Workshop:
Notions of "feature" in linguistic theory: cross-theoretical and cross-linguistic perspectives

On a functional explanation of features

Walter Bisang (U Mainz)

SLE 2016: Napoli,
September 02, 2016

JOHANNES GUTENBERG UNIVERSITÄT MAINZ

1.
Introduction:
Setting the stage

An initial observation

There is a relatively small number of grammaticizable cognitive domains (Slobin 2001: 408, based on Talmy 1985)

Domains on the verb:

1. **tense (temporal relation to speech event)**
2. **aspect (temporal distribution of event)**
3. **causativity**
4. **valence/voice (e.g. active, passive)**
5. **mood (e.g. indicative, subjunctive, optative)**
6. **speech act type (e.g. declarative, interrogative, imperative)**
7. **personation (action on self vs. on other)**
8. **person (1st, 2nd, etc.)**
9. **number of event participants (e.g. singular, dual, plural)**
10. **gender of participant**
11. **social/interpersonal status of interlocutors**
12. **speaker's evidence for making claim**
13. **positive/negative status of an event's existence**

Why these categories? 1

This relatively small set of grammatically important categories and the features associated with them ties in with the question of whether some features are "deeper" , more important than others.

Pleiotropy (Biberauer & Roberts 2015):

- **Person**
- **Tense**
- **Case**
- **Order**

"a single locus affects two or more apparently unrelated phenotypic traits and is often identified as a single mutation that affects two or more wild-type traits." (Stearns 2010: 767)

Why these categories? — UG 1

UG-perspective
(Biberauer et al. 2013, Biberauer & Roberts 2015)

The three factors of language design (Chomsky 2005):

(i) innate endowment (UG)
(ii) experience (Primary Linguistic Data, PLD)
(iii) non-language-specific innate capacities

Why these categories? — UG 2

Specification of (iii):

Economy Principle: Maximise Minimal Means:

- **Feature Economy (FE):**
  postulate as few formal features as possible
- **Input Generalization (IG):**
  generalize features as much as possible

Innateness of features? —

Innate specification of a very small number of formal features: linearization diacritic ^, [Person], [Case]) (Biberauer et al. 2013: 7).

Why these categories? —An alternative 1

I would like to sketch a function-based account for the small number of features of particular grammatical relevance (Bisang 2007, 2016):

- **Talmy (1985): cf. the list on the 1st slide**
- **Slobin (2001): frequency, obligatoriness, rapid online processing**
- **Exaptation / hyponalsysis / regrammaticalization (Lass 1990, Croft 2000, Greenberg 1991)**
- **Reanalysis (Traugott 2011)**

Why these categories? —An alternative 2

Prerequisites for cognitive domains to be grammatically relevant from the perspective of the human parser:

(i) Reliability: Obligatoriness
(ii) Small number of distinctive markers

Why these categories? —An alternative 3

(i) Reliability: Obligatoriness

Obligatoriness in a paradigm (Lehmann 1995: 139):

The extent to which the underspecificaton of a certain grammatical category for a certain value (e.g. tense:past) "becomes constrained and finally impossible".

Semantic generality (cf. Bybee 1985):

For a cognitive domain to be obligatory, it must be semantically compatible with all the relevant lexical items without affecting their meaning (relevance).

Semantic generality and obligatoriness contribute to the frequency with which the cognitive domain is addressed.

Why these categories? —An alternative 4

(ii) Small number of distinctive markers

The human parser prefers small numbers of distinctive markers within a given grammatical domain:

<Attribute : small number of values>

"If a domain is to be divided up such that each of the sub-categories can be rapidly accessed online, by speaker and hearer, there cannot be too many divisions in the domain ... Typically, as forms become highly grammaticized, they divide up a domain exhaustively into a very small number of options: singular vs. plural (with possible additions of dual), perfective vs. imperfective, the six cases and three genders of Russian." (Slobin 2001: 435)

Why these categories? —An alternative 5

The grammatically important categories are further supported by:

(i) Exaptation / hypoanalysis / regrammaticalization:

Features that are semantically general enough and expressed by obligatory markers can be co-opted for additional functions (further specifications below).

(ii) Reanalysis (survey: Traugott 2011):

Markers associated with other features can be re-analysed in terms of features that are associated with semantically more general categories.

Exaptation / Reanalysis 1

Lass (1990: 80):

"Exaptation ... is the opportunistic co-optation of a feature whose origin is unrelated or only marginally related to its later use. In other words (loosely) a 'conceptual novelty' or 'invention'".

What matters for my approach:

- **The idea of co-optation**
- **Refunctionalization (Giacalone Ramat 1998)**
- **Functional/semantic discontinuity in the development (arbitrariness)**

But:
Co-optation does not necessarily have a diachronic component.

Exaptation / Reanalysis 2

Croft (2000: 126-127):

In hypoanalysis, the listener reanalyzes a contextual semantic/functional property as an inherent property of the syntactic unit. In the reanalysis, the inherent property of the context ... is then attributed to the syntactic unit, and so the syntactic unit in question gains a new meaning or function.

The synchronic perspective of parsing: Exaptation / Hypoanalysis:

The use of features as indicators of syntactic units is not necessarily diachronic. The parser can use features syncronically for identifying syntactic units in the linguistic input (linguistic data).

The diachronic perspective: Reanalysis:

If we observe a feature X to be newly associated with a syntactic unit Y (it was not associated with Y at earlier stages of the grammar of language L), this is a case of reanalysis.

Exaptation / Reanalysis 3

The example to be discussed in this presentation:

Finiteness (Bisang 2007, 2016):
Features that indicate the independent status of a syntactic unit to the parser (independently utterable clauses).

The relevant features are often extremely time-stable (see T and AGR in standard GB in Indo-European).

If they are time-stable: → **Exaptation**

If we can observe diachronic change: → **Reanalysis**

Structure of the paper

Section 2: Exaptation/Hypoanalysis
Section 3: Reanalysis

Plus:

Section 4: Conclusion and final remarks

2.
Hypoanalysis/ Exaptation and Finiteness

Finiteness 1

Most typologists see finiteness as a scalar phenomenon (Givón 1990, 2016; but also cf. Lehmann 1988, Hengeveld 1998):

Features are arranged in scales with different degrees of finiteness (Givón 1990):

(1) Scale of finiteness of TAM:

more finite	**>**	**less finite**
terminated	**>**	**non terminated**
realis	**>**	**irrealis**
punctual	**>**	**durative**
in-sequence	**>**	**anterior**

Finiteness 2

My approach (Bisang 2007, 2016):

- **is non-scalar**
- **is based on individual languages and their systems**
- **takes the perspective of the human parser**

If a language has an overt marker with its corresponding feature(s) from which the human parser can derive the independent status of a grammatical structure representing a clause that language has a finite/non-finite distinction.

Finiteness 3

What features expressed on the verb allow exaptation/ hypoanalysis of the finite/non-finite distinction cross-linguistically?

Two types of asymmetries:

Minus asymmetry: [+finite] has one or more features that are obligatory in the independent clause and ungrammatical in the dependent clause.

Plus asymmetry: [-finite] has one or more features that are obligatory in the dependent clause and ungrammatical in the independent clause.

I will focus on minus asymmetry. (Bisang 1998, 2007).

Finiteness 4

Relevant features must fulfil the following conditions (Bisang 2007, 2016):

- **Obligatoriness and its corollary of semantic generality**
- **Small number of values**

Verbal features relevant for minus asymmetry:

- **Illocutionary Force:** — **Abkhaz**
- **Politeness:** — **Korean**
- **Evidentiality**
- **Tense (Aspect, Mood)**
- **Person**

} **Matses (Panoan, Peru/Brazil)**

Additional features beyond marking on the verb:

- **Information structure** — **Japanese, Dargwa**
- **Different alignment (case)** — **(e.g. Dixon 1994 on ergativity)**
- **Word order** — **(e.g. German)**

Example 1: Illocutionary Force 1

Abkhaz (Hewitt 1979, 1987)

Illocutionary force: Abkhaz (Hewitt 1979, 1987)

Declarative: *-(y)t', -n, -p'*

Interrogative

yes/no: *-ma, -w*

yes/no with presupposition: *-y*

(3) Group I

	[+finite]	[-finite]
PRS	s-ca-wa-(y)t'	yə-ca-wà
AOR	s-ca-(y)t'	yə-cà
FUT.I	s-ca-p'	yə-ca-rà
FUT.II	s-ca-ş-t'	yə-cà-şa
PFV	s-ca-ɣ́à-yt'	yə-ca-ɣ́à-w

Group II

	[+finite]	[-finite]
IPFV	s-ca-wa-n	yə-ca-wà-z
PST.INDF	s-ca-n	yə-cà-z
COND.I	s-ca-rə-n	yə-ca-rə-z
COND.II	s-ca-ş-n	yə-cà-şa-z
PL.PFV	s-ca-ɣ́à-n	yə-ca-ɣ́à-z

Example 1: Illocutionary Force 2

(4) a. Abkhaz (Hewitt 1987:138):
Finite, declarative:
də-z-ba-ø-yt'
3SG.P-1SG.A-see-AOR-DECL
'I saw him.'

b. Non-finite:
d-anə-z-ba-ø ***a-ʂ°q°'ə***
3SG.P-when-1SG.A-see-NFIN ART-book
(ø-)lə̀-s-t-a-yt'
3SG.P-3SG.F:BEN-1SG.A-give-AOR-FIN
'When I saw her, I gave her the book.'

Example 1: Illocutionary Force 3

(5) Abkhaz (Hewitt 1977: 8)

a. yes/no-question:

də-y-kʼʼə̀-s-ma?

3SG.A-3SG.P-PREV-touch-Q

‘Did he touch me?’

b. yes/no question, against presupposition:

də-m-ca-xə́-y?

3SG.A-NEG-go-PF-Q

‘He has gone already, hasn’t he?’

Example 2: Politeness

Korean

Finiteness is expressed by

- **a set of suffixes in the final slot of the verbal paradigm**
- **combines the features of [politeness] and [illocutionary force]**
- **In the cases of Intimate, Blunt, Polite, [illocutionary force] is irrelevant**

(6) Sentence-enders (Sohn 1994: 8), *po-* 'see':

	DECL	INTER	IMP	PROPOSITIVE
Plain	*po-n-ta*	*po-ni*	*po-a-la*	*po-ca*
Intimate	*po-a*	*po-a*	*po-a*	*po-a*
Familiar	*po-ney*	*po-na*	*po-key*	*po-sey*
Blunt	*po-o*	*po-o*	*po-o*	*po-o*
Polite	*po-a-yo*	*po-a-yo*	*po-a-yo*	*po-a-yo*
Deferential	*po-p-ni-ta*	*po-p-ni-kka*	*po-si-p-si-o*	*po-p-si-ta*

Example 3: Matses 1

Discourse-ready words have obligatory markers from the following two sets of suffixes (Fleck 2003: 395-297, 2007):

Type 1: Tense, Mood, Evidential, Illocution, Person

(i) Past + Evidential:

Recent Past: Experiential: *-o*
Distant Past: Experiential: *-onda*
Remote Past: Experiential: *-denne*

(ii) Non-past: *-e*
Non-past (Permission): *-enda*
Non-past: Conditional: *-tsia*

+

Ind/Decl + Interrogative + Person

	-o*, *-nda*, *-tsia	***-denne*, *-e*, *-enda***
-c	**Ind 1/2**	**Ind 1 / 2 / 3, Int 3**
-sh	**Ind 3/Int 3**	**—**
-ø	**Int 1/2**	**Int 1/2**

(7) *mibi nid-onda-c.*
2:ABS go-DIST:PST-IND.1/2
'You went (long ago).' Fleck (2003: 395)

Example 3: Matses 1

Type 2: Tense, Aspect, Mood, Evidential, Illocution, Person

-ac:	Narrative Past: 3	*-nui*:	NPST: Uncertainty
-ac:	Rec Past: Inferential	*-pashun*:	NPST: Desid
-nedac:	Dist Past: Inferential	*-nu*:	Intention: 1
-ampic:	Rem Past: Inferential: 2/3	*-mane*:	Fut Pot: 1
-nedampic:	Rem Past: Conjecture: 2/3	*-nunda*:	Fut Pot: 3
-ash:	Rec Past: Conjecture: 3	*-panonda*:	Fut Pot: 3
-nedash:	Dist Past: Conjecture: 3	*-nushe*:	Fut Pot: 3
-quid:	Pres Habitual	*-ø*:	Imper: 2 (incl 1)
-paid:	Pres Habitual: 3	*-ta*:	Imper: 2 (excl 1)
-esa:	Neg Habitual	*-enda*:	Neg Imper: 2

(8) *bedi-n* *senad* *pe-quid.*
jaguar-ERG deer eat-HAB
'Jaguars eat deer.' (Fleck 2003: 395)

Example 4: Information structure 1

Japanese:
Topics can only occur in the matrix clause:

(9) Shibatani (1990: 272):

a. ***Hanako wa sin-da koto o sira-nakat-ta.***
Hanako TOP die-PST NML ACC know-NEG-PST
'[Hanako didn't know [that X has died]].'

b. ***Hanako ga sin-da koto o sira-nakat-ta.***
Hanako NOM die-PST NML ACC know-NEG-PST
'[X didn't know [that Hanako has died]].'

Example 4: Information structure 2

Dargwa (Nakh-Dagestanian, Caucasus, Kalinina & Sumbatowa 2007)

Declarative and interrogative clauses must take predicative particles (PP), which are suffixed to the element that is in focus:

(10) Dargwa (Kalinina & Sumbatowa 2007: 196, 198):

a. ***murad-il qu b=ax-un-ca=b.***
Murad-ERG field NEUTR-sow-PST-PP-NEUTR
'Murad has sown the field.'

b. ***murad-il-ca=b qu b=ax-un-ci.***
Murad-ERG-PP-NEUTR field NEUTR-sow-PST-ATR
'It was Murad who sowed/has sown the field.'

Exaptation: Discussion 1

(i) Not all cognitive domains are general enough to be combined with any clause that can be uttered alone.

→ cf. the ones marked in red in Talmy's list:

(ii) Number and gender only occur in combination with other features (as far as I can say).

→ cf. the domains marked in green in Talmy's list:

1. tense
2. aspect
3. causativity
4. valence/voice
5. mood
6. speech act type
7. personation
8. person
9. number of event participants
10. gender of participant
11. social/interpersonal status of SAP
12. speaker's evidence for making claim
13. positive/negative status of event

Exaptation: Discussion 2

- This leaves us exactly with the five verbal features discussed in this section:

  1./2. Tense/Aspect
  6. Illocutionary force (”speech act type”)
  8. Person
  11. Politeness (“social/interpersonal status of SAP”)
  12. Evidentials (“speaker’s evidence for making claims”)

- Information structure can be relevant for the finiteness/non-finiteness distinction because of its importance in discourse.
- Different case marking/alignment can be due to the reanalysis of nominalized structures as matrix clauses

3.
Reanalysis
and
Finiteness

Reanalysis

Definition:

The assignment of a new morphosyntactic analysis on a given linguistic structure (survey: Traugott 2011; Heine et al. 1991, Haspelmath 1998, Newmeyer 1998, Hopper & Traugott 2003, ...)

Examples:

- **Verb ‘want‘ —> Auxiliary tense marker**
- **Verb ‘to be at‘ —> Adposition**
- **Relational noun (e.g. ‘center/middle‘ —> Adposition**
- **Demonstrative —> Definite article**
- **Numeral ‘one‘ —> Indefinite article**

Reanalysis and finiteness 1

Nominalized verbs are reanalysed as finite verbs in many languages / language families / areas.

If so, the nominalizers lose their [+N] feature and get another feature that

(i) is expressed obligatorily / semantically general
(ii) consists of a small number of values

Example (Bisang 2007, 2016):
Nominalised verbs in information structure —> TAM /finite

Reanalysis and finiteness 2

An example:

Belhare and Limbu (Tibeto-Burman: Kiranti; Bickel 1999)

Belhare: NML verbs (NML *-ha*) used in cleft-constructions:

(11) Copula sentence (Bickel 1999: 276):

un mastar
3.SG teacher
'S/he is a teacher.'

(12) Verbal nouns in exhaustive focus (Bickel 1999: 276):

ŋka yaŋ nak-cai-ʔ-ŋa-ha.
1.SG DISTR ask-eat-NPST-1.SG-NML
'I am one who begs and eats [what he gets; and that's what I am].'

Reanalysis and finiteness 3

In Belhare, the nominalizer *-ha* does not occur in an independent clause. It is always interpreted in terms of focus.

In Limbu, another Kiranti language, the cognate marker *-pa* has developed into an imperfective/conative marker of a finite clause (Bickel 1999):

(13) Limbu: *-pa* as an imperfective marker (Bickel 1999):

pha:ks-u-ŋ-ba	**mɛ-ba:ks-ɛ-n.**
untie-3SG.P-1.SG:A-IPV	**NEG-come.undone-PST-NEG**

‘I tried to untie [the knot], but it didn’t come undone.’

Reanalysis and finiteness 4

In various languages, nominalized forms express stance:

Anchoring of a proposition in the speech situation from an epistemic and attitudinal perspective:

> **"The lexical and grammatical expression of attitudes, feelings, judgments, or commitment concerning the propositional content of a message." (Biber & Finegan 1989: 92; for other definitions: Biber 2004, Jaffe 2009, Yap & Matthews 2008)**

e.g. Chyantal (Tibeto-Burman: Bodic) (Noonan 1997)

Lahu (Tibeto-Burman: Burmese-Lolo) (Matisoff 1972: 246-7)

Japanese (s. next slide)

Reanalysis and finiteness 5

Examples on stance from Japanese:

(15) Japanese (Horie 2008: 176-177):

a. ***Sira-nai*** ***mon*****.**
know-NEG NML
'I'don't know [I assert this no matter what you say].'

b. ***Asoko-ni*** ***ik-oo*** ***tte*** ***it-ta*** ***wake*****.**
that.place-LOC go-INTT QUOT say-PST NML
'I said why not go there, you know?
[Offering explanation, justification]

Reanalysis and finiteness 6

Examples on aspect (16) and inferential evidence (17) in combination with the copula from Japanese:

(16) Japanese: Habitual past (Horie 2008: 176):

Yoku mukasi-wa umi-ni oyogi-ni it-ta mono da.
well past-TOP sea-to swim-for go-PST NML COP:PRS
'In the past, I would go to sea for swimming.'

(17) Japanese: Inferential evidence (Horie 2008: 176):

Ame ga fut-ta yoo da.
rain NOM fall-PST NML COP:PRS
'It appears to have rained.'

Reanalysis and finiteness 7

In my view, the development of finite verbs out of nominalized verbs is very frequently due to earlier cleft-constructions associated with predicate focus (Bisang 2016).

My prediction:
If that happens, the marker to which that change applies will have a feature that

- **is semantically general enough**
- **is obligatory**
- **has a small set of values.**

4.
Conclusions
and final remarks

Conclusions 1

1. Grammatically relevant features as indicators of syntactic structures (e.g. independent clauses in terms of finiteness) are not necessarily motivated by UG.

In an alternative scenario, they are motivated by:

(i) Parser-friendliness:

- Semantic generality as a prerequisite for obligatoriness and reliability as an indicator of a given syntactic unit
- Small number of values

in combination with:

(ii) Exaptation/hypoanalysis and reanalysis

Conclusions 2

2. Semantic generality automatically limits the number of important grammatical features and thus creates a kind of pleiotropic features that can be used for various purposes.

3. These features are partially the same as the ones postulated by Biberauer & Roberts (2015). See the red-colored verbal features:

   - Tense
   - Person
   - Evidentiality
   - Politeness
   - Illocutionary force

4. Given the semantic generality of case, I hypthesize that the relevance of case can be motivated in the same way.

Final remarks 1

The three factors of language design again (Chomsky 2005):

(i) innate endowment (UG)
(ii) experience (Primary Linguistic Data, PLD)
(iii) non-language-specific innate capacities

My account is also based on the factors (ii) and (iii):

(ii) The child sees a reliable marker with its features and associates them with a given syntactic structure (e.g. independent clause).
(iii) The relevant semantic/cognitive verbal domains discussed here are not language-specific (e.g. temporal deictics, person deictics, social deictics, ...).

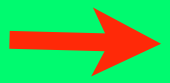
Final remarks 2

1. Universal vs. modular pleiotropy in genetics (Stearns 2010: 770):

(i) Any gene in any genome may potentially affect all traits in some way.

vs.

(ii) There are extensive pleiotropic effects within a single module but limited effects with regard to the organism as a whole.



There is quite some evidence for extensive pleiotropic effects of some genes on the phenotype but more limited effects for the majority of genes (Featherstone & Broadie 2002, Su *et al.* 2009, Wagner *et al.* 2008).

Final remarks 3

1. Universal vs. modular pleiotropy from a linguistic perspective:

Similar situation in linguistics.

Cog **Semantic generality determines the deeper features which can be used across different grammatical domains.**

→ **The number of "deep" features is relatively small.**

UG **Hierarchical taxonomy of parametrically variant features in Biberauer & Roberts (2015):**

→ **Macro-/Meso-/Micro-/Nanoparameters.**

Final remarks 4

2. Pleiotropy as (i) an evolved trait or (ii) a byproduct of bio-chemical and genetic constraints.

Probably similar situation in linguistics:

→ **Pleiotropic features are motivated by general cognitive properties of the brain (parsing + semantic generality).**

→ **Pleiotropic features are motivated by UG?**

I would go for the first option.

Final remarks 5

Does the question of pre-existing categories (Haspelmath 2007) matter for my approach?

No.

The semantic details and cross-linguistic differences do not matter.

What matters is that the relevant features with their values as they exist in individual languages show the relevant degree of semantic generality and thus fit into categories like tense, aspect, mood, evidentials, politeness, ...

Grazie!
谢谢
Thank you!

SLE, Napoli,
September 02, 2016

JOHANNES GUTENBERG
UNIVERSITÄT MAINZ

References 1

Biber, D. & Finegan, E. 1989. Styles of stance in English: Lexical and grammatical marking of evidentiality and affect. *Text* 9, 93-124.

Biber, D. 2004. Historical patterns for the grammatical marking of stance: A cross-register comparison. *Journal of Historical Pragmatics* 5, 107-136.

Biberauer, T. & Roberts, I. 2015. Rethinking formal hierarchies: A proposed unification. *Cambridge Occasional Papers in Linguistics* 7, 1-31.

Biberauer, T.; Holmberg, A.; Roberts, I. & Sheehan, M. 2013. Complexity in comparative syntax: The view from modern parametric theory. In: Newmeyer, F. & Preston, L. (eds.), *Measuring Linguistic Complexity*, 103-127. Oxford: Oxford University Press.

Bickel, B. 1999. Nominalization and focus constructions in some Kiranti languages. In: Yadava, Y. P. & Glover, W. W. (eds.), *Topics in Nepalese Linguistics*, 271-296. Kathmandu: Royal Nepal Academy.

Bisang, W. 1998. The view from the far East. Comments on seven thematic areas. In: Van der Auwera, J. with Dónall P. Ó Baoill (eds.), *Adverbial Constructions in the Languages of Europe*, 641-812. Berlin: Mouton de Gruyter.

Bisang, W. 2001. Finite vs. non finite languages. In: Haspelmath, M.; König, E.; Œsterreicher, W. & Raible, W. (eds.), *Language Typology and Language Universals, Volume* 2, 1400-1413. Berlin & New York: Mouton de Gruyter.

Bisang, W. 2007. Categories that make finiteness: discreteness from a functional perspective and some of its repercussions. In: Nikolaeva, I. (ed.), *Finiteness. Theoretical and Empirical Foundations*, 115-137. Oxford: Oxford University Press.

References 2

Bisang, W. 2014. On the strength of morphological paradigms: A historical account of radical pro-drop. In: Robbeets, M. & Bisang, W. (eds.), *Paradigm Change. In the Transeurasian Languages and beyond*, 23-60. Amsterdam & Philadelphia: Benjamins.

Bisang, W. 2016. Finiteness and nominalization—convergence and divergence. In: Chamoreau, C. (ed.), *Finiteness and Nominalization*, 13-41. Amsterdam & Philadelphia: Benjamins.

Bybee, J. L. 1985. *Morphology: A Study of the Relation between Meaning and Form*. Amsterdam & Phildalelphia: Benjamins.

Chomsky, N. 2005. Problems of projection. *Lingua* 130: 33-49.

Croft, W. A. 2000. *Explaining Language Change. An Evolutionary Approach*. Essex: Pearson Education.

Featherstone, D. E. & Broadie, K. 2002. Wrestling with pleiotropy: genomic and topological analysis of the yeast gene expression network. *BioEssays* 24, 267-274.

Fleck, D. W. 2003. *A Grammar of Matses*. PhD Dissertation, Rice University, Houston, Texas.

Fleck, D. W. 2007. Evidentiality and double tense in Matses. *Language* 83, 589-614.

Giacalone Ramat , A.1998. Testing the boundaries of grammaticalization. In: Giacalone Ramat, A. & Hopper, P. J. (eds.), *The Limits of Grammaticalization*, 227-270. Amsterdam: Benjamins.

Givón, T. 1990. *Syntax. A Functional-Typological Introduction, Vol. II*. Amsterdam & Philadelphia: John Benjamins.

Givón, T. 2016. Nominalization and Re-finitization*Finiteness and Nominalization*, 271-296. Amsterdam & Philadelphia: Benjamins.

References 3

Greenberg, J. H. 1991. The last stages of grammatical elements: Contrastive and expansive desemanticization. In: Traugott, E. C. & Heine, B. (eds.), *Approaches to grammaticalization, Vol. I.*, 301-314. Amsterdam and Philadelphia: Benjamins.

Haspelmath, M. 1998. Does grammaticalization need reanalysis? *Studies in Language* 22, 315-351.

Heine, B., Claudi, U. & Hünnemeyer, F. 1991. *Grammaticalization. A con-ceptual framework*. Chicago & London: The University of Chicago Press.

Hengeveld, K. 1998. Adverbial clauses in the languages of Europe. In: van der Auwera J. with Ó Baoill, D. P. (eds.), *Adverbial Constructions in the Languages of Europe*, 335-419. Berlin: Mouton de Gruyter.

Hewitt, B. G. 1979. *Abkhaz*. Amsterdam: North Holland Publishing Company.

Hewitt, B. G. 1987. *The Typology of Subordination in Georgian and Abkhaz*. Berlin, New York & Amsterdam: Mouton de Gruyter.

Hopper, P. J. & Traugott, E. C. 2003. *Grammaticalization (2nd edition)*. Cambridge: Cambridge University Press.

Horie, K. 2008. The grammaticalization of nominalizers in Japanese and Korean. In: López-Couso, M. J. & Seoane, E. (eds.), *Rethinking Grammaticalization. New Perspectives*, 169-187. Amsterdam & Philadelphia: John Benjamins.

Jaffe, A. 2009. *Stance: Sociolinguistic Perspectives*. Oxford: Oxford University Press.

References 4

Kalinina, E. & Sumbatova, N. 2007. Clause structure and verbal forms in Nakh-Daghestanian languages. In: Nikolaeva, I. (ed.), *Finiteness. Theoretical and Empirical Foundations*, 183-249. Oxford: Oxford University Press.

Lass, R. 1990. How to do things with junk: exaptation in language change. *Journal of Linguistics* 26, 79-102.

Lehmann, C. 1988. Towards a typology of clause linkage. In: Haiman, J. & Thompson, S. G. (eds.), *Clause Combining in Grammar and Discourse*, 181-225. Amsterdam & Philadelphia: John Benjamins.

Lehmann, C. 1995. *Thoughts on Grammaticalization*. Munich: Lincom Europa.

Matisoff, J. A. 1972. Lahu nominalization, relativization, and genitivization. In: Kimball, J. P. (ed.), *Syntax and Semantics*, Vol. 1, 237-257. New York: Academic Press.

Newmeyer, F. J. 1998. *Language Form and Language Function*. Cambridge, Mass.: The MIT Press.

Noonan, M. 1997. Versatile nominalizations. In: Bybee, J.; Haiman, J. & Thompson, S. A. (eds.), *Essays on Language Function and Language Type. In Honor of Talmy Givón*, 373-394. Amsterdam: John Benjamins.

Shibatani, M. 1990. *The Languages of Japan*. Cambridge: Cambridge University Press.

Slobin, D. I. 2001. Form-function relations: how do children find out what they are? In; Bowerman, M. & Levinson, S. C. (eds.), *Language Acquisition and Conceptual Development*, 406-449. Cambridge: Cambridge University Press.

References 5

Sohn, H.-M. 1994. *Korean*. London and New York: Routledge.

Stearns, F. W. 2010. One Hundred Years of Pleiotropy: A Retrospective. *Genetics* 186, 767-773.

Su, Z.; Zeng, Y. & Gu, X. 2009. A preliminary analysis of gene pleiotropy estimated from protein sequences. *Journal of Experimental Zoology* 312B, 1-10.

Talmy, L. 1985. Lexicalization patterns: semantic structure in lexical form. In: Shopen, T. (ed.), *Language, Typology and Semantic Description, vol. 3: Grammatical Categories and the Lexicon*, 36-149. Cambridge: Cambridge University Press.

Traugott, E. C. 2011. Grammaticalization and mechanisms of change. In: Narrog, H. & Heine, B. (eds), *The Oxford Handbook of Grammaticalization*, pp. 19-30. Oxford: Oxford University Press.

Wagner, G. P.; Kenney-Hunt, J. P.; Pavlicev, M.; Peck, J. R. & Waxman, D. 2008. Pleiotropic scaling of gene effects and the 'cost of complexity'. *Nature* 452, 470-472.

Yap, F. H. & Matthews, S. 2008. The development of nominalizers in East Asian and Tibeto-Burman languages. In: López-Couso, M. J. & Seoane, E. (eds.), *Rethinking Grammaticalization. New Perspectives*, 309-341. Amsterdam & Philadelphia: John Benjamins.