøj-o* *namas,* *auks-o* *žiedas*
teacher-GEN house, gold-GEN ring
'a / the teacher's house, a / the golden ring'
- b. *stiklinė* *pien-o*
glass milk-GEN
'a glass of milk'

c.	<i>gabalélis</i>	<i>t-o</i>	<i>pyrag-o/</i>
	slice	this-GEN	cake-GEN
	<i>t-o</i>	<i>pyrag-o</i>	<i>gabalélis</i>
	this-GEN	cake-GEN	slice
	'a slice of this cake'		

With respect to word order, PPCs provide a clear parallel to numeral constructions, in which the Numeral (quantifier) in the European languages almost always precedes its complement (the quantified) (Dryer 2005) – cf. section 4 for the discussion of Basque. The word order in PCs, on the other hand, is not restricted in a comparable way.

In spite of certain structural differences (primarily related to the internal structure of the Quantified), the English PPC “a slice of bread” and the PC “a slice of this fruit cake” share the same construction marker and belong to the same construction-marking type. Languages differ in the extent to which they distinguish between PCs and PPCs. The following generalisation trivially follows from the obligatory use of an overt marker in PCs across the languages of Europe.

Euroversal 3: If a language has juxtapositional PPCs as its main PPC type, its PPCs and PCs will belong to different construction-marking types.

In fact, the cross-linguistically preferred option in Europe consists in having a clear formal PC/PCC distinction, with PCs of the Separative type and PCCs of the Juxtapositional type, as in (1). Examples come from various language families, e.g. Indo-European (Bulgarian, Greek, Armenian, Swedish), Semitic (Maltese), NE Caucasian (Lezgian), Turkic (Turkish), Finno-Ugric (Hungarian), and Basque.

Neutralisation, or severe reduction of the PC/PCC distinction is, on the contrary, genetically restricted to certain groups of Indo-European languages. In Baltic and Slavic (apart from Bulgarian and Macedonian) PCs and PPCs share the possessive marker, while in Romance and English the shared marker is of the Separative-Possessive type. The PC/PCC neutralisation was also found in older Indo-European languages – Latin, Classical Greek, Old German, where the meanings of the genitive case included “genitivus partitivus” (covering the Quantified in both PCs and PPCs).

A few other combinations of PC and PPC types are attested in the European languages, e.g., PCs of the Possessive type vs. PPCs of the Juxtapositional type, cf. (2) from Albanian, or PCs of the Separative type and PPCs of the Possessive type in Irish (*buidéal bainne* ‘bottle:NOM milk:GEN’ =

‘a bottle of milk’ vs. *buidéal den bhainne* ‘bottle:NOM from:the milk:GEN’ = ‘a bottle of the milk’, Skerrett 1972). A few languages show several different patterns for PCs, PPCs or for both.

Now, even in languages where PCs and PPCs belong to the same construction-marking type, the two can still differ in how these types are implemented. Lithuanian PCs allow a freer word order than PPCs, as (5b-c) shows. Finnish has Separative PPCs and PCs, but whereas PPCs always involve the partitive case (an erstwhile ablative case) on the Quantified, the Quantified in PCs can be marked with either the Partitive or the Elative case (for the details see Koptjevskaja-Tamm 2001), cf. PPC in (6a) and PC in (6b). A similar picture is found in Rumanian, with its contrast between the ablative preposition *de* ‘of’ (used in PPCs) and the elative preposition *din* ‘from inside’ (used in PCs), cf. *o bucată de prăjitură* ‘a slice of cake’ = ‘a slice of a cake’ vs. *o bucată din prăjitura asta bună* ‘a slice from.inside cake that good’ = ‘a slice of that good cake’ (Elisabeth Stark, Andrei Avram p.c.).

(6) Finnish (Päivi Juvonen p.c.)

- | | | | |
|----|----------------------|---------------|----------------|
| a. | <i>pala</i> | <i>kakkua</i> | |
| | bit:NOM | cake:PART | |
| | ‘a bit of cake’ | | |
| b. | <i>pala</i> | <i>tätä</i> | <i>kakkua</i> |
| | bit:NOM | this:PART | cake:PART |
| | <i>pala</i> | <i>tästä</i> | <i>kakusta</i> |
| | bit:NOM | this:ELAT | cake:ELAT |
| | ‘a bit of this cake’ | | |

The next section discusses several diachronic processes that might be responsible for the different types of (P)PCs and for the similarities/dissimilarities between PCs and PPCs in one and the same language.

3. Grammaticalization

The construction-marker typology of PCs suggests two basic sources for the construction marker in PCs: a marker of ‘FROM’ / ‘SEPARATION’ and a possessive marker. The two sources agree well with two different ‘stages’ in the part-whole relations relevant for PCs. Take the example of ‘a slice of the cake’ (schematically shown in Fig. 3 below). At first, a slice of the cake

is a part belonging to the whole – the situation often encoded by possessive constructions, e.g. ‘the roof of the house’, ‘the middle of the street’ or ‘the lion’s head’. At a later stage the slice gets separated from the cake.

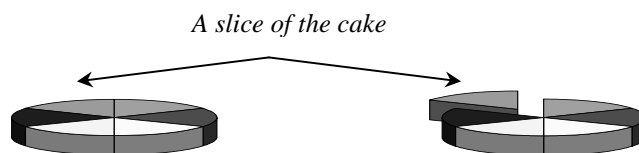


Figure 3. The Separative vs. Possessive grammaticalization sources for ‘a slice of the cake’

Finnish PCs with the Quantifier in the Elative case (6b) provide an interesting evidence for the gradual development of the Separative type. They are both lexically restricted (primarily to words referring to parts / fractions) and appear most often in contexts where a part is taken away from the whole in a way which has a clear impact on it. On the basis of these facts it is reasonable to assume that the development of Separative PCs involves reanalysis of sentences referring to physical separation of a part from an object, e.g. “Give me a slice from the cake”, where both the part and the whole are verbal dependents rather than co-constituents within one and the same phrase (for the details cf. Koptjevskaja-Tamm 2001).

A number of facts from other languages support this assumption. Damberg’s (2002) corpus-based study of Swedish (P)PCs shows a remarkable divergence in the propensity of different nominal quantifiers to occur in PCs vs. PPCs, exemplified in Table 3. While fractions are very frequent in PCs (*del* ‘part’ appears almost exclusively in PCs), most other quantifiers by far prefer PPCs with only rare occurrences (or even none) in PCs. This statistics on the actual uses of (P)PCs in texts supports the assumption that the development of PCs starts in contexts involving fraction expressions.

Some evidence for the hypothesis about the clausal sources for Separative PCs comes from Basque, which has two kinds of PCs. Possessive PCs in (7) look like ordinary possessive NPs and have a strict “Quantified – Quantifier” order. In Separative PCs, on the contrary, there is no strict order between the Quantifier and the Quantified (8a-b) and the two can even be separated from each other (8c). Thus, rather than being related to each other by tight syntactic bond, both function as verbal dependents.

Table 3. Occurrence of some Swedish nominal quantifiers in PCs vs. PPCs in the Parole-corpus at the Swedish Language Bank, 19.4 mln words (according to Damberg 2002: 27)

		PCs		PPCs	
		inst.	%	inst.	%
fractions:	<i>del</i> 'part'	198	99	2	1
	<i>bit</i> 'bit'	80	41,5	113	58,5
quanta:	<i>droppe</i> 'drop'	3	11,1	24	88,9
conventionalised measures:					
	<i>kilo</i> 'kilogramm'	4	1,3	304	98,7
abstract quantity nouns:					
	<i>mängd</i> 'amount'	11	1,4	773	98,6
group nouns:	<i>grupp</i> 'group'	6	0,9	696	99,1
containers:	<i>flaska</i> 'bottle'	0	0	200	100

(7) Basque (Alan King p.c.), PCs of the Possessive type

tarta goxo hon-en zati bat
 cake delicious this-GEN piece one
 'a piece of this good cake'

(8) Basque (Alan King p.c.), PCs of the Separative type

- a. *tarta goxo hon-etatik zati bat*
 cake delicious this-ABL piece one
 b. *zati bat tarta goxo hon-etatik*
 piece one cake delicious this-ABL
 'a piece of this good cake'
 c. *Zati bat eskatuko dut tarta goxo hon-etatik*
 piece one request.FUT AUX cake delicious this-ABL
 'I'm going to ask for a piece of this nice cake.'

A later development of Separative PCs involves, most probably, three different processes. These are extension from fraction expressions to a larger class of nominal quantifiers, reanalysis of the original construction whereby the "part" and the "whole" end up by making up one constituent instead of being two dependents to one predicate (cf. Fig. 4), and extension of predicates from those referring to concrete separation to others. The story of Possessive PCs remains to be worked out.

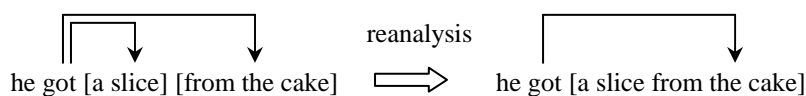


Figure 4. Reanalysis (probably) involved in the development of Separative PCs

PPCs are cross-linguistically more diverse than PCs. The cross-linguistic preference for the Juxtapositional type is a particular challenge for grammaticalization-minded researchers. Europe has two different groups of languages with such PPCs:

- In a few languages Juxtapositional PPCs are a result of a recent development (Cont. Scandinavian, Icelandic, German, Dutch; Bulgarian, Macedonian, Greek). Juxtaposition is the final output of grammaticalization (the loss of overt markers, cf. Lehmann 2002: 12).
- For the majority of the languages with Juxtapositional PPCs this construction type seems to be old. Juxtaposition there is therefore something that has not undergone any grammaticalization at all.

Three possible explanations for this preference are listed below.

First, the juxtapositional strategy may be due to the tendency to develop a unified treatment of nominal and other quantifiers, in particular cardinal numerals, which, in the vast majority of languages, are normally juxtaposed to their complements. Various phenomena point to a gradual association of nominal quantifiers with typical quantifiers (recategorization), e.g., the word order preferences (Euroversal 2), and to their gradual alienation from the class of nouns (decategorization), e.g., the loss of nominal inflectional distinctions for some nominal quantifiers in Germanic (cf. Swedish *två liter/*litrar mjölk* – ‘two litre/*litre.PL milk’, and German *nach drei Glas/Gläsern Bier* – ‘after three glass/glass:DAT.PL beer’). Since numerals often develop from nominal quantifiers, possible connections and „cross-pollination“ between the two are quite intricate. Significantly, languages in which numerals assign case to their complements (e.g., Finnic and most Slavic) lack juxtapositional PPCs (for a detailed discussion cf. Koptjevskaja-Tamm 2001), justifying the following generalization:

Euroversal 4: If a language has juxtapositional PPCs, it will not have numerals that assign case to their complements.

Now, the apparent morphosyntactic similarities between constructions with nominal and other quantifiers do not per se explain their common preference for juxtaposition, which calls for other explanations.

Second, in a PPC, the Quantifier and the Quantified are generally “weakly coreferential” (Kinn 2001: 5): they are used about the same real-world object, but categorize it in different ways. An earlier similar suggestion is found in (Löbel 1986: 77–88) who views PPCs as intermediate between loose apposition (*Hans, mein Onkel*) and tight apposition (*mein Onkel Hans*).

Finally, rather than being generally coreferential, the Quantifier and the Quantified are coreferential on a clause level, where both are used as verbal dependents: if X is taking a glass of tea, (s)he is taking both a glass and tea. The Quantifier and the Quantified are later reanalyzed as co-constituents.

For non-juxtapositional PPCs several grammaticalization scenarios are possible. First, since the overt markers in PPCs generally fall into the same categories as the PC markers and quite a number of languages show the same construction-marker type for their PCs and PPCs, it is reasonable to suggest that such markers have spread from PCs to PPCs. In spite of the semantic difference between the two constructions, there are contexts that allow both interpretations and can therefore function as “bridging contexts” between the two constructions. *This cake in a slice of this* cake can, for instance, refer either to a particular entity or to a particular kind of entity. The bridging function is presumably carried out by fraction expressions, which are naturally compatible with both contexts (cf. Table 3).

Two other grammaticalization scenarios for PPCs have been suggested and elaborated for Swedish and Norwegian, which combine the standard Juxtapositional option with two other more restricted ones – involving the prepositions *av* ≈ ‘of’ and *med* ‘with’ (Delsing 1993; Ekberg 1994; Koptjevskaja-Tamm 2001; Kinn 2001; Damberg 2002). As shown in Table 4, *av* occurs mainly with quanta and group nouns, followed by form and abstract quantity nouns, while *med* occurs with forms, containers and groups.

Ekberg (1994) and Kinn (2001: 121) suggest that the use of *av* vs. *med* reflects two different metaphors for quantity, cf. Fig. 5. According to the “material metaphor”, drops, groups and piles are “made of” entities they quantify in the same vein as a house is made of bricks, cf. (9). According to the “containment metaphor”, groups and piles “contain” entities they quantify in the same vein as a glass contains water, cf. (10). Here, there is also an additional initial semantic extension from containers containing some quantity to containers full with, or measuring a certain quantity.

Table 4. Distribution of the three different PPC types in Swedish in the Parole-corpus at the Swedish Language Bank (according to Damberg 2002:50)

quantifier type	juxtaposition	<i>av</i> 'of'	<i>med</i> 'with'	totals
conventionalized measures	100 %	0 %	0 %	753
abstract quantity nouns	97 %	2,9 %	0,1 %	905
containers	94,2 %	0,4 %	5,4 %	727
fractions / parts	97,4 %	2,6 %	0 %	153
quanta	76,1 %	23,9%	0 %	117
group nouns	85,4 %	11,7%	2,9 %	827
forms	90,6 %	3 %	6,4 %	235
totals	93,4 %	4,5 %	2,1 %	3717

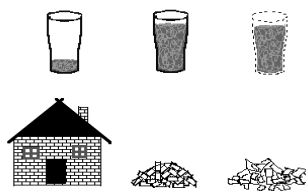


Figure 5. The material and containment metaphors (pictures by Katarina Tamm)

(9) Swedish

Material: *ett hus av rött tegel* 'a house of red bricks'PPCs with quanta nouns: *en droppe av blod* 'a drop of blood'PPCs with group nouns: *en grupp av kvinnor* 'a group of women'PPCs with form nouns: *en stapel av böcker* 'a pile of books'

(10) Swedish

Accompaniment: *en vas med blommor* 'a vase with flowers'PPCs with container quantifiers: *ett helt glas med vatten* 'a whole glass of water'PPCs with group nouns: *en grupp med flickor* 'a group of girls'PPCs with form nouns: *en stapel med böcker* 'a pile of books'

Interestingly, Norwegian, as opposed to Swedish, allows expressions for conventionalized measures, such as 'meter' and 'litre', to occur in containment-based PPCs (Kinn 2001: 135), which means that the grammatical-

ization of such constructions in Norwegian has gone further than in Swedish.

Fig. 6 summarizes the different connections between (P)PCs and other constructions that have been dealt with in this section.

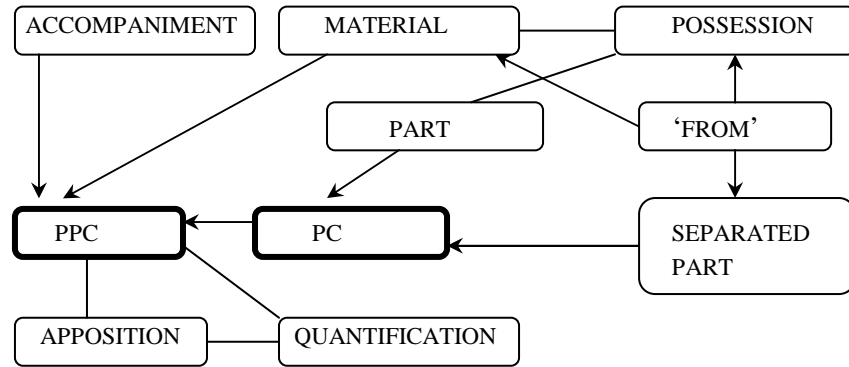


Figure 6. PCs, PPCs and “related constructions” (arrows show grammaticalization paths, lines show general semantic relatedness)

4. Partitive and pseudo-partitive constructions and lexical typology

As stated in section 1, the class of nominal quantifiers is semantically heterogeneous. Different semantic groups of nominal quantifiers do in fact differ in their behaviour and morphosyntactic properties:

- Propensity to occur in PCs vs. PPCs: cf. Table 3 in section 3.
- Occurrence in structurally different types of (P)PCs: cf. Table 4 and the discussion of the Scandinavian PPCs in section 3.
- Word order preferences: in Basque, PPCs with expressions for conventionalized measures show the order “Quantifier – Quantified”, while PPCs with expressions for fractions, quanta and collections have the order “Quantified – Quantifier”.

Not only semantic groups of nominal quantifiers, but also individual lexemes can differ in their behaviour and properties, usually as a consequence of their lexical semantics (understood broadly). Let us take a few Swedish examples to illustrate restrictions on standard Juxtapositional PPCs. First, nominal Quantifiers often show quite restricted combinability with particular types of Quantified entities, at least in particular construc-

tions, in many cases reflecting cultural preferences. *Korg* 'basket' and *plåt* 'baking-plate' can be used as container quantifiers in such juxtapositional PPCs as *en hel korg svamp* 'a whole basket of mushrooms' and *en hel plåt kanelbullar* 'a whole baking-plate of cinnamon buns'. However, *en hel korg böcker* 'a whole basket of books' or *en hel plåt torkad svamp* 'a whole baking-plate of dried mushrooms' sound strange. In addition, it is not always predictable or clear which words will be used as quantifiers at all, and even closely related languages can differ here. Such apparent containers as *vas* 'vase' and *portmonnä* 'purse' never appear as Quantifiers in Juxtapositional PPCs, whereas *generation* 'generation' does, e.g., *en ny generation tonåringar* 'a new generation of teenagers' – note that German does not allow such uses for *Generation*. There is also an interesting interaction between possibilities to use a syntactic quantifying construction (a PPC) and lexicalization processes, which is particularly obvious for groups, forms and quanta. Swedish distinguishes between the compound *en vargflock* and the PPC *en flock vargar*, 'a pack of wolves'. The compound designates a particular type of a collective, with its own internal organization, while the primary function of the PPC is quantificational, to denote a group of wolves of a certain size. On the other hand, for the compound *en sockerbit* and the PPC *en bit socker*, which both can translate as 'a lump of sugar' into English, the difference is hard to pinpoint.

All this makes PCs and PPCs a challenging object for lexical typology understood as a search for typologically relevant features in the grammatical structure of the lexicon, or as typologically significant correlations between lexicon and grammar (Lehmann 2000; Koptjevskaja-Tamm et al. 2007).

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