Ben Ambridge, University of Liverpool
The formation and restriction of linguistic generalizations: A competition-based account

In this paper we present and test a new theory of the formation and restriction of linguistic generalizations based on the competition-model framework. The goal of the account is to explain (1) how children form generalizations that allow for the production of novel utterances, (2) how children retreat from overgeneralization errors (e.g., *She giggled me*), (3) why certain generalizations are deemed ungrammatical by adult speakers, whilst other equally creative novel utterances (e.g., *She sneezed the napkin off the table*) are not and (4) why overgeneralization errors are observed at different rates for different constructions.

A basic assumption of the account is that speakers form grammatical constructions - at whatever level - (e.g., AGENT ACTION PATIENT; VERB+*ed*) by abstracting across utterances in the input (e.g., *I rolled the ball, John broke the cup*; *walked, talked, smiled*). Each slot (e.g., ACTION) is associated with particular semantic (and/or phonological and/or pragmatic) properties: those shared by the items that appeared in this position in the input utterances that gave rise to the construction. For example, the ACTION slot in the AGENT ACTION PATIENT transitive causative construction is associated with the semantic property of expressing direct, prototypically-physical causation (e.g., one cannot say *John crashed the car* if John simply distracted the driver).

When producing an utterance, *every* construction in the speaker's inventory competes for selection to convey the intended **message** (though most will have an activation level close to zero). The winner is the most highly activated construction, as determined by **construction frequency** (more frequent constructions will be more easily activated than less frequent constructions), **item-in-construction frequency** (items in the message will activate constructions in which they have frequently appeared), **fit** and **relevance**. The notion of **fit** reflects the assumption that grammaticality is determined by the compatibility between the properties of individual **items** and the construction **slots** into which they are inserted: An utterance is grammatical to the extent that the semantic properties of each slot and its filler overlap (e.g., *giggle* is a poor filer for the ACTION slot in the transitive causative construction [*She giggled me*] as the properties of the verb [internal causation] and slot [direct external causation] are not well matched). A highly **relevant** construction matches the message perfectly, in that it contains an appropriate slot for each entity in the message, and is associated with the required meaning (see Table 1 for examples).

Overgeneralization errors (e.g., *She giggled me*) reflect the use of an item in a construction slot with which it is less than optimally compatible. Hence, such errors reflect **competing motivations** on the part of the speaker: the motivation to use (a) a particular verb to express the semantics associated with that action (e.g., the nature of the laughter) and (b) a particular construction to express the event-level semantics (e.g., causation). These errors are due to the child's failure to have acquired (a) an adultlike understanding of the properties of a particular construction slot or item or (b) an alternative construction which contains a slot that is a better fit for that item. Errors cease gradually as this knowledge is acquired.

The predictions of this account were tested on data from the English locative constructions. The VERB slot in the **container-locative** construction is associated with the semantics of causing the container/location to change state (e.g., from full to empty; *Lisa **filled** <u>the box</u> with paper*). Hence the account predicts (via *fit*) that the lower the degree to which a verb is judged (by independent semantic-raters) as AFFECTING THE CONTAINER, the greater the degree to which overgeneralization errors of this verb into the container-locative construction (e.g., **Lisa* *poured/spilled <u>the floor</u> with water*) will be deemed ungrammatical. Conversely, since the VERB slot in the **contents-locative** construction is associated with the semantics of AFFECTING THE CONTENTS (e.g., *Lisa **poured** <u>water</u> onto the floor*), the less a verb is judged to exhibit this semantic feature, the greater the predicted ungrammaticality of overgeneralization errors into the contents-locative construction (e.g., **Lisa* *filled/lined paper into the box*). The account also predicts (via *item-in-construction frequency*) that the higher the frequency of a particular verb in the container-locative construction, the greater the extent to which overgeneralizations into the contents-locative construction will be deemed ungrammatical (and vice versa), as the verb will activate the former construction at the expense of the latter (due to construction competition).

These predictions were tested by obtaining grammaticality judgment data for 60 verbs (20 contents-locative-only, 20-container-locative only and 20 alternating) from 20 participants aged 5-6, 9-10 and adults, and semantic feature ratings from 10 adults. In support of the account, regression analyses revealed that both item-in-construction frequency (as determined using the *British National Corpus*) and semantic-feature ratings were significant predictors of the relative ungrammaticality of overgeneralization errors.

Ben Ambridge, University of Liverpool
The formation and restriction of linguistic generalizations: A competition-based account

Table 1. Competition between constructions: Example of a sentence derivation for the message JOKE CAUSE_{INDIRECT} [MAN LAUGH] showing some of the most highly-activated competing constructions.

Construction	Freq	Relevance	Fit
Transitive causative [SUBJ] [VERB] [OBJ] *The joke laughed the man	High	High. There is a suitable slot for *the joke* [SUBJ], the man [OBJ] and *laughed* [VERB].	Relatively high. *The joke* and *the man* are suitable items for the [SUBJ] and [OBJ] slots respectively. However, *laughed* is not a good candidate for the VERB slot, which requires a VERB that denotes direct causation (e.g., *amuse*).
Intransitive [SUBJ] [VERB] *The man laughed*	High	Low. *The man* and *laughed* are suitable items for the [SUBJ] and [VERB] slot, but one item in the message (*the joke*) is left unexpressed.	Perfect. *The man* and *laughed* are suitable items for the [SUBJ] and [VERB] slots respectively.
Periphrastic causative [SUBJECT] make [OBJECT] [VERB] *The joke made the man laugh*	Low	High. There is a suitable slot for *the joke* [SUBJ], the man [OBJ] and *laughed* [VERB].	Perfect. *The joke* and *the man* are suitable items for the [SUBJ] and [OBJ] slots respectively. Since the VERB slot is associated with the meaning of an action that is less than fully causal, *laugh* is a suitable item.

Mira Ariel   **Tel Aviv University**

Or constructions: Monosemy versus polysemy, encoding versus inferencing

Monosemy and polysemy compete in language, and they are intimately associated with the competition between more encoding versus more inferencing. Single-function forms (monosemies) require minimal inferencing. Still, speakers routinely mobilize current monosemic forms to express additional meanings (via inference), so multi-function forms (polysemies) are constantly evolving, requiring heavy inferencing. Applied to constructions, the competition arises between one (super-) construction associated with multiple meanings (polysemy + heavy inferencing) and multiple sub-constructions, each with its own dedicated meaning (monosemy, or near monosemy + minimal inferencing). The idea is that discourse use increases construction polysemy (and inferencing), yet, at the same time, naturally evolved sub-constructions counter this development, increasing monosemy (and decreasing inferencing). To test these ideas, I focus on disjunctive constructions with *or*.

The disjunctive interpretation introduces multiple alternatives which must be construed as distinct instances of some higher-level relevant category (cf. 1a&b). The category may be constructed ad-hoc (1c, Ariel, 2007):

1.   a. Category = Hot drinks to be served: Would you like **tea or coffee?** (LSAC).

      b. Category= ??   ~?? Flight attendant: Chicken or cookies?

      c. Category= a large and powerful organization
                  MONTOYO: ... for example,
                              ... the president (H) .. of .. **a major labor union,**
                              .. **or a major corporation**.
                              ... the position,
                              .. (H) as president of **that entity**, (SBC: 012)

The options mentioned cannot be marked realis (Mauri, 2008). This follows from my suggestion, contra current assumptions, that the speaker is not (linguistically, necessarily) committed to the truth of even one of the alternatives (note the acceptability of *I don't remember* in 2). The speaker's (minimal) goal is to simply raise possible alternatives:

2.   'At a certain stage, part of the shares were transferred to the children before going out on the stock exchange **or** they were returned and divided up **or** partly returned **I don't remember**... you have our prospectus here' (Originally Hebrew, Lotan 1990: 12).

The most polysemous cases of disjunctive interpretations involve no specialized marking. The interpretation must then be contextually inferred:

3.   ... Practices of abortion of, **perhaps, pre-partum, perhaps postpartum** (LSAC).

While [X *or* Y], the most general dedicated disjunctive construction, only encodes the minimal disjunctive interpretation above, it can be inferentially enriched in any number of ways. For example, quite often, it is actually the higher-level concept that X and Y exemplify that is relevant in the discourse, rather than the alternatives mentioned explicitly (4, and see the anaphoric reference to the powerful organization by the singular *that entity* in 1c):

4. NORA: Wonder who was the ruler.
            in nineteen ten.
   DIANE: Who was the **king or queen (=monarch)**? (SBC: 023)

Partial encoding, especially when accompanied by distinct discourse profiles (e.g., interrogative), demands only some inferencing. Such is the case of the 'exclusive' reading in 1a. In fact, [X *or* Y] can be used to convey most of the interpretations that the dedicated sub-constructions discussed below convey. Note that with minimal modifications, we can

1

substitute [X *or* Y] for most of the sub-constructions exemplified below. This then is a case of rather heavy polysemy.

At the same time, specialized sub-constructions can virtually guarantee the single higher-level concept reading: [X *or something*destressed] (*or something* introduces a hedge rather than another viable option in 5a), and note the single concepts denoted by the lexicalized (5b):

5.   a. RICKIE: ... So is he in like jail **or** something? (SBC: 001)

        b. More or less= 'about'; sooner or later= 'at some point in time'

Finnish lacks the *or something* construction, but mobilizes a different sub-construction for the one-concept reading (using *tai*, rather than *vai* for 'or', Elsi Kaiser, P.C). Many languages have a dedicated construction for the opposite function, where the speaker indicates that each of the disjuncts denotes a distinct discourse option (6):

6.   It's an **either or situation**$_i$, you **either give me quality or you give me productivity**$_{ii}$ (LSAC).

Very often these options are also construed as exhausting all possible options, in which case an exclusive reading is triggered ('either X or Y, but neither both nor any other alternative'). This is true for virtually all the *either X or Y* sub-constructions in LSAC and SBC (~500 examples, e.g., 6$_{ii}$), and for all bare *either or*s (6$_i$). Additional disjunctive sub-constructions are exemplified in (7), where some, but not all features of the basic construction are inherited, while others are added on:

7.   a. Corrective (designated prosody, only Y):
        MARY: ... Hand me that ashtray.
               ... **Or** your light,
               I mean (SBC:007).

        b$_i$. Dispreferred Y (*or else*):
           ... (H) **Or else** I'll give her a call tomorrow. (SBC: 014)

        b$_{ii}$. b$_i$ + Threat: You've got until count of three to get up **or else** (I'm smacking you) (LSAC)

        c. Dilemma (*to verb or not to* verb):   .. **to follow,**
                                           or not to follow.
                                         (H) **To respond or not to respond.** (SBC: 025)

        d. Impossible Y (=Only X) This has GOT to be the breakthrough album, **or I'm a monkey's uncle** (http://www.amazon.co.uk/Shepherds-Dog-Digipak-Us/dp/B000TQZ7O4).

        e. One option X *or* X: Who is the idiot—**me or me**??? (Originally Hebrew).

Our focus on the competition between minimal encoding (polysemy), which trades on heavy inferencing, and rich encoding (a set of monosemies), which only requires minimal inferencing, reveals that natural languages manifest the whole spectrum. A preliminary typological survey suggests that some languages opt for heavy polysemy accompanied by heavy inferencing, while others combine polysemy ([X *or* Y]) with a set of sub-constructions which are monosemic, or virtually so. Interestingly, no language demonstrates exclusive monosemy (eliminating inferencing). In sum, I show that a combined functional perspective linking the pragmatics of inference with the semantics of constructions sheds important light on the role of competing motivations in the grammaticization and typology of linguistic structure.

References

Ariel, Mira. 2007. *Or* constructions. Tel Aviv University.
Mauri, Caterina. 2008. The irreality of alternatives: Towards a typology of disjunction. *Studies in Language* 32:22-55.

Deriving the weight of syntactic constraints from experience

Markus Bader
University of Konstanz

While the gradedness of syntactic constraints has been widely recognized, most theories aimed at modeling graded acceptability in syntax explicitly deny the possibility that constraint weights can be learned from experience (e.g., *Linear Optimality Theory*, Keller, 2006; the *Decathlon Model*, Featherston, 2005). This contrasts with much work in phonology (e.g., *Stochastic OT*, Boersma & Hayes, 2001; *Harmonic Grammar*, Coetzee & Pater, 2008). One of the reasons for this is that research comparing graded acceptability ratings with corpus-derived frequencies in the domain of syntax (e.g., Featherston, 2005; Kempen & Harbusch, 2008) has uncovered certain mismatches between perceived grammaticality and corpus frequency. One mismatch that has been found is that syntactic structures that all occur with zero or near-zero frequency can nevertheless receive significantly different grammaticality ratings. Mismatches of this kind have been used to argue that constraint weights cannot be learned from experience.

This talk presents a case study on verb cluster formation in German showing that such mismatches between acceptability and language use only hold when acceptability is related to language use on the level of global sentence probabilities, as in Stochastic OT, but not when this relationship is considered on the atomic level of individual constraints, as in Harmonic Grammar. The relevant experimental data on graded acceptability are partially taken from the literature (Bader & Schmid, 2009) and partially new. To obtain the relevant frequency data, we analyzed the DeWac Corpus of internet texts (Baroni, Bernardini, Ferraresi & Zanchetta, 2009).

Consider first three-verb clusters with a modal verb in the perfect tense, as illustrated in (1).

(1) a.   . . . dass Maria ein Buch **hat lesen müssen**. $\sqrt{}$Aux=1, $\sqrt{}$V<Mod
          that M.   a   book has read   must
        '. . . that Maria had to read a book.'
     b. *. . . dass Maria ein Buch **lesen müssen hat**.   *Aux=1, $\sqrt{}$V<Mod
     c. *. . . dass Maria ein Buch **müssen lesen hat**.   *Aux=1, *V<Mod

In (1-a), the order of lexical verb (*lesen* 'read'), modal verb (*müssen* 'must') and finite auxiliary (*hat* 'has') follows the rules of prescriptive grammar. First, the lexical verb precedes the modal verb, in accordance with the default rule for verbs in German (selected verb before selecting verb). Second, the finite auxiliary occupies the initial position of the verb cluster. This is required by a special linearization rule for modal verbs in the perfect tense. The two sentences in (1-b) and (1-c) deviate from the grammatical order to different degrees. In (1-b), the auxiliary is in final position instead of the required initial position but the main verb still precedes the modal verb. In (1-c), the auxiliary is again in final position and in addition the modal verbs precedes the main verb.

Experiments show that sentences with the grammatical order are highly acceptable whereas sentences with deviating verb orders are rejected most of the time. Importantly, sentences like (1-c) are judged as even worse than sentences like (1-b). In terms of corpus frequencies, both ill-formed orders occur with zero or near-zero frequency. Despite initial appearance, this is not necessarily at odds with the hypothesis that language use determines acceptability. After all, (1-c) violates two constraints on verb clusters whereas (1-b) violates only a single constraint. The seeming discrepancy between judgment and frequency data can therefore be reconciled by making two assumptions. First, constraint violations act in a cumulative way on the acceptability of sentences (see Sorace & Keller, 2005). Second, constraint weights are learned from experience.

This talk will first present an analysis of three-verb clusters in the framework of Harmonic Grammar as presented in Boersma & Pater (2008) and Coetzee & Pater (2008). Simulations using the Praat program show that experimental acceptability jugdments can be predicted from learned constraint weights. As a further test of the resulting model, the acceptability of sentences with four-verb clusters was investigated using the method of magnitude estimation (Bard, Robertson & Sorace, 1996). The results of this experiment will be presented in conjunction with additional corpus data on four-verb clusters. Again, simulations show that acceptability can be predicted from

learned constraint weights. The presented results will finally be discussed with regard to the general relationship between grammar and language use.

References

Bader, M. & Schmid, T. (2009). Verb clusters in Colloquial German. *The Journal of Comparative Germanic Linguistics* 12, 175–228.

Bard, E. G., Robertson, D. & Sorace, A. (1996). Magnitude estimation of linguistic acceptability. *Language* 72, 32–68.

Baroni, M., Bernardini, S., Ferraresi, A. & Zanchetta, E. (2009). The WaCky Wide Web: A collection of very large linguistically processed web-crawled corpora. *Language Resources and Evaluation Journal* 23, 209–226.

Boersma, P. & Hayes, B. (2001). Empirical tests of the gradual learning algorithm. *Linguistic Inquiry* 32, 45–86.

Boersma, P. & Pater, J. (2008). Convergence properties of a gradual learning algorithm for Harmonic Grammar. Unpublished manuscript, University of Massachusetts at Amherst (available at http://roa.rutgers.edu/).

Coetzee, A. W. & Pater, J. (2008). Weighted constraints and gradient restrictions on place co-occurrence in Muna and Arabic. *Natural Language and Linguistic Theory* 26, 289–337.

Featherston, S. (2005). The decathlon model of empirical syntax. In M. Reis & S. Kepser (Eds.), *Linguistic evidence*, (pp. 187–208). Berlin: de Gruyter.

Keller, F. (2006). Linear optimality theory as a model of gradience in grammar. In G. Fanselow, C. Féry, R. Vogel & M. Schlesewsky (Eds.), *Gradience in grammar: Generative perspectives*, (pp. 270–287). New York: Oxford University Press.

Kempen, G. & Harbusch, K. (2008). Comparing linguistic judgments and corpus frequencies as windows on grammatical competence: A study of argument linearization in German clauses. In A. Steube (Ed.), *The discourse potential of underspecified structures*, (pp. 179–192). Berlin: de Gruyter.

Sorace, A. & Keller, F. (2005). Gradience in linguistic data. *Lingua* 115, 1497–1524.

Cognitive attractors in language processing? Evidence from neurotypology

Ina Bornkessel-Schlesewsky
Department of Germanic Linguistics, University of Marburg

Language, as a singularly human ability, is intimately tied to the structure of human cognition and constrained by the organising principles of neurobiology. It thus appears likely that fundamental architectural characteristics of language reflect more general cognitive and biological principles. In this context, Evans and Levinson (2009) proposed that "cognitive attractors" could serve as one source of competing motivations in language. This talk will review a recent experimental approach, entitled "neurotypology", which is suited to identifying attractor categories of this type. By comparing and contrasting neurophysiological processing signatures for typologically diverse languages, neurotypological research aims to establish cross-linguistic generalisations in the neurocognition of language as well as to identify dimensions of variation. The generalisations identified in this way are promising candidates for cognitive attractors, which serve to shape the structure of language(s) / language processing on the one hand and provide a new perspective on the structure of human cognition on the other. This proposal will be illustrated with reference to one such potential attractor, the notion of "actorhood".

Children's Interpretation of Relative Clauses with Multiple Cues:
What does case add?

Silke Brandt (Max Planck Institute for Evolutionary Anthropology)

Purely structural accounts of sentence processing, such as the Active Filler Strategy (Frazier & Clifton, 1989), predict that German relative clauses (RCs) without clear case marking or agreement, such as "die Kuh, die das Pferd füttert" (the cow that feeds the horse/the cow that the horse feeds) will be interpreted as subject RCs (the cow that feeds the horse) (c.f. Schriefers et al., 1995). However, it has also been shown that children and adults use multiple, and not just structural, cues in their parsing decisions (e.g., Bates & MacWhinney, 1987; Seidenberg et al., 1999). In the current study, we have investigated how German-speaking children interpret ambiguous RCs, and whether they integrate case marking when it is available and the form of the non-relativized NP.

  We tested 24 three-year-olds and 16 six-year-olds on ambiguous RCs and 24 three-year-olds and 24 six-year-olds on RCs with case marking, signaling either a subject- or object RC reading. In both the ambiguous and case-marked RCs, the non-relativized NP was expressed either by a pronoun or a lexical NP. This resulted in 6 conditions, with four test sentences in each condition for the case-marked sentences and 8 sentences in each condition for the ambiguous sentences (see table). The pre-recorded sentences were presented together with two movies that were played simultaneously and only differed in semantic role assignment (e.g., cow feed horse in movie A - horse feed cow in movie B). The children were asked to point to the still picture that matched the sentence.

  The six-year-olds almost exclusively interpreted the ambiguous RCs as subject RCs (90%), and they showed ceiling effects in the conditions with the (case-marked) subject RCs (98% correct). Both the six-year-olds and the three-year-olds performed at chance on the (case-marked) object RCs. The three-year-olds did not show a default interpretation for the ambiguous sentences. They pointed to the picture supporting the subject RC reading (37%), the object RC reading (37%), or to both pictures (26%). They only interpreted those RCs as subject RCs that were clearly marked as such by case (66%). The form of the non-relativized NP had no influence on the children's interpretation in any condition, for either age group.

  The results from the older children seem to support a purely structural account for sentence processing. The younger children, however, seem to require multiple cues. Taken together, these results can be interpreted as support for experience-based accounts (e.g., Wells et al., 2009) and the coalitions-as-prototypes approach (Bates & MacWhinney, 1987). The older children prefer an SOV reading of the ambiguous sentences because the vast majority of sentences a German child hears have a subject-object order (SVO or SOV). The younger children, having less linguistic experience, need more than one cue to arrive at a clear interpretation. Finally, children's failure to correctly interpret the case-marked object RCs – even when that interpretation is supported by the form of the non-relativized NP - is probably due to the fact that one cue, namely animacy of the head NP, points to a subject-RC reading (cf.

Kidd et al., 2007), and that children have difficulty activating more than one interpretation for (locally) ambiguous sentences (Booth et al., 2000).

References

Bates, E., & MacWhinney, B. (1987). Competition, variation, and language learning. In B. MacWhinney (Ed.), *Mechanisms of language aquisition* (pp. 157-193). Hillsdale, NJ: Lawrence Erlbaum.

Booth, J. R., MacWhinney, B., & Harasaki, Y. (2000). Developmental differences in visual and auditory processing of complex sentences. *Child Development, 71*(4), 981-1003.

Frazier, L., & Clifton, C. (1989). Successive cyclicity in the grammar and the parser. *Language and Cognitive Processes, 4*(2), 93-126.

Kidd, E., Brandt, S., Lieven, E., & Tomasello, M. (2007). Object relatives made easy: A cross-linguistic comparison of the constraints influencing young children's processing of relative clauses. *Language and Cognitive Processes, 22*(6), 860-897.

Schriefers, H., Friederici, A. D., & Kühn, K. (1995). The processing of locally ambiguous relative clauses in German. *Journal of Memory & Language, 34*(4), 499-520.

Seidenberg, M. S., MacDonald, M. C., & Seidenberg, M. S. m. g. u. e. (1999). A probabilistic constraints approach to language acquisition and processing. 1999. *Cognitive Science, 23*(4), 569-588.

Wells, J. B., Christiansen, M. H., Race, D. S., Acheson, D. J., & MacDonald, M. C. (2009). Experience and sentence processing: Statistical learning and relative clause comprehension. *Cognitive Psychology, 58*(2), 250-271.

Conditions and test sentences*

	Lexical NP	Pronoun
Ambiguous	Das Pferd, das die Kuh füttert. the horse that the cow feeds *the horse that is feeding the cow/* *the horse that the cow is feeding*	Das Pferd, das die jetzt füttert. the horse that she/her now feeds *the horse that is feeding her now/* *the horse that she is feeding now*

	Lexical NP	Pronoun
Subject RC	Der Hund, der den Löwen füttert. the dog that-NOM the-ACC lion feeds *the dog that is feeding the lion*	Der Hund, der den jetzt füttert. the dog that-NOM him-ACC now feeds *the dog that is feeding him now*
Object RC	Der Hund, den der Löwe füttert. the dog that-ACC the-NOM lion feeds *the dog that the lion is feeding*	Der Hund, den der jetzt füttert. the dog that-ACC he-NOM now feeds *the dog that he is feeding now*

*The forms *das* and *die* function as determiners and demonstrative pronouns and can stand for both nominative and accusative.

Sonia Cristofaro (University of Pavia)

Competing motivation models and diachrony: what evidence for what motivations?

Competing motivation models are usually established on synchronic grounds. If different constructions can plausibly be associated with different functional motivations, then it is assumed that the interaction between these motivations determines the distribution of the constructions. This holds both for classical competing motivations models, as used in the functional-typological approach, and Optimality Theory models.

In the functional-typological approach, however, cross-linguistic patterns are the result of diachronic processes leading to the creation of the relevant constructions in individual languages (Bybee 1988, Newmeyer 2002, Dryer 2006). This paper argues that, in many cases, these processes pose a number of challenges for existing competing motivation models. Attention will be focused on various processes pertaining to alignment patterns and zero vs. overt marking. In particular:

(i) The motivations postulated in a particular model may turn out to play no direct role in the diachronic development of the relevant constructions. In this case, the constructions provide no evidence of a competition between these particular motivations. For example, a number of processes of form-function reanalysis have been described whereby accusative, ergative, and patient markers originate, respectively, from serial verb constructions, oblique or possessive markers, and object markers (Anderson 1977, Lord 1993, Malchukov 2008, Mithun 2008, among several others). These processes can be accounted for in terms of mechanisms of contextual inference which are independent of the motivations that have been invoked to account for the existence of different alignment patterns on synchronic grounds, e.g. principles that lead speakers to associate different argument types (Du Bois 1985), or the need to mark some particular argument as opposed to others (Comrie 1989, Dixon 1994, Aissen 2003). Likewise, overt expression of plural may originate from contextual inferences that lead speakers to grammaticalize distributives, collectives, duals, or paucals, or constructions involving nouns of multitude (Lynch 1977, Mithun 1999, Corbett 2000). Overt marking for singular/plural (as found in gender-number portmanteau morphemes) and person may arise through the grammaticalization of demonstratives and personal pronouns (Greenberg 1978, Heine and Reh 1984, Mithun 1991, Siewierska 2004), and thus is related to what categorial distinctions are originally available for these elements in the language. These processes are arguably distinct from the competing motivations postulated to account for the distribution of zero vs. overt marking on synchronic grounds, such as e.g. iconicity and economy (Haiman 1985, Croft 2003).

(ii) The very notion of competing motivations may not provide an adequate account for particular distributional patterns. If different constructions originate from processes of form-function reanalysis, then their distribution is related to what source constructions are originally available in the language and how these can be reanalyzed (e.g. through mechanisms of contextual inference), rather than being the result of a competition between alternative functional principles that lead speakers to create different constructions. There may still be a competition between different motivations in this case, but only in the relatively general sense of a competition between the tendency to maintain the conventions of the language (Newmeyer 2002) and the principles leading to reanalysis .

While these facts do not invalidate the idea that cross-linguistic patterns may be the result of different functional principles, they suggest that any model of the interaction of these principles in a speaker's mind should take into consideration, on a case-by-case basis, the diachronic processes that may possibly contribute to the shaping of the relevant patterns.

References

Aissen, J. (2003). Differential Object Marking: Iconicity vs. Economy. *Natural Language and Linguistic Theory 21*, 435–83.

Anderson, S. (1977). On mechanisms by which languages become ergative. In C. Li (Ed.), *Mechanisms of syntactic change*, pp. 317–63. Austin: University of Texas Press.

Bybee, J. (1988). The diachronic dimension in explanation. In J. A. Hawkins (Ed.), *Explaining language universals*, pp. 350–79. Oxford: Basil Blackwell.

Comrie, B. (1989). *Language universals and linguistic typology. 2nd edition*. Oxford: Basil Blackwell.

Corbett, G. G. (2000). *Number*. Cambridge: Cambridge University Press.

Croft, W. (2003). *Typology and universals. 2nd edition*. Cambridge: Cambridge University Press.

Dixon, R. M. W. (1994). *Ergativity*. Cambridge: Cambridge University Press.

Dryer, M. (2006). Descriptive Theories, Explanatory Theories, and Basic Linguistic Theory. In F. Ameka, A. Dench, and N. Evans (Eds.), *Catching Language: The Standing Challenge of Grammar Writing*. Berlin and New York: Mouton de Gruyter.

Du Bois, J. A. (1985). Competing motivations. In J. Haiman (Ed.), *Iconicity in syntax*, pp. 343–66. Amsterdam and Philadelphia: John Benjamins.

Greenberg, J. H. (1978). How does a language acquire gender markers? In J. H. Greenberg, C. H. Ferguson, and E. A. Moravcsick (Eds.), *Universals of human language. Vol. 3*, pp. 47–82. Stanford: Stanford University Press.

Haiman, J. (1985). *Natural syntax*. Cambridge: Cambridge University Press.

Heine, B. and M. Reh (1984). *Grammaticalization and reanalysis in African languages*. Hamburg: Helmut Buske.

Lord, C. (1993). *Historical change in serial verb constructions*. Amsterdam and Philadelphia: John Benjamins.

Lynch, J. (1977). On the history of the Tanna numerals and number-markers. *Te Reo* (20), 3–28.

Malchukov, A. (2008). Split intransitives, experiencer objects and 'transimpersonal' constructions: (re-) establishing the connection. In M. Donohue and S. Wichmann (Eds.), *The typology of semantic alignment*, pp. 76–101. Oxford: Oxford University Press.

Mithun, M. (1991). The develoment of bound pronominal paradigms. In W. P. Lehmann and H.-J. J. Hewitt (Eds.), *Language Typology 1988*, pp. 85–104. Amsterdam: John Benjamins.

Mithun, M. (1999). *The Languages of Native North America*. Cambridge: Cambridge University Press.

Mithun, M. (2008). The emergence of agentive systems in core argument marking. In M. Donohue and S. Wichmann (Eds.), *The typology of semantic alignment*, pp. 297–333. Oxford: Oxford University Press.

Newmeyer, F. J. (2002). Optimality and Functionality: A Critique of Functionally-Based Optimality Theory. *Natural Language and Linguistic Theory 20*, 43–80.

Siewierska, A. (2004). *Person*. Cambridge: Cambridge University Press.

Competing motivations for the linear structuring of complex sentences

Holger Diessel, Karsten Schmidtke-Bode and Katja Hetterle (Friedrich Schiller University Jena)

At least since Greenberg's seminal work in the 1960s, the linear order of syntactic constituents has been considered an important dimension of linguistic structure. Moreover, the systematic typological variation of word order has been shown to be influenced by various competing forces, ranging from on-line processing pressures (e.g. Hawkins 2004) to long-term effects of grammaticalization (e.g. Aristar 1991). Crucially, the generalized linearization patterns typically invoked, such as uniform head-dependent ordering or branching directions (e.g. Dryer 1992), also make predictions for the ordering of main and dependent *clauses*. Those have hitherto received comparatively little attention, even though the respective phenomena are structurally more complex and hence, arguably, sensitive to even more (and maybe differently ranked) functional motivations.

In this paper, we present key results and insights of the first large-scale project that has investigated the linear structure of complex sentences from a typological perspective. The project has resulted in a substantial database that takes stock of entire systems of complex sentences from more than 100 independent languages. The database is coded for some 50 pertinent construction-specific variables of relative, complement and the main semantic types of adverbial clauses. We will illustrate how these multivariate data can be exploited to further strengthen and differentiate the competing-motivations approach to constituent order at the inter-clausal level.

To begin with, the database allows for a precise quantification of the degrees to which different types of subordinate clauses pattern with other constituent-order choices of VO/OV language types, and with each other. The expected analogical or systemic pressures are, for instance, typically overridden by adverbial clauses in VO languages, and by complement and relative clauses in OV languages. Crucially, however, several independent motivations need to be invoked here, ranging from the structural complexity of the subordinate clause over the position of subordinating elements, to semantic and discourse-pragmatic factors. Recurrent phenomena such as differential topic marking on clauses or their obligatory extraposition thus reflect grammaticalized solutions, as it were, to the pressure of responding to these motivations simultaneously.

More generally, then, the position of subordinate clauses provides a challenging test case for theories of competing motivations: It can shed light on the question of which alleged motivations or 'principles' (Hawkins 2004) are actually significantly materialized in grammars across the world's languages, which ones may be needed in addition, and how they are ranked when it comes to potential conflicts.

References

Aristar, A.R. 1991. On diachronic sources and synchronic patterns: An investigation into the origin of linguistic universals. *Language* 67: 1-33.

Dryer, M.S. 1992. The Greenbergian word order correlations. *Language* 68: 80-138.

Hawkins, J.A. 2004. *Efficiency and Complexity in Grammars.* Oxford: Oxford University Press.

Abstract for the Leipzig conference on competing motivations

Conflicting vs. convergent vs. interdependent motivations in morphology

Wolfgang U. Dressler*,**, Gary Libben***, Katharina Korecky-Kröll*

*Dept. of Linguistics and Communication Research, Austrian Academy of Sciences
** Institute for Corpus Linguistics and Text Technology, Austrian Academy of Sciences
*** University of Calgary

Presenting and corresponding author: wolfgang.dressler@univie.ac.at

"Competing motivations" may have different meanings. I intend to discuss three of them:

1) Competition may mean conflicting motivations either within the same theoretical approach or between different theoretical approaches. This is prototypical rivalry between motivations that exclude each other, if properly formulated. This is the classical case of the scientific ideal of monocausality, which is much easier to establish in "hard" sciences than in "soft" human sciences to which linguistics belongs in spite of all efforts to the contrary. Here the main epistemological problem is the weight of decisive criteria, whereas the main problem from the perspective of the sociology of science is ideological aversion against other theoretical approaches.

2) Convergent motivations are best conceived of as mutually independent motivations that combine or conspire in determining or promoting a certain result. Here the main problems lie in establishing multicausality, the mutual independence of motivations and in weighting the relative importance of each motivation.

3) Interdependent motivations are the most problematic ones to identify and classify. The ideal is to subordinate one motivation under another one, e.g. when subordinating a linguistic principle under a semiotic one. Here we must avoid the danger of undue reductionism, and clear criteria must be established, for example for differentiating reduction of phonology to phonetics from establishing a phonetic basis for a phonological generalisation. Whenever symmetric, reciprocal implications are found, one should try to subordinate such implications under a higher level motivation. But when asymmetric implications are found, then there may be either a superordinate motivating principle or the implied may be simply more basic.

4) An orthogonal dichotomy is the difference between sufficient and partial motivations where the boundaries are often difficult to draw. Are all non-reductionist motivations partial or are partial motivations rather a symptom of insufficiency of explanation?

I intend to discuss these and related problems with examples A) from morphological grammar theory with their synchronic and diachronic impacts and B) from psycholinguistic research in morphology (first language acquisition and online or offline processing, where I will draw on joint work with my coauthors). Since too many examples are worth of discussing, I am not yet decided which ones to finally choose, but indicate some of the most promising ones.

A) The theoretical approach is Natural Morphology with its "vertical" hierarchy of subordinations from extra-linguistic bases over subordinated universal morphological preferences, typological adequacy to language-specific system adequacy (cf. Dressler 2006, Kilani-Schoch & Dressler 2005), but this does not exclude that generalisations of a higher level may not be reweighted as less weighty than generalisations of a lower hierarchical level. But architectural problems of the model will be much less dealt with than topics which are relevant to several morphological models.

A case of hierarchisation of motivations applies to Greenberg's (1963) generalisation that derivational affixes tend to be positioned between lexical roots/stems and inflectional affixes. Dressler (1989) has extended this to the preferential right-bound order: root/stem −

prototypical derivation – non-prototypical derivation – non-prototypical (= inherent) inflection – prototypical (= contextual) inflection. The highest-level motivation for this order proposed so far (Dressler 1989) is the difference between the main functions of derivation (lexical function) and inflection (syntactic function). The motivating syntactic function of inflection is combined with the indexical closeness preference in preferring inflectional indexical signantia of syntactic relations to be positioned closest to their indexical signata (e.g. in agreement the morphological marker of the gender targets closest to its gender controller) and thus to be peripheral in the word, especially in case of contextual inflection. The motivating lexical function of (especially prototypical) derivation favours lexicalisation (and tends to reduce morphosemantic transparency) and storage as a whole, which in turn combines with the word base preference of morphological rules in favouring inflectional suffixation following derivational suffixation than the inverse order. But how can the iconic correlation with degree of concreteness/abstracness of lexical, derivational and inflectional elements be related to this motivation architecture? And what about competing motivations formulated within other linguistic models?

In due respect to Leipzig-based Martin Haspelmath, his attack against the concept of markedness and its identification as an epiphenomenon (if that) of frequency (Haspelmath 2006) will be discussed in synchrony and diachrony. The main question about motivation will be whether markedness has to be subordinated to frequency or vice versa or whether mutual motivational relations are more complex (or whether it is a hen-and-egg question).

Markedness vs. frequency is also a general topic in the field of morphonotactics, as proposed by Dressler & Dziubalska (2006): phonological markedness predictions may interact conflictingly with typological morphotactic motivations and explain why certain phonotactically consonant clusters occur only in morphologically complex words or word forms, as in G. *lach-st* '(you) laugh', but frequency considerations come in when this is not an exclusive but still a default constellation (as in frequent German patterns *leb+st* '(you) vs. rare monomorphemic occurrences, as in *Papst* 'pope') vs. an equal cooccurrence of morphonotactic and phonotactic patterns. Resulting predictions for typical vs. SLI language acquisition have been confirmed.

A case of conflicting and convergent motivations relating morphology to text linguistics is the tendency towards cataphorical reference of nominal compounding in titles to nouns and phrases in the following text (cf. Dressler & Mörth to appear): although cataphoric indexicality is dispreferred to anaphoric indexicality, which establishes more reliable sign relations, the convergence of textual condensation in titles and morphosemantic condensation in compounds appears to represent a stronger motivation.

B) The psycholinguistic data come, on the one hand, from processing studies undertaken together with Gary Libben, on the other hand from an international typological cooperation on first language acquisition of 18 languages (cf. Bittner et al. 2003, Savickiene & Dressler 2007, Stephany & Voeikova 2009) and related acquisitional studies.

The first acquisitional question why inflection emerges earlier than derivation in first language acquisition can be answered by two combined motivations: first, in morphology-rich languages, there is a syntactic motivation for the earlier emergence of inflection, but a second motivation comes from processing: peripheral morphemes are easier to segment and identify than medial morphemes. This explains also that in agglutinating languages the first case morpheme (contextual inflection) is acquired earlier than the plural morpheme (inherent inflection, cf. Stephany & Voeikova 2009).

But there is a motivated exception: early emergence of diminutives as representatives of non-prototypical derivation (Savickiene & Dressler 2007): what is the main motivation? The pragmatic importance of diminutives in child-directed speech or the fact that inflection of diminutives is usually more productive and transparent than of the average of the simplex bases of diminutives? Frequency plays a role insofar as a low threshold of critical mass of

diminutives must occur in child-directed speech. However diminutives emerge as early in German as in much diminutive-richer Dutch, etc.

This will lead us to the general motivating forces of richness vs. complexity of inflectional morphology in their impact on order of acquisition (cf. Laaha & Gillis 2007, Xanthos et al. to appear, Ravid et al. 2008).

Various online and offline processing studies by the authors and their associates (Dressler et al. 2001, Libben et al. 2002) have established the importance of morphotactic transparency for production and perception of German compounds. The same motivating force, together with degree of productivity can explain the order of emergence of German compound types: first compounds with mere concatenation and then compounds with productive –n interfixation after first-member-final schwa (e.g. *Straße+n+bahn* 'tram') are the first compound types acquired.

However, in the course of acquisition of nominal compounds the Viennese boy has a phase where he tends to omit this –n-interfix and simultaneously adds an –e-interfix to consonant-final first elements (e.g. *Hase+mama* 'hare mother', *Bank+e+sache-n* 'bank hings') in a sort of output-oriented conspiracy. Such developments represent a short-termed blind-alley development that children construct in deviation from adult targets and have to give up very soon. Such blind alleys provide the most forceful support for a constructivist approach to language acquisition. But how are such deviating child constructions motivated or constrained? Does "everything go"?

The most spectacular cases of blind alley construction within our project have occurred in the course of development of the Greek boy Christos in his attempts to acquire the Greek subjunctive introduced by the particle *na* (Christofidou & Kappa 1998): in a first blind alley he omitted the particle and lengthened the root vowel of the verb, although Modern Greek has no distinctive vowel length; in a second attempt he replaced the particle by a reduplicative syllable, although Modern Greek lacks reduplication as a grammatical operation. Thus he replaced the 3.Sg. subjunctive of 'to cut' [na 'kopsi] first with ['ko:pi], then with [ko'kopsi], two operations which Natural Morphology can motivate partially.

Finally we'll discuss more in detail (including logistic regression statistics) the acquisition of actual German plural forms and of the differentiation between actual vs. potential vs. illegal plurals, based on an online processing test and on spontaneous longitudinal corpora. Conflicting and combined motivations will be discussed particularly in respect to our graded productivity model (Dressler 2003, Laaha et al. 2006, Libben et al. 2002) and to Köpcke's (1998, cf. Bittner & Köpcke 2001) schema model.

Bibliography

Bittner, Dagmar, W.U. Dressler & Marianne Kilani-Schoch eds. 2003. Development of Verb Inflection in First Language Acquisition: A Cross-Linguistic Perspective. Berlin: de Gruyter.

Bittner, Dagmar & Köpcke, Klaus-Michael (2001). Acquisition of the German plural markings: A case study in natural and cognitive morphology. In C. Schaner-Wolles, J. Rennison & F. Neubarth eds. *Naturally: Linguistic studies in honour of Wolfgang Ulrich Dressler*. Torino: Rosenberg & Sellier. 47-58.

Christofidou, Anastasia & Ioanna Kappa. 1998. Pre- and protomorphological fillers in Greek language acquisition. In: S. Gillis ed. Studies in the Acquisition of Number and Diminutive Marking. Antwerp Papers in Linguistics 95. 193-214.

Dressler, Wolfgang U. 1989. Prototypcial differences between inflection and derivation. Zs. für Phonetik, Sprachwissenschaft und Kommunikationsforschung 42. 3-10

Dressler, W.U. 2003. Degrees of grammatical productivity in inflectional morphology. Italian Journal of Linguistics 15. 31-62.

Dressler, W.U. 2006. ed. Special Issue: Natural Morphology. Folia Linguistica 40,1-2.

Dressler, W.U. & Katarzyna Dziubalska-Kołaczyk. 2006. Proposing morphonotactics. Italian Journal of Linguistics 18. 249-266.

Dressler, W.U., Laura E. Lettner & Katharina Korecky-Kröll. 2010. First language acquisition of compounds with special emphasis on early German child language. In S. Scalise & I. Vogel eds. Cross-Disciplinary in Compounding. Amsterdam: Benjamins. to appear

Dressler, W.U., Gary Libben, Jacqueline Stark, Christiane Pons & Gonia Jarema. 2001. "The processing of interfixed German compounds". *Yearbook of Morphology* 1999.185-220.

Dressler, W.U. & Karlheinz Mörth. 2010. Produktive und weniger produktive Komposition in ihrer Rolle im Text an Hand der Beziehungen zwischen Titel und Text. To appear

Greenberg, Joseph H. 1963. Some universals of grammar with particular reference to the order of meaningful elements. In: J.H. Greenberg ed. Universals of Language. Cambridge: MIT Press.

Haspelmath, Martin. 2006. Against markedness (and what to replace it with). Journal of Linguistics 42. 25-70.

Kilani-Schoch, Marianne & W.U. Dressler. 2005. Morphologie naturelle et flexion du verbe français. Tübingen: Narr.

Köpcke, Klaus-Michael. 1998. The acquisition of plural marking in English and German revisited: schemata versus rules. *Journal of Child Language 25*, 293-319.

Laaha, Sabine & Steven Gillis eds. 2007. Typological perspectives on the acquisition of noun and verb morphology. Antwerp Papers in Linguistics 112.

Laaha, Sabine, Dorit Ravid, Katharina Korecky-Kröll, Gregor Laaha & W.U.Dressler. 2006. Early noun plurals in German: regularity, productivity or default? Journal of Child Language 33. 271-302.

Libben, Gary, Gonia Jarema, W.U. Dressler, Jacqueline Stark & Christiane Pons. 2002. "Triangulating the effects of interfixation in the processing of German compounds". *Folia Linguistica* 26. 23-43.

Ravid, Dorit, W.U. Dressler, Bracha Nir-Sagiv, Katharina Korecky-Kröll, Agnita Souman, Katja Rehfeldt, Sabine Laaha, Johannes Bertl, Hans Basbøll & Steven Gillis 2008 Core morphology in child directed speech: Crosslinguistic corpus analyses of noun plurals. In: H. Behrens ed. Corpora in Language Acquisition Research. Amsterdam: Benjamins. 25-60.

Savickiene, Ineta & W.U., Dressler eds. 2007. The Acquisition of Diminutives. Amsterdam: Benjamins.

Stephany, Ursula & Maria D. Voeikova eds. 2009 Development of Nominal Inflection in First Language Acquisition: A Cross-Linguistic Perspective. Berlin: Mouton de Gruyter.

Xanthos, Aris, Sabine Laaha, Steven Gillis, Ursula Stephany, Ayhan Aksu-Koç, Anastasia Christofidou, Natalia Gagarina, Gordana Hrzica, Nihan Ketrez, Marianne Kilani-Schoch, Katharina Korecky-Kröll, Melita Kovačević, Klaus Laalo, Marijan Palmović, Barbara Pfeiler, Maria D. Voeikova & W.U. Dressler. 2010. On the role of morphological richness in the early development of noun and verb inflection. First Language, to appear.

Competing to Cooperate: Motivating the Grammaticization of Complexity

John W. Du Bois

University of California, Santa Barbara

dubois@linguistics.ucsb.edu

In language as in other games people play, competition and cooperation arise together. These two couplings, of competition with cooperation and of language with games of strategy, have the potential, I suggest, to tell us a lot about how languages get to be the way they are. The interaction of these two pairs of principles drives much of the narrative of this paper, in which I pose four related questions:

-- First, how do the communicative strategies which participants develop as they pursue the dialogic game of language lead to functional motivations with the potential to shape the elements, structures, and rules of grammar?

-- Second, why do some functional motivations come into conflict with others, yielding the phenomenon known as competing motivations?

-- Third, what role does grammaticization play in the resolution of competition between motivations?

-- And finally, in what sense does the resolution of competing motivations via processes of grammaticization play a role, perhaps the key role, in the emergence of complexity in language--ultimately shaping the functional power and structural efficacy of every human language?

It will prove crucial to pursue answers to these questions if we hope to approach an overall understanding of how language comes into being, and how it is shaped by the way it is used. In this effort it will be important to attend to the actual ecological environment in which language lives and continually evolves. The relevant ecological environment is language in use, or discourse, where grammar takes its shape in the service of its own speakers. To gain a vantage from which to pursue these questions, it will be useful to think about language as a complex adaptive system. This implies that language is characterized a vast number of interactions among a large population of elements, structures, processes, and strategies--not to mention speakers and their goals and identities--linked in a complex and dynamically evolving web of interacting components.

To have explanatory value, any theory of competing motivations must prove itself applicable to problems in the description and analysis of language. This may play out at the level of grammatical description, linguistic typology, discourse functional explanations for grammar, or some combination of these and other domains. In this paper, my approach will focus primarily on patterns in discourse and their relation to grammar, drawing as well on a typological perspective. The particular problem I address is the ditransitive, and specifically how this and other three-place predications arise through processes of grammaticization, emerging out of patterns of language use that necessarily include competing motivations. Ditransitives, boasting argument structures that accommodate three distinct syntactic arguments, are of special interest in that they are relatively complex in comparison to the simpler argument structures of transitive and intransitive verbs.

Evidence be presented mostly from English conversation, with some brief comparisons to Sakapultek Maya, with its distinct pattern of three-place predicates.

Alternating the position of adjectives in French : an item-based phenomenon

Gwendoline Fox
EA 1483 (RFC)
ILPGA
Université - La Sorbonne Nouvelle

Juliette Thuilier
Inria (ALPAGE)
UFRL
Université - Paris Diderot

Benoît Crabbé
Inria (ALPAGE)
UFRL
Université - Paris Diderot

French, like most Romance languages, displays both prenominal and postnominal placement of attributive adjectives. The fact that choice in position is not random led many linguists (Abeillé and Godard (1999); Forsgren (1978); Wilmet (1981)) to propose constraints based on different dimensions of language (syntax, semantics, phonology, morphology, pragmatics...), but most of them are only trends and it is very difficult to draw a general picture of the phenomenon. We thus proposed in a previous work (Thuilier et al. (2010)) a prediction model built on data from the French Treebank corpus (FTB) (Abeillé et al. (2003)), along the lines of Bresnan et al. (2007), based on most of the proposed constraints, to test the contribution weight of each of them and the impact of their interaction .

Even if results were encouraging, several facts were outlined: first, if introspection leads to the conclusion that most adjectives alternate, usage shows much more fixity: less than 10% of the adjectives in our data are actually in both positions. This suggests that locutors' mental representations for every item are in fact much stronger for a given position compared to its counterpart. Second, some constraints dont have a significant effect in our model. Yet, a qualitative exam showed that they are greatly correlated to a position for specific adjectives. For instance, *différent* 'different', which appears equally in both positions, displays for each position a pattern linked to the nature of the determiner, whereas the type of determiner is not relevant at a more general level. More precisely, we observe a strong cooccurrence of a definite determiner with *différent* in anteposition and a similar pattern between the indefinite determiner and the postposed adjective. This indicates that some constraints are relevant, but only for specific adjectives.

Like (Bybee and Mcclelland (2005); Goldberg (2006); Croft (2001)) we believe that locutors' knowledge is based on much more specific information on the item, but also on the context in which it appears: formal characteristics of a particular sequence, frequency of use, distributionality... This work focuses on a qualitative study, on another corpus (ER (2010) 147,934,722 tokens), of the adjectives identified as displaying this alternation in the FTB, the aim being to better understand their functioning, and to propose a model that will better handle actual usage in the FTB. Our methodology is inspired by Gries and Stefanowitsch (2004): we search which lexical elements occur in a particular pattern and identify their attraction strength to the construction by means of a statistical analysis. Results show different types of behaviour on a continuum going from very fixed general patterns to more alternation. A first class of adjectives appears to be very close to the fixed position adjectives: they massively prefer a given position, except in a few cases of idiomatic/collocational sequences. For instance, *majeur* 'major' is always postposed to the noun, unless it is in the sequence *majeure partie* 'most part'.

In a second class, we still see a great preference for a given position but the alternating cases show less fixity. Two patterns may be seen within this class: the alternate order either corresponds to a use driven by one major constraint, or to a cumulation/interaction of different constraints. For the first pattern, the constraint involved is not necessarilly the same for every adjective. It can be semantically grounded, which usually leads to distinct nominal paradigms combining with the adjective given its position (e.g. *ancien* : '*ancien*+N' means 'former', 'N+*ancien*' means 'old'), or it can be based on other devices, as illustrated by *différent*. The data of the ER corpus differs from the FTB by the fact that it shows a strong preference for anteposition. The findings concerning the definite/indefinite nature of the NP were however confirmed, with 97,5% cases of definite in anteposition and 96% of indefinite in postposition. The adjective *nouveau*

'new' illustrates the second pattern: it prefers anteposition, but postposition is favoured when combined with a concrete noun, or enhanced when the NP is complement of a preposition.

The third class concerns adjectives for which the general pattern shows a much weaker preference, if any, for one position over the other. There are however differences in usage for each position. The two patterns outlined for the preceeding class may also apply here: for instance, the placement of *principal* 'main' depends on a cumulation of information based on different grounds, whereas the semantics of *pauvre* (pitiful + N/N + not rich) clearly separates the uses.

To sum up, the problem of adjective alternation does not appear to depend on general principles, it seems tightly linked to the item and to the NP within which it appears. Our study shows that the constraints previously proposed play a role in the placement of adjectives, but on a more specific level than the broad NP. In other words, locutors speak according to more specific patterns present in their linguistic knowledge.

References

Abeillé, A., L. Clément, and F. Toussenel (2003). Building a treebank for french. In *Treebanks*. Dordrecht: Kluwer.

Abeillé, A. and D. Godard (1999). La position de l'adjectif épithète en français : le poids des mots. *Recherches linguistiques de Vincennes 28*, 9–32.

Bresnan, J., A. Cueni, T. Nikitina, and H. Baayen. (2007). Predicting the dative alternation. In G. Boume, I. Kraemer, and J. Zwarts (Eds.), *Cognitive Foundations of Interpretation*. Amsterdam: Royal Netherlands Academy of Science.

Bybee, J. and J. L. Mcclelland (2005). Alternatives to the combinatorial paradigm of linguistic theory based on domain general principles of human cognition. *The Linguistic Review 22*, 381–410.

Croft, W. (2001). *Radical Construction Grammar*. Oxford University Press.

ER, C. (2010). http://www.cnrtl.fr/corpus/estrepublicain/. *ATLIF*.

Forsgren, M. (1978). *La place de l'adjectif épithète en français contemporain, étude quantitative et sémantique*. Stockholm: Almqvist & Wilksell.

Goldberg, A. (2006). *Constructions at Work: the nature of generalization in language*. Oxford University Press.

Gries, S. T. and A. Stefanowitsch (2004). Extending collostructional analysis: a corpus-based perspective on 'alternations'. *International Journal of Corpus Linguistics 9(1)*, 97–129.

Thuilier, J., G. Fox, and B. Crabbé (2010). Prédire la position de l'adjectif épithète en français : approche quantitative. *Linguisticae Investigationes*.

Wilmet, M. (1981). La place de l'épithète qualificative en français contemporain : étude grammaticale et stylistique. *Revue de linguistique romane 45*, 17–73.

Combining weight and discourse factors to predict relative clause extraposition in English

Elaine J. Francis
Purdue University

Laura A. Michaelis
University of Colorado at Boulder

In Relative Clause Extraposition (henceforth RCE), a subject-modifying clause occurs following the VP, as in (1a), rather than adjacent to the noun it modifies, as in (1b).

(1)   a. <u>New sets</u> soon appeared <u>that were able to receive all the TV channels</u>. (ICE-GB corpus)
         b. <u>New sets that were able to receive all the TV channels </u>soon appeared.

Structurally, RCE is unusual in that the modifying clause is not a sister to the N' head. Nevertheless, this construction occurs naturally in both formal and informal styles of spoken and written English.

Why should English allow (and sometimes prefer) a discontinuous structure as in (1a) when an adjacent ordering can express the same meaning? Most previous research has focused on discourse-based explanation: that RCE is preferred when the subject NP is focal and/or the VP is backgrounded (Huck & Na 1990; Kuno & Takami 2004; Rochemont & Culicover 1990; Takami 1999). This explanation accounts for the tendency of RCE tokens to contain unaccusative predicates and indefinite subject NPs (Lambrecht 1994). However, a recent corpus and experimental study by Francis (2010) offered a different motivation for RCE: RCE is preferred to the extent that the RC is longer than the VP, because late placement of "heavy" constituents facilitates language production and comprehension (Hawkins 2004, Wasow 2002). In the Francis study, both corpus and reading time data showed an advantage for RCE over non-RCE structure when the VP was short and the RC was long.

The present study, which combines a corpus analysis with two psycholinguistic experiments, shows that discourse and weight-based explanations are not mutually exclusive: both are important for predicting RCE. A binary logistic regression analysis of RCE and non-RCE sentences from the ICE-GB corpus (n = 345) reveals that ratio of VP length to RC length is the strongest predictor of RCE ($X^2(1)$ = 25.37, p < 0.01), followed by definiteness ($X^2(1)$ = 11.78, p < 0.01) and predicate type ($X^2(1)$ = 5.57, p = 0.018). As shown in Figure 1, there is a strong preference for RCE when the weight ratio is less than 0.2 (i.e. the RC is more than five times longer than the VP), and a strong dispreference for RCE when the weight ratio is greater than 0.8. However, when the weight ratio is between 0.2 and 0.8, discourse-pragmatic factors become operative: the choice of RCE is determined primarily by definiteness and predicate type. For definite subject NPs, RCE is preferred only when the weight ratio is less than 0.2 (Figure 2), whereas for indefinite subject NPs occurring with a passive or unaccusative predicate, RCE is preferred with weight ratios up to 0.8 (Figure 3). Critically, discourse newness does not distinguish RCE from non-RCE sentences, since both types of tokens typically contain discourse-new subjects and predicates. Instead, RCE tokens are distinguished from non-RCE tokens by morphological form: RCE tokens typically contain a passive or unaccusative predicate and an indefinite or bare subject NP.

Two psycholinguistic experiments (in progress) follow up on these corpus findings. Both experiments use sentence materials which manipulate three factors: definiteness, RC length (5 words vs. 12 words), and VP length (2 words vs. 5 words). Predicate type is held constant, with a passive predicate in all experimental sentences. The first experiment, which consists of 64 experimental sentences and 96 filler sentences, measures structural preference in reading. Following Rosenbach (2005), participants are asked to choose which of two versions of a sentence (RCE vs. non-RCE) sounds more natural. The second experiment uses similar sentence materials to the first experiment to measure structural preference in production. Following Yamashita & Chang (2001), participants see sentence constituents randomly distributed on the computer screen, and they must formulate and speak a sentence using all of the parts. Preliminary results from thirty participants in the first experiment show very similar trends to the corpus data. As shown in Figure 4, RCE was preferred most often (74%) when the VP was short,

the RC was long, and the NP was indefinite, and least often when the VP was long, the RC was short, and the NP was definite (31%). A repeated measures ANOVA shows highly significant main effects for both RC length ($F = 31.85$, $p < 0.01$) and definiteness ($F = 58.09$, $p < 0.01$).

In conclusion, our corpus results and preliminary experimental results suggest that grammatical weight sets (soft) limits on RCE based on ease of processing, while discourse factors determine choice of RCE within these limits.

Figure 1: Percent extraposed by ratio of VP to RC length (ICE-GB corpus)

	<0.2 (21 of 23)	0.2-0.4 (14 of 34)	0.4-0.6 (6 of 27)	0.6-0.8 (6 of 32)	0.8-1.0 (1 of 18)	1.0+ (5 of 211)
%	91.30%	41.18%	22.22%	18.75%	5.56%	2.37%
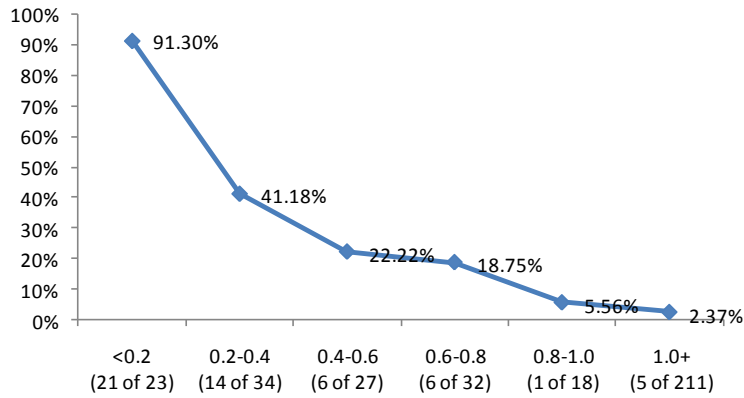
Figure 2: Percent extraposed by ratio of VP to RC length for definite subject NPs only (ICE-GB corpus)

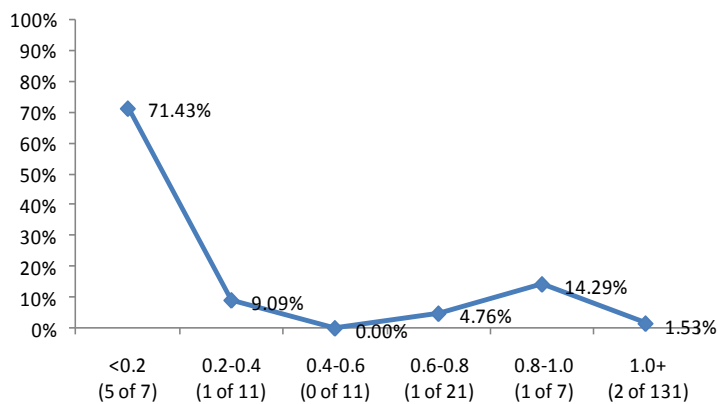|	<0.2 (5 of 7)	0.2-0.4 (1 of 11)	0.4-0.6 (0 of 11)	0.6-0.8 (1 of 21)	0.8-1.0 (1 of 7)	1.0+ (2 of 131)
%	71.43%	9.09%	0.00%	4.76%	14.29%	1.53%

Figure 3: Percent extraposed by ratio of VP to RC length for indefinite subject NPs with passive or unaccusative predicate only (ICE-GB corpus)
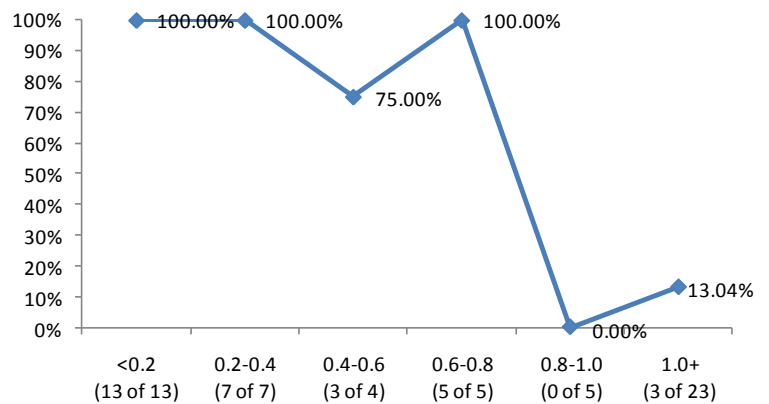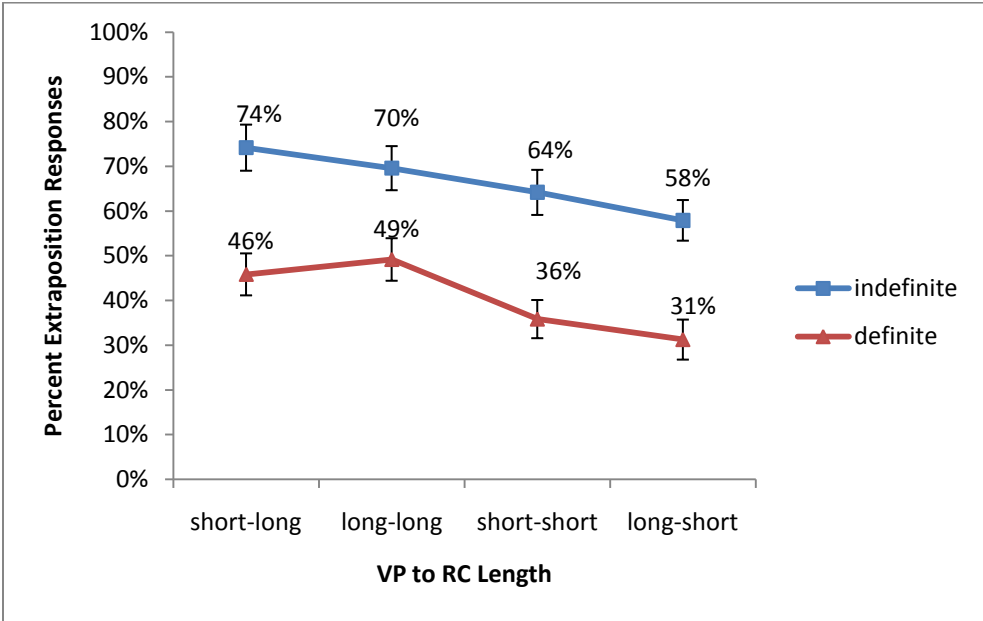
	<0.2 (13 of 13)	0.2-0.4 (7 of 7)	0.4-0.6 (3 of 4)	0.6-0.8 (5 of 5)	0.8-1.0 (0 of 5)	1.0+ (3 of 23)
%	100.00%	100.00%	75.00%	100.00%	0.00%	13.04%

Figure 4: Percent extraposition responses in a structural preference task
(error bars represent standard error)

Ljudmila Geist, Dolgor Guntsetseg, Klaus von Heusinger (University of Stuttgart)
Differential Object Marking competes with Dative Alternation

In this talk, we discuss functional motivations for obligatory and optional Differential Object Marking in Mongolian. We analyse the interaction between Differential Object Marking and the Dative Alternation construction, which have both been assumed to promote arguments. We show that these devices can block each other, but only if the object case marker is optional. This suggests that the object case marker is semantically active only if it is optional. If it is obligatory due to the NP type, it does not make a relevant semantic contribution.

Argument alternations such as Dative Alternation (1) have been widely assumed to be devices of argument promotion (cf. Levin & Rappaport 2005). According to the literature (Bresnan et al. 2007, Arnold et al. 2000 and Erteschik-Shir 1979) the direct object in the PO-construction is more discourse prominent than the prepositional argument in the sense that it is more topical. In the DO construction the direct object is less prominent than the dative object. In the following we focus on Dative Alternation in Mongolian, as in (2), which is like English, except that the linear order of the arguments is the same in both constructions.

In addition to the case frame provided by the construction, Mongolian has another device of argument promotion: Differential Object Marking (DOM). DOM is the phenomenon, found in many languages, that the direct object may or may not be case marked (Aissen 2003, Bossong 1985, Comrie 1975). In Mongolian, DOM depends primarily on definiteness, cf. the Definiteness Scale in (3). If the direct object is realized as a personal pronoun, a proper name or a definite NP, the Acc case marker is *obligatory*, cf. (4). As shown in (5), the Acc marking of indefinite NPs is *optional*. At least with indefinite NPs, the semantic contribution of the case marker is assumed to be specificity, as in Turkish (Enç 1991, von Heusinger & Kornfilt 2005). An indefinite NP without case is semantically unmarked and incorporated NPs are not case marked (Guntsetseg 2009). The distinction between obligatory vs. optional case marking is closely related to the one between split vs. fluid case alternations proposed by Dixon (1994) and reconsidered in de Hoop & Malchukov (2007). Split case is normally assumed to be grammatically required and to have no semantic contribution. In Mongolian, however, it is not clear whether the obligatory case marker on definite NPs is semantically vacuous and is just grammatically required or whether it has a semantic contribution signalling specificity. In principle, the obligatoriness of the case marking of definite NPs could be semantically motivated in the following way: Since in general definite NPs are specific, the case marker as a signal of specificity is obligatory with them. Thus, two different functional motivations for obligatory case marking of definite NPs are possible: a semantic one (specificity marking) and a grammatical one (no semantic contribution).

To determine the motivation for DOM with definite NPs we will examine the interaction of obligatory and optional case marking of direct objects with the Dative Alternation case frame. In (6) the case of indefinite direct objects is considered: in the PO-construction the direct object can be marked with Acc while in the DO-construction the Acc suffix on the direct object is dispreferred. The decreased acceptability of the Acc marker in the DO-construction can be explained in the following way: the DO-construction (6b) demotes the direct object while the Acc marker signals its promotion. This divergence leads to a conflict. No such conflict emerges in the PO-construction (6a), since the PO case frame and the object case marker have the same function of promoting the direct object.

Interestingly, definite NPs obligatorily marked with Acc exhibit no restrictions in the interaction with the Dative Alternation case frame in (2). In (2b) no conflict arises between the case frame and the DOM marker. This suggests that unlike optional case marking of indefinite NPs, the *obligatory* case marking of definite NPs has no impact on argument prominence, hence it has no semantic contribution.

To conclude, the two argument promotion devices, the case frame established by the construction and the object case marker, come into conflict with each other if they promote different arguments. However, such a conflict in promotion arises only if the object case marker is optional because only in this case does it have a semantic contribution signalling specificity. The obligatory case

marker on definite NPs occurs for purely grammatical reasons. It is semantically vacuous and has no effect on argument promotion.

(1) a. The student sent *the mail* to the dean.   [PO-construction]

    b. The student sent the dean *the mail.*   [DO-construction]

(2) a. Bi zahiral   ruu   *ene   mail-ig*   ilgee-sen.   [PO-construction]
     I   dean   to   this   mail-ACC   send-PST
     'I sent the mail to the dean.'

    b. Bi zahiral-d   *ene   mail-ig*   ilgee-sen.   [DO-construction]
     I   dean -DAT   this   mail-ACC   send-PST
     'I sent the dean the mail.'

(3) Definiteness Scale and DOM in Mongolian

pers. pron. >	proper noun >	definite NP >	indefinite NP >	incorporat. NPs
obligatory case marking			optional case marking	case marking is ungrammatical

(4) Bi   tedn-/Bold-/ene hun*(-ig)   har-san   [obligatory case marking]
    I   3PS.PL/Tuya/this person-ACC   see-PST
    'I saw them/Tuya/this person.'

(5) Bi neg   ohin(-ig)   har-san.   [optional case marking]
    I   a   girl-ACC   see-PST
    'I saw a girl.'

(6) a. Bi zahiral ruu   *neg   mail-(ig)*   ilgee-sen.   [PO-construction]
     I   dean   to   a   mail-ACC   send-PST
     'I sent a mail to the dean.'

    b. Bi   zahiral-d   *neg   mail-#ig*   ilgee-sen.   [DO-construction]
     I   dean-DAT   a   mail-ACC   send-PST
     'I sent the dean a mail.'

References

Aissen, J. 2003. Differential Object Marking: Iconicity vs. Economy. Natural Language and Linguistic Theory 21. 435-483.

Arnold, J. E., Wasow, Th., Losongco, A., & Ginstrom, R 2000. Heaviness vs. newness: The effects of structural complexity and discourse status on constituent ordering. - Bresnan et al. 2007. Predicting the Dative Alternation.

Bossong, G. 1985. Empirische Universalienforschung. Differentielle Objektmarkierung in den neuiranischen Sprachen. Tübingen: Narr

Comrie, B. 1975. Definite and animate direct objects: a natural class. Linguistica Silesiona 3. 13-21. Lingua 117, 1636–1656

Dixon, R.M.W., 1994. Ergativity. Cambridge University Press, Cambridge.

Enç, M. 1991. The semantics of specificity. Linguistic Inquiry 22. 1-25.

Erteschik-Shir, N. 1979. Discourse constraints on dative movement. In Syntax and semantics 12: Discourse and syntax, ed. T. Givón, 441-467. New York: Academic Press.

Guntsetseg, D. 2009. Differential Object Marking in (Khalkha-)Mongolian. In: R. Shibagaki & R. Vermeulen (eds.). Proceedings of the 5th Workshop on Altaic Formal Linguistics (WAFL 5). MIT Working Papers in Linguistics (MWPL) 58. 115-129.

von Heusinger, K. & Kornfilt, J. 2005. The case of the direct object in Turkish: Semantics, Syntax and Morphology. Turkic Languages, 9, 3-44.

de Hoop, H. & Malchukov, A. 2007. On fluid differential case marking: A bidirectional OT approach.

Levin, B. & Rappaport Hovav M. 2005. Argument realization. Cambridge: Cambridge University Press.

SVO and OVS – really a case of competing motivations?
# Evidence from German Child Language

Eileen Graf[1,2], Anna Theakston[1], Elena Lieven[2] & Michael Tomasello[2]
[1]The University of Manchester, [2]Max Planck Institute for Evolutionary Anthropology

In German, the most frequent and pragmatically neutral – i.e., *unmarked* – word order is SVO. Word orders that deviate from this pattern are generally considered *marked*: they fulfil different functions. With regard to SVO, Du Bois' (1987) account of Preferred Argument Structure captures the cross-linguistically valid statistical tendency of subjects of SVO transitives to tend to contain known or recurring information and of objects to reference new information. Information structurally, this phenomenon is described in a similar way: prototypical SVO transitives are predicate-focus constructions (Lambrecht, 1996) with a topical (i.e., *given*) subject and a focal (i.e., *new*) object. Since subjects represent given information, they are referred to with pronouns – or can in fact be dropped entirely, as is the case in so-called pro-drop languages (Chomsky, 1981). This information structural distribution leads to a general unevenness in the omission of referents: subjects are omitted more often than objects. This subject-object asymmetry is not only well attested in adult language use, but is also a pervasive phenomenon in child language – in both pro-drop and non pro-drop languages. However, given that in these transitive constructions subjects are topical and objects are focal, and thus exhibit different information structural properties, an *in situ* SVO comparison presents a far from ideal test case for the subject-object asymmetry.

Word order in German is more variable than in English and allows for both SVO and OVS constructions so that either S or O can assume topic status. Null references for both subjects and objects in utterance initial position are felicitous in adult spoken German. We assessed the relation between word order and argument omission with an elicited production study. German-speaking children of two age groups ([1] M=3;4, [2] M=3;8) completed a sticker book for a 3rd person referent (an elephant). Some stickers in the book were missing while some were already in place. The experimenter drew a sticker and then asked the child to check the elephant's book. She used a model utterance in order to elicit a response, either in SVO (*Der hat den oder der will den.* "He's got it or he needs it.") or in OVS (*Den will der oder den hat der.* "This one he's needs or this one he's got."). The results indicate that both age groups omit both subject and object referents according to their position in the sentence: Initial arguments are omitted significantly more often than final arguments (see Figure 1.). Whereas the older children omit initial subjects and objects alike, younger children omit initial objects more often than subjects. Thus, when information structure is taken into account, the subject-object asymmetry is neutralised and arguments are omitted due to sentence position and information status. The marked word order OVS behaves just like the unmarked SVO word order; thus, with regard to information structure, these different word orders do not compete, but rather, they converge on a similar function: [topic – action – secondary topic/focus]. We speculate that two different functions compete for both SVO *and* OVS word orders in German. Initial objects in German OVS sentences cannot only assume topic-hood, they can also serve to introduce new information (*foci*). Subjects serve the same function: [focus – action – topic]. Thus, information structural factors might be the real determinants of the patterns of use for these two different word orders in German.

Figure 1.

Argument omission as a function of sentence position and age
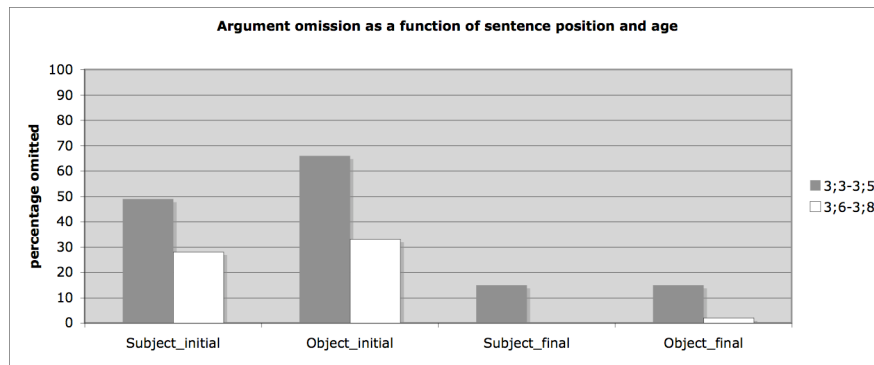
References.
(1)   Chomsky, Noam (1981). Lectures on Government and Binding: The Pisa Lectures. Holland: Foris Publications. Reprint. 7th Edition. Berlin and New York: Mouton de Gruyter, 1993.
(2)   DuBois, J.W (1987). The discourse basis of ergativity. Language 63(4): 805-855.
(3)   Lambrecht, Knud (1994). Information Structure and Sentence Form. Cambridge: CUP.

Competing Factors for Language Acquisition in Diglossic Environments: Languages, Metalanguages and the Socio-Syntax of Development Hypothesis

Kleanthes K. Grohmann & Evelina Leivada (University of Cyprus)

The linguistic reality of Cyprus is diglossic (e.g. Papapavlou & Pavlou 1998, Tsiplakou *et al.* 2006; for a recent overview, see Arvaniti, in press), where the 'low' variety of Cypriot Greek (CG) co-exists with the 'high' Standard Modern Greek (SMG), which is also the variety spoken in Greece (where no generalized diglossia exists). The two varieties have been argued to differ in terms of clitic placement in declaratives with CG and SMG requiring enclisis and proclisis, respectively. Grohmann *et al.* (2010) investigate the acquisition of object clitics in monolingual Greek Cypriot typically developing (TD) and language-impaired (LI) children aged 3;0–5;11, and conclude that object clitics are acquired by age 3. Leivada *et al.* (forthcoming) readdress the issue of acquisition of object clitic placement, yet approaching it from the other aspect of diglossia in Cyprus, that is, by examining the placement of object clitics in children from mainland Greece, native in the 'high' variety, as well as Greek Cypriot children, by presenting them with two versions of the same task, one for each variety. Both studies employed a picture-based task from COST Action A33 (Varlokosta *et al.*, to appear) in which children had to complete 12 sentences, inside a *because*-island, by producing a verb and direct object clitic, similar to Tsakali & Wexler's (2003) elicited production of clitic-shaped D-linked definite objects, replicating Schaeffer (1997).

We discuss the findings of both studies and draw a comparison of the alternative proposals made with respect to the linguistic development of these children, who despite living in the same linguistic environment follow different patterns of acquisition in terms of deciphering linguistic input. The fact that some Greek Cypriot children who performed 100% non-target placement in the CG version commented on their performance or on the experiment's pictures in CG, suggests that especially in bilingual populations, children are metalinguistically aware. If Crain & Fodor (1987) are right in suggesting that metalanguage is innate as a medium of representation used to encode observations about language, the link between enhanced metalinguistic abilities and multilingualism established in Bialystock (1991) and Jessner (2005) becomes relevant also for diglossic environments like the one in Cyprus (see Ibrahim 2009 for Arabic). The question raised here is whether the performance of Greek Cypriot children is an instance of code-mixing, as a result of bidialectism, or a(n) (un)conscious demonstration of metalinguistic awareness driven by linguistic anxiety to (show that they are able to) speak 'properly'. Regarding Greek Cypriot children, entrance in public school could explain the sudden rise of proclisis percentages in Greek Cypriot children at age 4;6–5;11. This can be associated with meta- or sociolinguistic factors; a suggested first factor is what we call the Socio-Syntax of Development Hypothesis. Findings of Leivada *et al.* (see Tables 1–2) do not relate this performance with sociolinguistic factors, such as the school place as a social institution or the social unfamiliarity of the children with the investigator, that could result in the use of 'formal' language, i.e. SMG and proclisis. Hence, the same sociolinguistic factors were relevant for Greek Cypriot children, aged 4;6–5;11, in both testings; still, they significantly changed from enclisis to proclisis when taking the different versions of the test. Also, although the Socio-Syntax of Development Hypothesis works for Greek Cypriot children, it remains to be explained why the socio-syntactic development of SMG-speaking children does not go through the same stages. Table 1 shows that, while CG-speaking children of age 4;6–5;11 get affected by input coming from school, SMG-speaking children do not: Their clitic placement remains unaltered, despite CG input from classmates.

Following Bates & MacWhinney's (1987) view that there is very little evidence for a single sequence of acquisition of grammatical forms, we examine different patterns of (the acquisition of) clitic placement in SMG and CG and suggest that competing factors are relevant for the socio-syntactic development of different populations in diglossic environments like the one in Cyprus. Our current view of the Socio-Syntax of Development Hypothesis captures the existence of these factors by assuming that the linguistic development of Greek Cypriot children primarily involves the need to resolve linguistic anxiety and adjust to the 'high' variety. This is a need SMG-speaking children lack: Their socio-syntactic development involves the need to decipher different sources of input so as to remain to the 'high' variety.

Age groups	Mainland Greek children (speakers of SMG)				Greek Cypriot children (speakers of CG)			
	SMG version of the test		CG version of the test		SMG version of the test		CG version of the test	
	clitic production	target placement (proclisis)	clitic production	target placement (enclisis)	clitic production	target placement (proclisis)	clitic production	target placement (enclisis)
3;0-4;5	78.6%	100%	79.8%	2.9%	91.7%	46.5%	72.2%	96.1%
4;6-5;11	91.7%	100%	96.7%	0.8%	97.5%	98.3%	90.8%	39.4%
6;0-7;5	95.0%	100%	99.2%	0%	98.3%	83.1%	96.7%	50.8%
7;6-8;11	100%	99.2%	100%	3.3%	99.1%	100%	94.4%	37.2%

Table 1: Clitic production and placement of SMG and CG speaking children (Leivada *et al.*, forthcoming)

References

Arvaniti, A. In press. Linguistic practices in Cyprus and the emergence of Cypriot Standard Greek. *Mediterranean Language Review*.

Bates, E. & B. MacWhinney. 1987. Competition, variation, and language learning. In B. MacWhinney (ed.), *Mechanisms of Language Acquisition: Proceedings of the 20th Annual Carnegie-Mellon Conference on Cognition*. Hillsdale, NJ; London: Lawrence Erlbaum, 157–193.

Bialystock, E. 1991. Metalinguistic dimensions of bilingual language proficiency. In E. Bialystock (ed.), *Language Processing in Bilingual Children*. Cambridge: Cambridge University Press, 113–140.

Crain, S. & J. D. Fodor. 1987. Simplicity and generality of rules in language acquisition. In B. MacWhinney (ed.), *Mechanisms of Language Acquisition: Proceedings of the 20th Annual Carnegie-Mellon Conference on Cognition*. Hillsdale, NJ; London: Lawrence Erlbaum, 35–63.

COST Action A33. *Crosslinguistically Robust Stages of Children's Linguistic Performance*. Principal Investigator: U. Sauerland, COST funded period: 2006–2010.

Grohmann, K. K., E. Theodorou, N. Pavlou & E. Leivada. 2010. Object clitics in typically-developing and language-impaired Cypriot Greek children. Poster presented at *Let the Children Speak: Learning of Critical Language Skills across 25 Languages*. Wellcome Trust, London, January 22–24.

Ibrahim, R. 2009. The cognitive basis of diglossia in Arabic: Evidence from a repetition priming study within and between languages. *Psychology Research and Behaviour Management* 2: 93–105.

Jessner, U. 2005. Multilingual metalanguage, or the way multilinguals talk about their languages. *Language Awareness* 14: 56–68.

Leivada, E., A. Epistithiou & P. Mavroudi. Forthcoming. (Meta)language(s) or bidialectism? Acquisition of clitic placement by mainland Greeks, Greek Cypriots and biethnics in the diglossic context of Cyprus. Paper presented at *Generative Approaches to Contrastive Linguistics 4*, Nicosia.

Papapavlou, A. N. & P. Pavlou. 1998. A review of the sociolinguistic aspects of the Greek Cypriot dialect. *Journal of Multilingual and Multicultural Development* 19: 212–220.

Schaeffer, J. 1997. *Direct Object Scrambling in Dutch and Italian Child Language*. PhD dissertation, University of California, Los Angeles.

Tsakali, V. & K. Wexler. 2003. Why children omit clitics in some languages but not in others? New evidence from Greek. *Proceedings of GALA* 2: 493–504.

Tsiplakou, S., A. N. Papapavlou, P. Pavlou & M. Katsoyannou. 2006. Levelling, *koineization* and their implications for bidialectism. In F. Hinskens (ed,), *Language Variation: European Perspectives: Selected papers from the Third International Conference on Language Variation in Europe (ICLaVE 3), Amsterdam, June 2005*. Amsterdam: John Benjamins, 265–276.

Varlokosta, S. and many co-authors. To appear. A cross-linguistic study of the acquisition of pronoun and clitic production. *Language Acquisition*.

German children use prosody to identify participant roles in transitive sentences

Thomas Grünloh[1,2], Elena Lieven[1], Michael Tomasello[1]

[1] Max Planck Institute for Evolutionary Anthropology, Leipzig
[2] IfL Phonetics, University of Cologne

In language acquisition, a construction of particular importance is the basic transitive construction, prototypically used to indicate an agent acting on a patient, as in ''The Flomer weefs the Miemel''. To interpret such transitive constructions one needs to understand and to distinguish the different roles of participants and thus the grammatical conventions used to mark these in the particular language being learned. In most languages, the transitive construction marks the roles of two participants with multiple, redundant cues. (e.g., word order, case marking or animacy). For German, a language with case marking and the possibility of OVS word order, Dittmar et al. (2008) found that two year olds only understood transitives with novel verbs, where several cues supported each other. Five year olds were able to use word order by itself but not case marking and only 7-year-olds behaved like adults by relying on case marking over word order when these two cues conflicted (e.g. "Den (+accusative) Löwen wieft der (+nominative) Hund" – "The (+accusative) lion is weefing the (+nominative) dog") .

However, most studies examining children's understanding of transitive constructions focus on the morphosyntactic properties of sentences and ignore an additional cue: prosody. But it has been established that different prosodic realizations guide listeners' interpretation of ambiguous sentences. Grice, Weber & Crocker (2006) found that adult-listeners use prosodic information in the interpretation of ambiguous SVO and OVS sentences when no clear morphological information is available.

In the current study we investigate whether or not German children aged five use prosody for the assignment of participant roles in order to distinguish their semantic roles, as has been found for adults. Using a video-pointing task, we embedded transitive OVS utterances in a natural context and presented these utterances as either clearly case-marked (e.g. "Den (+accusative) Hund wieft der (+nominative) Hase") or ambiguous (e.g. "Die (+accusative) Katze wieft die (+nominative) Kuh"). In order to examine the specific role of prosody for children in resolving the semantic function of the participants, the intonational realization of these constructions was either flat or, to support the syntactic marking of the utterance, characterized by a strong, contrastive pitch accent on the first Nominal phrase.

The results show that the prosodic cue has a main effect for children for the assignment of participant roles in transitive OVS-utterances ($F(1,15)=5.8$, $p= 0.029$). Children were better in judging the correct agent acting on the correct patient when this was clearly marked by intonation compared to unnatural realizations. Even when no clear case marking was available, children understood participant roles significantly better by using the prosodic cue ($p=0.009$) (see Figure 1). These findings show that, when reliable cues contradict each other, 5-year-old children are still able to understand the semantic roles in transitive OVS sentences when appropriate intonation is available. We argue that, to fully understand young children's skills at interpreting sentences online, the role of intonation must be taken into account.

Figure 1:

Proportion of judging NP1 as object
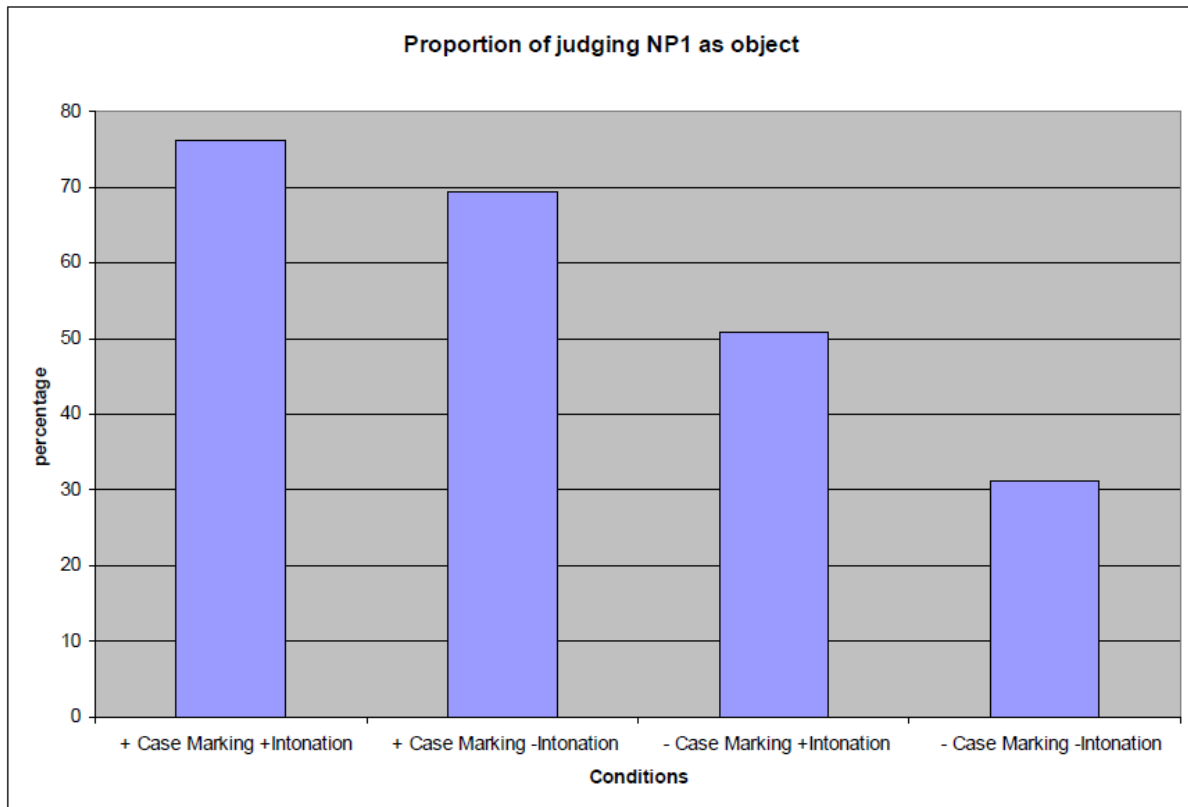
References:

Dittmar, M., Abbot-Smith, K., Lieven, E., & Tomasello, M. (2008). German children's comprehension of word order and case marking in causative sentences. Child Development, 79 (4), 1152-1167.

Weber, A., Grice, M., & Crocker, M. W. (2006). The role of prosody in the interpretation of structural ambiguities: a study of anticipatory eye movements. Cognition, 99, B63-B72.

On system pressure competing with economic motivation

Martin Haspelmath

Linguists have long noted that languages structures provide massive evidence for a least-effort principle, and that this is counteracted by the speaker's desire to make herself understood by the hearer. Thus, Gabelentz's *Bequemlichkeit* (laziness, ease of production) and *Deutlichkeit* (clarity, ease of perception) are engaged in a constant tug of war, with no winner. When there are systematic frequency differences between functionally similar and contrasting elements, this situation gives rise to systematic formal asymmetries: The frequent elements tend to be expressed in a shorter way (or by zero), while the rare elements tend to be expressed in a longer way (these are the classical economy effects). This was recognized for grammatical patterns by Greenberg (1966) and much subsequent work (e.g. Croft 2003, Haspelmath 2008a). For example, plurals are longer than singulars (which are generally zero), alienable possession is coded in a longer way than inalienable possession (which is mostly zero-coded), and direct-object reflexives tend to be longer than possessive reflexives (Haspelmath 2008b). The reason is that plurals are generally rarer than singulars, alienables are more rarely possessed than inalienables, and direct objects are more rarely reflexive than possessives.

However, what frequencies are relevant? If we look at the frequencies of individual items, then we often find exceptions: Plural-prominent nouns such as 'arm', 'tooth' and 'tear' tend to be more frequent in the plural (cf. Tiersma 1982), but still the plural forms are longer in many languages. (Not in all languages, of course: Welsh, for instance, has longer singulars in many such nouns, e.g. *pluen* 'feather', *plu* 'feathers'.) The explanation for this is **system pressure**: Plurals of plural-prominent nouns behave like plurals of singular-prominent nouns on the analogy with the latter -- more nouns are singular-prominent, and their higher type frequency leads the plural-prominent nouns to follow their pattern.

Thus, processing-based motivating factors such as *Bequemlichkeit* and *Deutlichkeit* are not sufficient to explain the actual patterns of languages. In addition to processing optimization, a kind of system optimization must also play an important role in shaping grammars. This was recognized by the Neogrammarians for the interaction of phonology and morphology (where the competition of *Lautgesetz* with *Analogie* was seen as crucial), and it was recognized by OT theorists, who supplemented FAITHFULNESS (i.e. clarity) and MARKEDNESS (i.e. laziness) with OUTPUT-OUTPUT CORRESPONDENCE to account for paradigm uniformity effects. In this talk, I focus on the role of system pressure in explaining the limits of economy-based explanations.

References

Croft, William. 2003. *Typology and universals*. 2nd ed. Cambridge: Cambridge Univ Press.

Greenberg, Joseph H. 1966. *Language universals, with special reference to feature hierarchies*. The Hague: Mouton.

Haspelmath, Martin. 2008a. Frequency vs. iconicity in explaining grammatical asymmetries. *Cognitive Linguistics* 19(1). 1–33.

Haspelmath, Martin. 2008b. A frequentist explanation of some universals of reflexive marking. *Linguistic Discovery* 6(1). 40-63.

Tiersma, Peter Meijes. 1982. Local and General Markedness. *Language* 58(4). 832-849.

Competing motivations in grammars, performance and learning: Common principles and patterns in three areas of language

John A. Hawkins, Cambridge University & UC Davis

This paper investigates the way in which different principles cooperate and compete in three areas of the language sciences: in cross-linguistic variation; in performance selections from competing structures in languages with choices; and in stages of (second) language learning. It is proposed that the rules of interaction between principles, as well as many of the basic principles themselves, are shared across these areas. Quantitative data are given to illustrate this, involving numbers of grammars in typological language samples, performance selections in corpora, and second language learning data from the Cambridge Learner Corpus of English (CLC). Three very general rules of interaction are proposed, supported by these quantitative data.

Rule One asserts that a principle P will apply to define and predict a set of outputs {P}, as opposed to a competing set {P'}, in proportion to the specified degree of preference that P defines for {P} over {P'}. This is illustrated with data involving degrees of syntactic complexity and weight that impact linear ordering in performance, and with quantities of grammars that have conventionalized certain ordering preferences. Both sets of data are claimed to follow from the Minimize Domains principle of Hawkins (2004). For second language learning, degrees of frequency in the input (as revealed by the British National Corpus) are shown to correlate precisely with order of acquisition for a wide range of grammatical constructions in the CLC, instantiating the Maximize Frequently Occurring Properties principle of Hawkins & Filipović (2010). These gradient principles predict larger sets of outputs {P} in proportion to the inherent strength of the preference that each defines for the relevant outputs.

Rule Two asserts that the more principles there are that cooperate to predict a common set of outputs {P}, as opposed to a proper subset or complement set {P'} motivated by fewer principles, the greater will be the preference for and size of {P}. Supporting performance data are given that involve the stronger preference in English for post-verbal prepositional phrases and particles adjacent to a verb when that adjacency is supported both by syntactic weight and by lexical-semantic dependencies with the verb, rather than by just one of these principles alone. Grammatical support comes from certain basic word order types that are supported by three versus two versus just one preference principle, with correlating quantities of grammars. And learning that is supported both by positive transfer from the L1 and by frequency in the input is earlier, more productive and more error-free than learning supported by one or the other alone.

Rule Three asserts that when there is competition between two principles P and P', where each predicts a (partially) different set of outputs {P} and {P'} respectively, then each will apply (i) in proportion to its degree of preference, as in Rule One. This is illustrated with grammatical data involving the degree of head finality in grammars: the more rigidly head-final they are, the more opposing principles that motivate non-head-final structures (like filler before gap relative clauses) are defeated (resulting in prenominal relative clauses). Further rules of resolution for competing principles include: (ii) the size of the total set of outputs predicted by P and P', which properly include {P} and {P'} respectively, will determine the relative strength of P and P' in competition

structures to which both apply. In other words, the greater the applicability of P versus P' in general, and the more structural instances to which each applies, the larger will be the set {P} or {P'} in actual competitions. This will be illustrated with weight-based orderings of prepositional phrases in the post-verbal domain in English in competition with lexical-semantic-based orderings. It will also be illustrated with learning data in which the more general preference for simpler structures in early learning outweighs positive transfer effects from the L1.

References

Hawkins, J.A. (2004) Efficiency and Complexity in Grammars, OUP, Oxford.
Hawkins, J.A. & L. Filipović (2010) Criterial Features in the Learning of English, CUP, Cambridge.

Abstract

Bernd Heine

Two Competing Systems: Sentence Grammar vs Discourse Grammar

The main goal of this paper is to argue that linguistic discourse organization operates on two different planes, involving two different systems, namely that of sentence grammar and of discourse grammar. Each of the two systems has its own internal structure, and the two tend to be separated from one another both syntactically and prosodically. The way these systems interact differs greatly between spoken and written linguistic communication.

Building on recent reasearch on parenthetical structures (e.g., Dehé and Kavalova 2007, Kaltenböck 2007, Brinton 2008, Heine and Kuteva 2010), the paper aims on the ond hand at defining the main characteristics of the two systems; on the other hand, it looks into the question of how the two interact in the construction of utterances.

References

Brinton, Laurel J. 2008. *The Comment Clause in English: Syntactic Origins and Pragmatic Development*. (Studies in English Language.) Cambridge: Cambridge University Press.

Dehé, Nicole and Yordanka Kavalova 2007.Introduction. In Dehé, Nicole and Yordanka Kavalova 2007, *Parentheticals*. (Linguistics Today, 106.) Amsterdam, Philadelphia: Benjamins. Pp. 1-22.

Kaltenböck, Gunther 2007. Spoken parenthetical clauses in English. In Dehé, Nicole and Yordanka Kavalova 2007, *Parentheticals*. (Linguistics Today, 106.) Amsterdam, Philadelphia: Benjamins. Pp. 25-52.

Heine, Bernd and Tania Kuteva 2010. Elements of discourse grammar. Typescript.

Politeness distinctions in personal pronouns – a case study in competing motivations

Johannes Helmbrecht (University of Regensburg)

The great majority of the Indo-European and Non-Indo-European languages of Europe display politeness distinctions in their paradigm of personal pronouns similar to the one between the second person singular address pronouns *tu* (2SG) and *vous* (2SG.HON) in French. With a few exceptions, it is only a single politeness distinction in the second person category that is encoded in the pronominal paradigms. The polite or honorific forms in such oppositions derive historically from second person plural pronouns (as in French), from third person singular (as in Italian), or third person plural pronouns (as in German), from reflexive pronouns (as in Hungarian) and from plain nouns (as in Polish) or complex nominal constructions (as in Spanish). The geographical distribution of politeness distinctions in personal pronouns in European languages is the result of the European-wide spread of this innovation which began presumably already in early medieval times. It is important to note that there is not a single case of borrowing in the narrow sense of *matter replication* (Matras) involved here; all cases fall under the rubric of *pattern replication* (Matras) and its potential subtypes such as contact-induced grammaticalization and polysemy copying (Heine & Kuteva).

The goal of the proposed paper is to present a functional analysis of the emergence and diffusion of politeness distinctions in personal pronouns in terms of a competing motivations approach. First of all, the relevant functional motivations for this historical process will be identified in a criteria bound systematic way. Secondly it will be shown that the rather social or pragmatic functions – politeness (Brown & Levinson) and prestige – are in conflict with the rather cognitive/ psychological principle of paradigmatic economy. It will be argued that the different degrees of grammatical integration (grammaticalization) of the polite pronouns into the pronominal paradigm of the respective languages may be explained by this conflict, not in terms of a winning and a losing factor but in terms of a compromise between the factors involved.

The paper will be concluded with some methodological proposals with regard to the identification of functional motivations and their potential conflicts in a synchronic and diachronic perspective and a plea for not to neglect social motivations in the debate of the concept of competing motivations.

References
Matras, Yaron. 2009. *Language Contact*. Cambridge: CUP.
Heine, Bernd & Tania Kuteva. 2005. *Language Contact and Grammatical Change*. Cambridge: CUP
Brown, Penelope & Stephen Levinson 1987. *Politeness. Some universals in language use*. Cambridge: CUP.

Competing motivations in diachronic perspective: the case of doubly-marked relative clauses

Rachel Hendery, Australian National University
Antoinette Schapper, Leiden University

In this poster we show several ways in which "competing motivations" can play out diachronically, by illustrating these with case studies involving relative clauses. There is a type of relative clause in which more than one relative clause marker/relative pronoun is present, which we will refer to as "doubly-marked relative clauses". These go beyond the double-marking described in most typologies of the relative clause, which restrict themselves to combinations of relative marker and resumptive pronoun, or relative pronoun and correlative pronoun (c.f. e.g. Keenan & Comrie 1977; Lehmann 1986; Andrews 2008, among others). We therefore first provide a typology of doubly-marked relative clauses.

Some examples of types of doubly-marked RCs include the following:
- co-occurrence of a clause-initial free morpheme (often an interrogative pronoun) with a verb affix, as in Basque (Lafitte 1962:408) and some Celtic languages (Ziegler 1993);
- the co-occurrence of an interrogative-based and a demonstrative-based relative clause marker, as in Middle English (Allen 1980), Prince Edward Island Acadian French *which que* (King 1991) or sometimes even fusing together, as in Tocharian (Pedersen 1949:113, 121);
- bracketing of the clause with a demonstrative at each end, as in some of the Oceanic languages of the Huon Gulf (Bradshaw 2009).

In many of these cases, the influence of language contact can be seen on the construction, with one of the two markers being an earlier feature of the RC, and the other a loanword, calque or otherwise influenced by another language of the region.

We then discuss how the concept of competing motivations can inform our understanding of these doubly-marked relative clause constructions. This is the case on several levels. First, drawing on the idea of processing-related constraints on relative clauses (given certain combinations of word order and clause order), as proposed by Hawkins (1990, 2004), we argue that there are at least three ways for a language to resolve such processing problems. A language can lose the problematic construction entirely (i.e. it can be out-competed by less problematic ones); it can be repaired by a change in word order or clause order; or new material can be added to simplify processing. It will be argued that in particular the "bracketing" type of relative clause is often a result of this latter solution. The development of other types of double marking may also be motivated by such processing constraints, however. Relative clause markers perform multiple functions—clause-boundary marking, referentiality, and case-marking—all of which aid processing, yet in some languages a single item that can fulfil all three functions may not be available. Another tension in such a case is therefore the conflict between the processing ease of a clause that contains all three of these elements (clause boundary marker, reference to head NP, case-marking of the "gap" in the RC) and the iconicity that is achieved by having only one unique, single-function marker. We will argue that a given language's choice between these two preferences (processing ease; iconicity) is not limited to the relative clause construction but is found in other constructions in the language too, and can therefore be analysed as a typological parameter, perhaps as a "ranking" of constraints in an Optimality Theory sense.

Moreover, in the case of those doubly-marked constructions that result from language contact, competing motivations can be seen to be at work on a sociolinguistic level. Multilingual speakers face a choice between maximising information by explicitly marking and distinguishing all categories they use in both languages and conforming to norms of the standard languages (where such norms exist). We argue that it is the sociolinguistic context that determines the outcome in these cases. Sometimes, in fact, a compromise between these competing motivations is reached: adaptation of the standard construction to maximise information without direct adoption of a loanword or calque.

References

Allen, Cynthia. 1980. *Topics in diachronic English syntax*. New York: Garland.

Andrews, Avery. 2008. Relative clauses. In T. Shopen (ed.), *Language Typology and Syntactic Description*, vol 2. Cambridge and New York: Cambridge University Press, 2nd edition.

Bradshaw, 2009. Relative-clause bracketing in Oceanic languages around the Huon

Gulf of New Guinea. In A. Adelaar and A. Pawley (eds.), *Austronesian Historical*

Linguistics and Culture History: A Festschrift for Robert Blust. Canberra: Pacific Linguistics.

Hawkins, J. 1990. Seeking motives for change in typological variation. In W. Croft, K. Denning and S. Kemmer (eds.), *Studies in Typology and Diachrony: Papers presented to Joseph H. Greenberg on his 75th birthday*, 95-128. Amsterdam: John Benjamins.

Hawkins, J. 2004. *Efficiency and complexity in grammars*. Oxford: Oxford University Press.

Keenan, E. & B. Comrie. 1977. Noun phrase accessibility and universal grammar. *Linguistic Inquiry*. 8:1.

King, Ruth. 1991. WH-words, WH-questions and Relative Clauses in Prince Edward Island Acadian French, *Canadian Journal of Linguistics/Revue canadienne de linguistique* 36:65- 85.

Lafitte, P. 1962. *Grammaire basque (navarro-labourdin litteraire)*. Bayonne: Editions des 'Amis du musée basque' et 'Ikas'.

Lehmann, C. 1986. On the typology of relative clauses. *Linguistics* 24:663-681.

Pedersen, H. 1949. *Tocharisch: Vom Gesichtspunkt der Indoeuropäischen Sprachvergleichung*. Copenhagen: Ejnar Munksgaard.

Ziegler, S. 1993. Zur Entwicklung der Relativsätze mit dem Relativpronomen *io- in den keltischen Sprachen. *Munchener Studien zur Sprachwissenschaft* 54:251-270.

Competing constraints in the acquisition of referential choice: the contribution of grammatical and discourse-pragmatic effects on subject realization in child English

Mary E. Hughes and Shanley E.M. Allen
Boston University and University of Kaiserslautern

It has been widely observed that young children acquiring a first language omit arguments more frequently than their adult counterparts whether the target language allows it or not. Two competing approaches attempt to explain this phenomenon: competence-based accounts [1] and discourse-pragmatic accounts [2]. Typically, grammatical and discourse-pragmatics approaches are considered orthogonal because they are concerned with explaining unrelated aspects of the null argument phenomenon. However, this assumption has never been explored or tested empirically. It seems more likely that these two accounts interact in some important ways. In the present study, the assumption that these two accounts are orthogonal will be tested.

Specifically, under the grammatical approach, subjects are omitted more frequently in the context of non-finite verbs than in the context of finite verbs. Although null subjects occur more frequently in this context, there are still overt subjects that occur in non-finite contexts and vice versa. Moreover, the grammatical account does not address the full range of subjects that can occur (i.e., null, pronominal, demonstrative, and overt). The discourse-pragmatic approach predicts that subjects are more likely to be omitted when referents are accessible rather than inaccessible and does a better job at predicting the full range of referential forms; however, overt subjects still occur when referents are fully accessible. Can these two accounts be reconciled? This study will examine the connection between referential form, verb finiteness, and discourse pragmatics. Investigating these two competing accounts (i.e., grammatical and discourse-pragmatic) will help to determine ways in which they complement each other and will demonstrate how different theoretical approaches can work together to provide a fuller picture of language development than each can provide alone.

The corpus for this study consists of videotaped spontaneous interactions between four monolingual English-speaking children (2;0-3;1) children and their caregivers [3]. A total of 1836 child third person arguments were examined. Consistent with the hypothesis that cognitive development is a crucial factor in referential choice, the utterances were analyzed for subject omission at two different age ranges: Time 1 (T1) from 2;0 to 2;7 and Time 2 (T2) from 3;0 to 3;1. The data were coded for discourse-pragmatic information by a set of six binary features which predict the accessibility of a referential argument (i.e., *animacy*, *contextual disambiguation*, *physical presence*, *prior mention*, *linguistic disambiguation,* and *joint attention*). Each argument was also coded as null, pronominal, demonstrative, or lexical, and all verbs were coded for tense and agreement.

As predicted by the grammatical account, initial findings show that the children at both Time 1 and Time 2 omit more subjects in the context of non-finite verbs (T1: 49% and T2: 17%) than they do in the context of finite verbs (T1: 12% and T2: 1%). When four or more discourse-pragmatic features were inaccessible, subjects were more likely to be realized overtly whether the verb was finite or not. Moreover, when subjects were categorized as null, pronominal, demonstrative, and lexical, it was found that discourse-pragmatic features were able to more strongly predict referential form. This predictive ability became stronger at Time 2, showing development in the acquisition of referential choice. Furthermore, certain discourse features were shown to have a stronger effect than others. In particular, the features *physical presence*, *prior*

mention, and *joint attention* were found to be the most predictive, replicating results found in an earlier studies by Hughes and Allen [4].

The significance of this work is far-reaching. Most importantly, this will be the first study to explicitly compare two different theoretical accounts of early null subjects in the same data set and to determine the extent to which these two accounts complement each other or are completely orthogonal to each other. This will provide a model and foundation for further studies comparing theoretical accounts of the same phenomenon.

Selected references:

 [1] Boser, K., Lust, B., Santelmann, L. & Whitman, J. (1992). The syntax of CP and V2 in early child German. In *Proceedings of NELS 23*, 51-65. Clancy, P.M. (2003). The lexicon in interaction: Developmental origins of Preferred Argument Structure in Korean. In J.W. Du Bois, L.E. Kumpf & W.J. Ashby (eds.), *Preferred Argument Structure: Grammar as architecture for function*, 81-108. Amsterdam: John Benjamins.

[1] Hoekstra, T. & Hyams, N. (1998). Aspects of root infinitives. *Lingua 106,* 91-112.

[1] Hyams, N. (2001). Now you hear it, now you don't: The nature of optionality in child grammars. In A. Do, L. Dominguez & A. Johansen (eds.), *Proceedings of the 25th Annual Boston University Conference on Language Development*, 34-58. Somerville, MA: Cascadilla Press. Hyams, N. & Wexler, K. (1993). On the grammatical basis of null subjects in child language. *Linguistic Inquiry, 24,* 421-459.

[1] Rizzi, L. (1993/4). Some notes on linguistic theory and language development: The case of root infinitives. *Language Acquisition* 3(4): 371-393.

[2] Allen, S.E.M. (2000). A discourse-pragmatic explanation for argument representation in child language. *Linguistics* 38: 483-521.

[2] Guerriero, S., Oshima-Takane, Y. & Kuriyama, Y. (2006). The development of referential choice in English and Japanese: a discourse-pragmatic perspective. *Journal of Child Language 33(4),* 823-857.

[2] Serratrice, L. (2005). The role of discourse pragmatics in the acquisition of subjects in Italian. *Applied Psycholinguistics*, *26,* 437-462.

[2] Skarabela, B. (2007). The role of social cognition in early language: The case of joint attention in argument realization in child Inuktitut. Unpublished doctoral dissertation, Boston University.

[3] Lieven, E., Behrens, H., Speares, J. & Tomasello, M. (2003). Early syntactic creativity: A usage-based approach. *Journal of Child Language, 30,* 333-70.

[4] Hughes, M. and Allen, S. 2006. A discourse-pragmatic analysis of subject omission in child English. *Proceedings of the 30th Annual BUCLD*, vol. 1. Somerville, MA: Cascadilla Press, 293-304.

[4] Hughes, M. and Allen, S. 2008. Child-directed speech and the development of referential choice in child English. Talk presented at the *International Association for the Study of Child Language Conference*, Edinburgh, Scotland.

Competing motivations in Path-coding systems:
A case study from an ancient language

Caroline Imbert
University of Grenoble

This paper deals with competing motivations and constraints in Path coding. It adheres to the theoretical framework developed by Talmy (2000)[1]. It relies on the case study of a satellite-framed ancient language: Homeric Greek[2]. It focuses on the underlying motivations for the emergence and decline of a little-described system of Path-preverb multiple affixation.

The Homeric data attest one set of Path elements, used in two competing systems that serve a similar function: the productive coding of complex Paths. They are, as in (1), a stabilized system of combination between a satellite preverb and an adposition which controls the case of the argument (*ARG*); and, as in (2), an emerging system of multiple preverbation. In the latter, PV1 is a *bona fide* satellite preverb just as PV in (1), whereas PV2 functions as an adposition as it is linked to the verb argument and controls its case ("*relational preverb*"[3]):

(1) Stable system of [satellite preverb + adposition] combinations (Il. 18.231-233)
     autàr Akhaioì aspasío:s Pátroklon… **kát**-thesan   **en** *lekhéessi*
     LNK Achaean:NOM.PL gladly Patroclus:ACC **PV/down**-lay:AOR.3PL **ADP/in** *ARG/couch:DAT.PL*
     'But the Achaeans with gladness […] laid Patroclus **down on** *a couch*'

(2) Emergent system of multiple preverbation [relational preverb + satellite preverb] (Od. 11.98)
     xíphos   arguróe:lon   *kouleô:i*   **en**-**kat**-épe:x'
     sword:ACC silver-studded:ACC *ARG/sheath:DAT* **PV2/in-PV1/down**-thrust:AOR.1SG
     'I thrust my silver-studded sword **down into** *the sheath*'

The system in (1) survived for a long time in Greek as a Path-coding system. Conversely, the system in (2) never stabilized and quickly disappeared, through interesting processes of grammaticalization and lexicalization. With the loss of the verb argument as a major triggering context, the relational preverb (PV2) becomes a satellite preverb like PV1, exhibits semantic bleaching and is finally fused with the verb stem or dropped.

Overall, the rapid emergence and disappearance of multiple preverbation could stem from the *functional tension* induced between two underlying motivations: the emergence of multi-preverb systems as part of a preverb-based, "satellite-framed" Path-coding strategy, and on the contrary a process of univerbation in Greek, by which Path preverbs tended to be dropped or lexicalized over time, toward the verb-framed strategy of Modern Greek.

However, the progressive disappearance of multiple preverbation was *asymmetrically* slowed down by constraints of a more semantic nature. A frequency study shows that:
  (a) The Path elements that intrinsically express Goal (e.g. "to, into…") are the most frequent as adpositions and relational preverbs (PV2) in the data, while they are proportionally much less frequent as satellite preverbs (PV1).
  (b) Strikingly, when PV2 is "Goal-coding", it tends to remain a relational preverb, and its grammaticalization process to the state of satellite preverb is less advanced or does not occur at all. This results in a better conservation in terms of productivity of multi-preverb constructions that involve Goal-coding relational preverbs.

---

[1] And his distinction between satellite-framed languages (languages which code Path outside of the verb stem in "satellite" elements, such as preverbs or verb particles) and verb-framed languages (languages which code Path within the verb stem).

[2] Data collected through the complete texts of the *Iliad* and the *Odyssey* via the *Perseus* database (Crane, 1997).

[3] Cf. Craig & Hale (1988)

Therefore, among other interests, multiple preverbation in Homeric Greek is a striking example of how competing motivations and constraints may be crucial parameters in the evolution of morphosyntactic systems, at least in the conceptual domain of space.

REFERENCES

Craig, C. and Hale, K. 1988. "Relational preverbs in some languages of the Americas: Typological and historical perspectives". In *Language*, 64:2, pp. 312-344.

Crane, G. (ed) 1997. *Perseus Digital Library Project 3.0*, Tufts University. <http://www.perseus.tufts.edu>.

Talmy, L. 2000. *Toward a cognitive semantics*. Bradford Books.

Regularity is overrated:
Stochastic competition in grammar and the primacy of the lexicon

Vsevolod Kapatsinski
University of Oregon

Linguistic theory draws a distinction between regular and irregular systems of generalizations. Regular systems are to be preferred over irregular ones by the analyst, and thus presumably are also preferred by the learners. In rule-based theory, a regular system is one in which rules predicting different outputs do not compete with each other for application to any (class of) inputs. Thus, if rule A states that an input X corresponds to an output Y, there can be no rule B stating that X corresponds to a different output, Z. If the learner of a language has a preference to learn regular rule systems, s/he should minimize competition between rules in the grammar s/he induces from linguistic data (Plag 2003), the way a linguist does when analyzing a dataset. In Optimality Theory, a regular system is one that can be described by a single constraint ranking where the choice regarding which constraint to obey is deterministic, rather than stochastic. Again, other things being equal, strict rankings are preferred as analytic solutions and thus are (implicitly) suggested to be preferred by learners.

We present a case in which learners of a language do not appear to be minimizing competition between generalizations. Table 1 shows an artificial language with two plural suffixes, -i and –a, where –i always palatalizes the preceding velar. A competition-minimizing learner would be expected to learn that [k] becomes [tʃ] before –i while other consonants do not change when –i is attached. This could be achieved by either extracting the rules shown on the left in Table 1 or a constraint ranking like *ki >> Ident-Velar. If this were the case, velar palatalization would be equally productive in Language 1 and Language 2 because the palatalizing rule or constraint ranking has no competitors that can produce errors. Saying that rule/constraint application is noisy does not change this prediction, since the amount of noise would be presumably the same in both languages.

On the other hand, a learner that does not attempt to minimize competition could extract a generalization like Ident-Place or $C_{[\alpha place]} \rightarrow C_{[\alpha place]}i$. The resulting generalization would then compete with the palatalizing generalization and would be supported by more examples in Language 2 than in Language 1. This greater strength of the anti-palatalizing generalization in Language 2 matters iff competition between generalizations is resolved stochastically rather than always being resolved in favor of the "best" generalization because the best generalization is palatalizing in both languages. With stochastic resolution of competition, palatalization would be expected to be more productive in Language 1 than in Language 2. This is in fact what we observe with English speakers (Figure 1; p<.01). This account also explains the puzzling fact that in nonce borrowing from English into Russian as seen on Google, velar palatalization (exceptionless in the native lexicon) is shown to be less productive before the verbal stem extension –i (blok$\rightarrow$ blotʃ+i+t^j) than before the diminutive suffix –ok (blok $\rightarrow$ blotʃ+ok): 44% vs. 100% (p<.0005), which can be attributed to the Russian lexicon providing greater support for $C_{[\alpha place]} \rightarrow C_{[\alpha place]}i$ than for $C_{[\alpha place]} \rightarrow C_{[\alpha place]}ok$ because –i tends to attach to non-velars while –ok tends to attach to velars.

Thus many grammatical systems that look regular to an analyst might not be regular to the speakers of the language. Retrieval of known complex expressions from the lexicon in preference to grammatical generation appears almost inevitable in an irregular grammatical system for a speaker to be very certain about the forms of words s/he knows. The grammar must account for the speaker's stochastic behavior with novel lexical items, since these items by definition cannot be retrieved from memory. However, the grammar cannot at the same time account for lexically-specific deterministic behavior exhibited with familiar lexical items (Frisch et al. 2004: 220; Zuraw 2000). The speaker's certainty about the form of a familiar word must come from retrieving the information about the familiar word from the lexicon. To further support our contention that seemingly regular systems are sometimes not, we will present a case where a seemingly regular grammatical system (the spelling of Russian prefixes, e.g., Figure 2) is nonetheless shown to be very reliant on lexical retrieval in precisely the cases when the prefix is highly confusable with a differently-spelled preposition (e.g., for the adjectival prefix *bez-* but not the verbal prefix *raz-*) resulting in the potential for competition between spelling rules in production that is not apparent from a linguistic description of the seemingly regular spelling system.

References:

Frisch, S. A., J. B. Pierrehumbert, & M. B. Broe. 2004. Similarity avoidance and the OCP. *Natural Language and Linguistic Theory*, 22, 179-228.

Plag, I. 2003. *Word formation in English*. Cambridge: Cambridge University Press.

Zuraw, K. 2000. Patterned exceptions in phonology. Ph.D. Dissertation, UCLA.

Table 1: The two artificial languages presented to learners. The variables M and N show the numbers of word pairs exemplifying a particular rule in each of the four languages. M and N can be unequal, and are greater than zero.

	Language 1	Language 2
{k;g} → {tʃ;dʒ}i	M	
{t;d;p;b} → {t;d;p;b}i	N	3N
{t;d;p;b} → {t;d;p;b}a	3N	N

Figure 1: Adding –i without changing the stem-final consonant is more productive in Language 2 than in Language 1 (the dashed line shows the median).
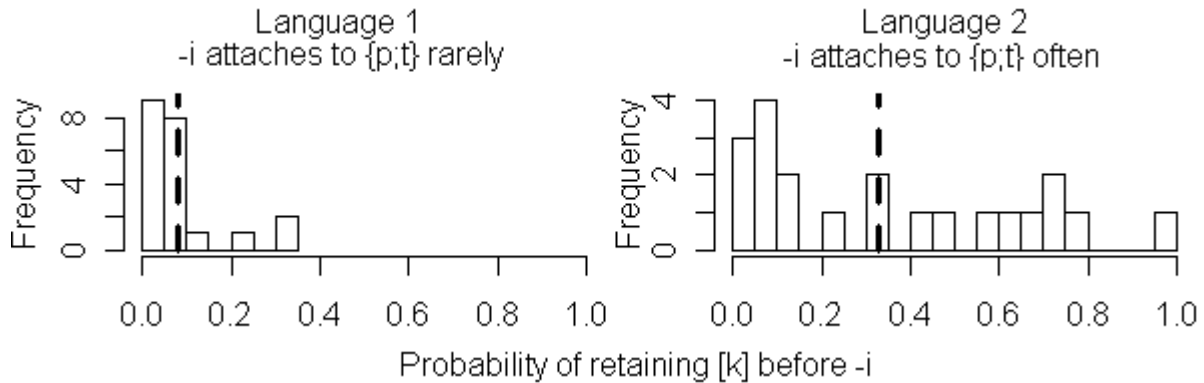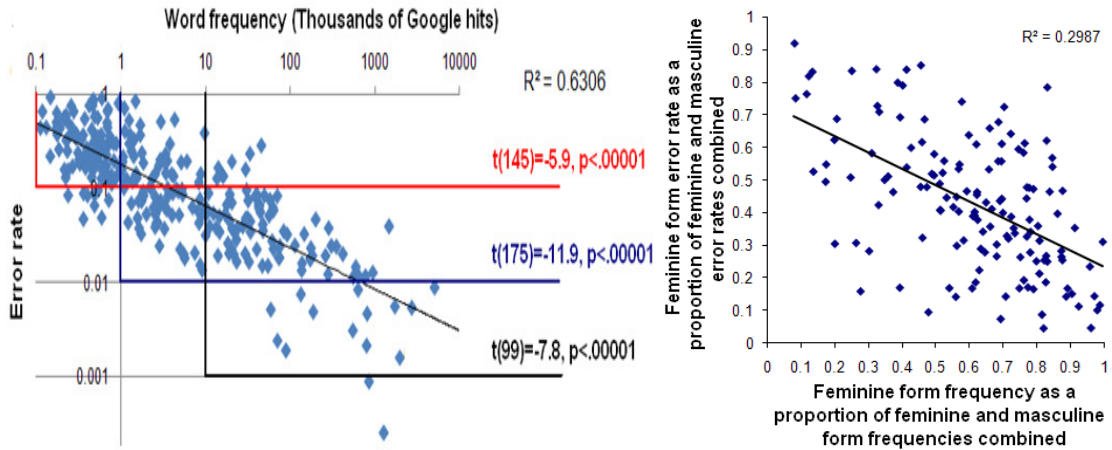

Figure 2: The (regular) spelling of *bez-* in regularly inflected Russian adjectives is driven by lexical retrieval of whole words (unlike for prefixes of verbs, which are less like differently spelled prepositions)

The role of word order and case marking in Polish children's comprehension of transitives

Grzegorz Krajewski
Max Planck Child Study Centre, University of Manchester, UK

Elena Lieven
Max Planck Child Study Centre, University of Manchester, UK &
MPI for Evolutionary Anthropology, Leipzig, Germany

Michael Tomasello
MPI for Evolutionary Anthropology, Leipzig, Germany

This study investigates the role case marking and word order play in young Polish children's comprehension of simple transitive sentences. Case marking is a highly reliable cue for identifying agent and patient but, unlike word order, is not always available, as different cases can be marked with the same marker and the same case can have different markers; hence it may take children some time before they learn to rely on it, when interpreting sentences involving novel verbs. Previous research (Dittmar et al., 2008) has shown that two-and-a-half-year old German children can only comprehend sentences in which the two cues work together, four-and-a-half-year old can interpret word order, when there is no case marking available, and only seven-year old are able to follow case marking, if it competes with word order.

The aim of this study was to find out if Polish children start using case marking earlier. In Polish, case is marked on noun endings, rather then on determiners, which makes it more local as a cue (Slobin, 1982). There is also evidence of even two-and-a-half-year old children being able to identify two endings as marking the same case (Dąbrowska & Tomasello, 2008), which may increase perceived availability of this cue for younger children.

Like in Dittmar et al. (2008), there were three conditions: Coalition, Word-Order-Only, Competition. Children were taught two novel verbs referring to transitive constructions. In each condition four different familiar nouns were used in fixed pairs with both verbs, resulting in four items per condition. All nouns were inanimate and those in Word-Order-Only were masculine, neutralising case marking in that condition. For each item, the child simultaneously saw on a computer screen two animations differing only with respect to agent and patient assignment, heard a pre-recorded utterance, and was asked to point to the animation it referred to.

18 two-and-a-half-year old (mean age: 2;10), 25 four-and-a-half-year old (mean age: 4;6), and 21 eight-year old (mean age: 8;0) children were tested and their performance was analysed in terms of proportions of expected pointings. Both main effect of age and main effect of condition were significant, $F(2, 61) = 23.69$, $p < 0.001$, $\eta^2 = 0.44$, and $F(2, 122) = 36.05$, $p < 0.001$, $\eta^2 = 0.33$ respectively, as was the interaction between them, $F(4, 122) = 6.64$, $p < 0.001$, $\eta^2 = 0.12$. In the youngest group, Coalition was significantly easier than Competition, Exact Wilcoxon-Signed-Rank Test, $Z = 2.139$, $p < 0.033$, and marginally significantly easier than Word-Order-Only, $Z = 1.76$, $p < 0.09$, whereas in the middle and oldest groups, both Coalition and Word-Order-Only were significantly easier than Competition, $Z = 2.729$, $p < 0.004$, and $Z = 2.98$, $p < 0.003$ in the middle group, and $Z = 3.77$, $p < 0.001$, and $Z = 3.76$, $p < 0.001$ in the oldest group.

The results replicate in part the German findings, thus confirming basic predictions of the Competition Model (Bates & MacWhinney, 1987). Surprisingly however, unlike in the German study, case marking remained difficult as a cue, even for eight-year old children, and we offer three possible reasons for that. First, its availability may be lower than expected, due to some complexities of the system we will discuss. Second, perceptually distinguishing accusative and nominative endings may be difficult. Third, using inanimate, rather than animate, agents may add to the difficulty of comprehending transitives.

Figure. Distribution of proportions of expected responses (a) in the 2-and-a-half-year old group, (b) in the 4-and-a-half-year old group, and (c) in the 8-year old group (bold line: median, solid square: mean).
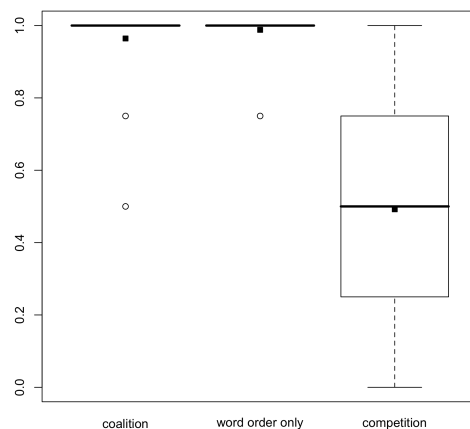
a)
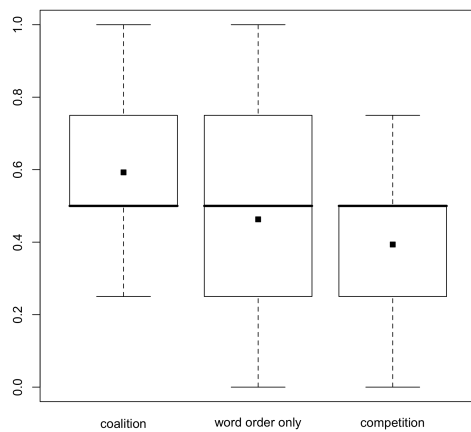
b)
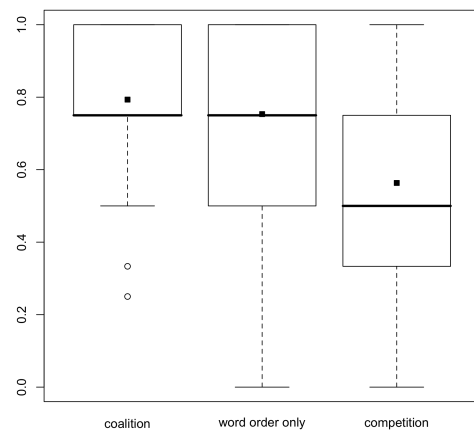
c)

References

Bates, E., & MacWhinney, B. (1987). Competition, variation, and language learning. In B. MacWhinney (Ed.), *Mechanisms of Language Acquisition* (pp. 157–193). Hillsdale: Lawrence Erlbaum.

Dąbrowska, E., & Tomasello, M. (2008). Rapid learning of an abstract language-specific category: Polish children's acquisition of the instrumental construction. *Journal of Child Language, 35*(3), 533-558.

Dittmar, M., Abbot-Smith, K., Lieven, E., & Tomasello, M. (2008). German children's comprehension of word order and case marking in causative sentences. *Child Development, 79*(4), 1152-1167.

Slobin, D. I. (1982). Universal and particular in the acquisition of language. In L. R. Gleitman & E. Wanner (Eds.), *Language acquisition: The state of the art* (pp. 128–170). Cambridge: CUP.

Argument linearization in Dutch and German: a multifactorial approach

Monique Lamers (Department of Language and Cognition, VU University Amsterdam) &
Kees de Schepper (Department of Linguistics, Radboud University Nijmegen)

Although Dutch and German are two closely related languages, they also differ in many aspects. In this paper we address the question whether differences in preferences of argument linearization in Dutch and German can be attributed to differences in overt case marking between these two languages.

Dutch, with no overt case marking of full noun phrases, exhibits a strong preference for subject-before-object (SbO) sentences. This preference seems to be strongest for sentences in which an animate subject precedes an inanimate object which is often the case with agentive or experiencer-subject verbs (e.g. Lamers, 2005). For German, a language with overt case marking of full noun phrases, this so-called subject-first preference seems to be less robust. Psycholinguistics studies have shown that for sentences with verbs that assign dative case, it is the ObS order that is preferred (e.g. Bornkessel & Schlesewesky, 2006; Bornkessel-Schlesewsky & Schlesewsky, 2009).

 To establish this difference in word order preference we performed two similar sentence production studies, one in German, and one in Dutch. In both studies verbs with different characteristics were used in such a way that it became possible to isolate the influence of case marking from other factors that might influence the linearization of the arguments (i.e. selection restrictions, animacy, thematic role assignment).

In both studies participants were asked to construct a sentence using the words (i.e. two arguments and a verb) that were provided in a prompt (see Ferreira, 1994). In the Dutch study three different types of verbs were used: experiencer-subject verbs selecting an animate subject, and causative and unaccusative psych verbs, selecting an animate object. Whereas experiencer-subject and causative psych verbs can passivize, unaccusative psych verbs can not. In German experiencer-subject and causative psych verbs assign accusative case to the object, and unaccusative psych verbs assign dative case. In the German study yet another verb type was used, an agentive-dative verb assigning lexical dative case to the object. In this study the verbs were either combined with two animate arguments or an animate and an inanimate argument (for an overview, see table I).

The results of the Dutch study provide evidence for the influence of both animacy and verb type on word order. For each verb type more SbO than ObS were produced. Stimuli with causative psych verbs resulted in more passive constructions than with experiencer-subject verbs. ObS structures were most frequent with unaccusative psych verbs. The results of the German study showed a different pattern with a clear subject-first preference for sentences with experiencer-subject verbs and causative psych verbs irrespective of the animacy of the arguments. The subject-first preference was also found for the agentive-dative verbs and was strongest for sentences with two animate arguments. However, prompts with unaccusative psych verbs resulted in more ObS than SbO sentences, with the highest occurrence for sentences starting with an animate object followed by an inanimate subject. Finding a difference in preference between the two verbs that assign dative case indicate that other factors than case marking underlie the ObS preference for unaccusative psych verbs.

To explain the differences in patterns between sentences with different types of verbs on the one hand, and between the two languages on the other hand, we follow a multifactorial approach as was proposed by Primus (1999). According to this approach argument realization results from the interplay of multiple factors. These factors give us several competing prominence principles (e.g. SubjectFirst, AnimateFirst and AgentFirst). We will show that next to the SubjectFirst, and AnimateFirst principles, prominence principles of case marking (NominativeFirst principle vs. DativeFirst principle) and thematic role assignment (ExperiencerFirst principle alongside the AgentFirst principle) play an important role in preferences of argument linearization in Dutch and German.

Table I. Examples of Dutch and German verb types and their characteristics. The example of a prompt with a combination of an animate and an inanimate argument is given in English (in bold).

Verbs	Selectional restrictions	Passivize	Case marking of the object	Examples of Dutch and German verbs **Example of a prompt** (translated in English)
Experiencer-subject	Animate subject	Yes	Accusative	German: kritisieren Dutch: bekritiseren Translation: **criticize president affaire**
Caustive psych	Animate object	Yes	Accusative	German: verblüffen Dutch: verbazen Translation: **amaze president affaire**
Unaccusative psych	Animate object	No	Dative	German: gefallen Dutch: bevallen Translation: **please president affaire**
Agentive - dative	Animate object	No	Dative	German: schaden Dutch: schaden Translation: **damage president affaire**

References

Bornkessel, I. & M. Schlesewsky. 2006. The extended argument dependency model: a neurocognitive approach to sentence comprehension across languages. *PsychologicalReview*, 113.787-821.

Bornkessel-Schelswesky, I. & M. Schlesewsky. 2009. The role of prominence information in real time comprehension of transitive constructions: A cross-linguistic approach. *Language and Linguistics Compass.* 3/1, 19-58.

Ferreira, F. 1994. Choice of passive voice is affected by verb type and animacy. *Journal of Memory and Language*, 33, 615-636.

Lamers, M. 2005. Resolving subject-object ambiguities with and without case: evidence from ERPs. *Case-marking: competition and variation*, ed. by M. Amberber and H. de Hoop, 251-293: Elsevier.

Primus, B. 1999. Cases and thematic roles - ergative, accusative and active. Tübingen: Niemeyer.

Brian MacWhinney

Title: How Competition Works Across Time

Abstract:
Competition is recognized as a core organizing principle in biology, psychology, economics, and linguistics. But how and when is the competition between competing and collaborating motivations adjudicated and implemented in real time? Using examples drawn from empirical studies of lexical, syntactic, and discourse motivations, I will show how competition plays itself out across multiple time frames, including historical change. The stability of these various frames emerges from patterns of neural consolidation linked to features of cue validity, cue conflict, and group referencing.

Andrej Malchukov *(Max Planck Institute for Evolutionary Anthropology)*
Edith Moravcsik *(University of Wisconsin-Milwaukee)*

Competing motivations: what, how, and why?

In our talk, we introduce the phenomenon of competing motivations and conflict resolution in language sciences. First, we provide some illustrations of the competing motivations approach to grammar, building on earlier insights of functional typology and Optimality Theory. In the domain of morphology, the examples cited involve conflict resolution of functionally infelicitous grammatical categories. In the domain of syntax, we illustrate the potential of the competing motivations account for constraining and predicting case-marking patterns and alignment types of certain constructions.

In the second part of the talk, logical possibilities of resolving conflicts are considered and the various resolutions of competing motivations attested in the literature are situated among these logically available options. By reference to examples from sciences outside linguistics and from everyday thinking, the issue of competing motivations and, more generally, of conflict resolution is suggested to have broad interdisciplinary significance.

Britta Mondorf

JOHANNES GUTENBERG
UNIVERSITÄT MAINZ

(Apparently) competing motivations in morpho-syntactic variation

With the revived interest in language variation there has been a growing readiness to incorporate competing motivations into linguistic theory-building, and an increasingly large number of (potentially) universal factors conditioning variation have come to the fore. The present paper explores competing motivations in the form of analytic support (i.e. the tendency to resort to analytic rather than synthetic variants in cognitively demanding environments). It bridges the gap between traditionally descriptive variation linguistics and approaches based on typological and psycholinguistic principles, with the primary concern to explain competing motivations governing the choice between functionally equivalent morphological and syntactic structures. Providing a quantitative and qualitative in-depth account of a range of novel and hitherto neglected factors, that shape and design morpho-syntactic alternation, it will be argued that languages retain morpho-syntactic variation in order to optimally exploit the system. What appears to be competing motivations at first glance turns out to be an intricately systematic adaptation to processing demands reflected in an emergent division of labour: Morphology is resorted to more often in comparatively easy-to-process contexts, while syntactic variants are preferred in cognitively more demanding environments. A case in point is comparative alternation in English (i.e. the choice between syntactic *more full* vs. morphological variants *fuller*), which has recently been shown to be subject to at least 24 determinants. An in-depth treatment of several complexity parameters reveals that the underlying force pertaining to all determinants that invoke the analytic comparative is to mitigate increased processing demands – a strategy referred to as *more*-support. A bird's eye view of 24 determinants from all core levels of linguistic analysis illustrates that the different degrees of processing effort mirrored in comparative alternation emanate from structures that are phonologically, morphologically, syntactically, lexically, semantically and pragmatically complex. These factors are also shown to be operative across different language varieties, for instance in the trajectory of diachronic change and the regional variation exhibited in British and American English. The findings offer new and theoretically unaligned explanations for competing motivations in morpho-syntax.

Constraints on prosodic word development in typically developing children and in early cochlear implant users

Ignacio Moreno-Torres*, M. M. Cid*, S. Torres* and R. Santana+

* University of Málaga, Spain

+ University of Las Palmas de Gran Canaria, Spain

Early phonological development is the result of a series of conflicting constraints (Thelen, 1991, Vihman, 1996). This study will explore two of them: language specific prosodic constraints (Lleó & Demuth, 1999) and presumably universal phonetic constraints (Prince & Smolensky, 2004). While earlier studies have obtained data mostly from spontaneous speech samples, this study will explore phonology with a non-word repetition task, which will make it possible to control different variables. Two populations will be studied: typically developing children and children born deaf and implanted with a cochlear implant before 24 months of age. The second group of children is an interesting population for the study of phonological development in that, at least for some of them (Edwards, 2007), their only limitation is auditory perception (i.e. no associated impairments). For that reason, it should be easier to explore phonological development.

Method. Subjects were 4 CI users (CI experience range: 18-27 months), and 24 months old TD children. Non-word repetition task (34 items): The items include only the most basic syllable types in Spanish language: CVV (consonant-vowel-vowel; with the vowels forming different sylables) (5 items), VCV (5), CVCV (12), and laCVCV (12). The tri-syllabic items (laCVCV) are identical to the CVCV forms except for the addition of the unstressed syllable "la" (i.e. identical to Spanish feminine form of the determinate article). Items are balanced for prosodic structure (trocaic-iambic); with a small set of occlusive and fricative consonants being used in all position (k/t/g/d/s/j). Items were analyzed prosodically and phonologically. Prosodically, an item is wrong if the accent is misplaced. Phonologically, errors were classified either as fortition (insertion, devoicing, occlusivizaton, etc.) or lenition (omition, voicing, fricativization, etc.) or other (changes in place of articulation).

Initial results (for 4 TD children and 4 CI users). There was a considerable variety (total number of correct words) both in TD and in CI users, though general resulst were clearly better for TD group. Results were similar to those obtained in a control elicitation tasks. TD made few or no prosodic errors (1/34, 2/34, 0/34 and 0/34). Three of the CI users made a relatively important number of prosodic errors (7/34, 7/34 and 8/34), while the third child made no errors. Syllable omission was mostly guided by position in prosodic structure in both groups. As for segmental errors, TD children did not show a marked tendency either to lenition or to fortition. On the contrary, in CI users there was a clear preference for fortition.

Discussion. Results confirm that the two constraints explored in this study are relevant for the study of phonological development. The fact that fortition was not relevant in TD children suggests that it might be relevant only in an earlier period. The fact that no interaction between these constrains was observed (i.e. phonetic errors were independent of prosodic position) shows that they are independent skills. The differential importance

of these constraints in both groups will be discussed in terms of the motivations for each of constraints.

References

Edwards, L. C. (2007). Children with cochlear implants and complex needs: A review of outcome research and psychological practice. *Journal of Deaf Studies and Deaf Education, 12*, 258-268.

Lleó, C. and K. Demuth. 1999. Prosodic constraints on the emergence of grammatical morphemes: Crosslinguistic evidence from Germanic and Romance languages. In A. Greenhill, H. Littlefield, & C. Tano (eds.), *Proceedings of the 23rd Annual Boston University Conference on Language Development*, pp. 407-418. Somerville, MA: Cascadilla Press.

Prince, A. and P. Smolensky (2004). *Optimality Theory:constraint interaction in Generative Grammar*. Oxford, Blackwell.

Thelen, E. (1991). Motor aspects of emergent speech: a dynamic approach. In N. A. Krasnegor & D. Rumaugh (Eds.), *Biological and behavioural determinants of language development.* (pp. 339 - 362). Hillsdale, NJ: L. Erlbaum.

Vihman, Marilyn M. 1996 *Phonological Development*. Oxford: Basil Blackwell.

Jockeying for position: Competing motivations in Garrwa word order.
Ilana Mushin, University of Queensland

This paper examines competition between syntax and pragmatics in determining word order in actual language use. Speakers of all languages face the challenge of tailoring their utterances to meet the informational and interactive needs of the local context, while working within linguistic structures that may no longer be sensitive to these needs. While the focus here is on one particular North Australian language, Garrwa, the results have implications for our general understanding of where syntax and pragmatics meet, and the nature of 'free' word order more generally.

My analysis is based on the word order restrictions, preferences and practices using a corpus of Garrwa discourse. While Garrwa has been described as basically verb-initial in its typology (eg. Mushin 2005), there are many discourse contexts in which verbs are not initial, and some contexts in which they are cannot be initial. Second position is more restricted: only pronouns and associated clitics are found there (Mushin 2006). The placement of referential nominals and adjuncts are not obviously syntactically governed but is motivated by both the information status (eg. as new or prominent), and by the presence or absence of more syntactically constrained constituents (eg. second position pronouns or initial-only elements like question words or contrastive markers). For example, in (a), the verb is initial and the object nominal immediately follows the second position pronoun. In (b), the presence of an initial-only question word results in an order where the verb occurs immediately following the 2P pronoun, followed by the object nominal.

(a)   *langandaba   ja=ngayu   ngaki diraji*
        hang.up   FUT=1sgNOM   1sgDAT dress
        I'm going to hang up my dress. (8.8.03.2.TD)

(b)   *wanyi-nkanyi yalunjalu   ninkijba   kukurdun   wawarran   junu*
        what-DAT   3plACC/3plNOM   look.at   black   child   DUBIT
        Why do they want to look at those black kids, I don't know. (20.6.08.KS)

In these and other examples I detail where and how the syntacticised constructions of Garrwa grammar compete with the pragmatic motivations to put prominent information first. I show that while it is not always the case that the more syntacticised structure has priority, speakers have systematic ways of managing such priorities.

This paper thus goes beyond previous work on the 'front end' of Garrwa sentences and utterances (cf. Simpson & Mushin 2008) to show how ordering patterns over the whole sentence are motivated by competition between what is already in-built grammatical architecture (ie. syntacticized) and what is open to locally managed speaker choices, determined by context (ie. pragmatics). If both are taken into account, the word order of Garrwa appears remarkably systematic. Australian languages have often been described as having 'free' or 'pragmatic' word order, where the positioning of words is claimed to be motivated by extra-syntactic factors and not by the syntactic function of constituents (eg. Hale 1992). But the precise nature of this syntactic freedom is regularly left unexplored in descriptive grammars of Australian languages (although there are some specific studies of word order and syntactic structure - eg Swartz 1989, McConvell 1996, Laughren 2002, Simpson & Mushin 2008). This paper therefore also contributes to our understanding of what 'free word order' means in the Australian context and more broadly.

References

Hale, Ken. 1992. Basic word order in two 'free word order' languages. In Payne, D (ed)
     Pragmatics of word order flexibility (pp63-82) Amsterdam: John Benjamins

Laughren, Mary 2002 Syntactic constraints in a 'free word order' language. In Amberber, M.
     andCollins, P. (eds) *Language universals and variation* pp. 83-130. Praeger , Westport

McConvell 1996. Functions of split-Wackernagel position The functions of split-Wackernagel
     clitic systems: Pronominal clitics in the Ngumpin Languages (Pama-Nyungan family,
     Northern Australia). In Halpern & Zwicky (eds.) *Approaching Second: Second Position
     Clitics and Related Phenomena.*(pp 299–331). Stanford, Cal.: CSLI.

Mushin 2005. Word order pragmatics and narrative functions in Garrwa. *Australian Journal of
     Linguistics.* 25:2 253-273

Mushin 2006. Motivations for second position: Evidence from North-Central Australia.
     Linguistic Typology. Vol 10. 267-326.

Simpson & Mushin 2008. Clause initial in four Australian languages. In Mushin & Baker (eds)
     Discourse and grammar in Australian languages. (pp25-58).Amsterdam: Benjamins.

Swartz 1989. *Constraints on zero anaphora and word order in Warlpiri narrative text* — SIL-
     AAB Occasional papers.

Morphological Syncretism in Declension Paradigms: A Harmonic Grammar Account
Wataru Nakamura (Tohoku University, Japan)

The presence of morphological syncretism in declension paradigms renders a typological investigation of linking systems a challenging task. The aim of this paper is provide a competing-motivation account of German determiner and weak adjective declensions (e.g. Bierwisch 1967, Blevins 1995, Wiese 1996, Müller 2002) with a typological extension. What is notable about the present account is that it is couched within the framework of **Harmonic Grammar** (Smolensky and Legendre 2006, Pater 2009), which allows us to derive both language-internal and typological variation of declension paradigms from a competition between numerically weighted **markedness constraints** and **faithfulness constraints** as in (2)-(4) and the morphology-phonology mapping:

(1) a. **Case Hierarchy** (Silverstein 1980/1993):
Nom[inative]⇔Dat[ive] < Acc[usative](/Ergative) < Gen[itive]
   b. **Gender Hierarchy** (Steinmetz 1985): Masc[uline] < Fem[inine] < Neut[er]
   c. **Number Hierarchy** (Corbett 2000): Sing[ular] < Pl[ural] (< Dual)
   d. **Macrorole Hierarchy** (Van Valin and LaPolla 1997): Act[or] < Und[ergoer]
(2) a. *{Gen}, *{Gen, Acc}, *{Gen, Acc, Dat}
   b. *{Neut}, *{Neut, Fem}, *{Neut, Fem, Masc}
   c. *{Pl}
(3) a. *{Gen} & *{Neut, Fem}, *{Gen, Acc, Dat} & *{Neut}, *{Pl} & *{Gen}, ...
   b. *{Und/Neut} & *{Gen, Acc, Dat}, *{Und/Fem} & *{Gen, Acc, Dat},
      *{Und/Pl} & *{Gen, Acc, Dat}
(4) a. MAX [Case], MAX [Gender], MAX [Number]
   b. IDENT [Case], IDENT [Gender], IDENT [Number]

Markedness constraints in (2) are derived from **markedness hierarchies** in (1a)-(1c) in terms of **stringency relation** (de Lacy 2006) and they are antagonistic to faithfulness constraints in (4). The stringency constraints in (2) are freely rankable/weightable and enable us to describe the German declension paradigms with extensive syncretism in a more flexible way than the counterparts in the classical OT (Prince and Smolensky 2004).

(3a,b) are additional markedness constraints derived from (1) and (2): (3a) is derived from (2) through **constraint conjunction** (Smolensky 1995), but, in contrast to the original formulation, is meant to reflect, as a very first approximation, a synergistic, interactive effect of any two/three of the markedness constraints in (2), while (3b) originates ultimately from frequency distribution of NPs (cf. Jäger 2004, Krifka 2009); (3b) involves **harmonic alignment** of (1d) with (1b,c) in addition to constraint conjunction and penalizes extra marking on the frequent types of undergoers. I assume that (2)-(4) apply only to contrastive feature values (cf. Calabrese 2005).

An empirical focus here is on the declensions of *der* 'the' and *kein* 'no' in Table 1 and the weak adjective declension in Table 2. Six key observations are in order (the first five are about Table 1, while the sixth one is about Table 2): **(i)** no gender distinction in the plural; **(ii)** no distinct accusative in the singular feminine, singular neuter, and plural; **(iii)** a parallelism between the singular masculine and singular neuter (except for the singular neuter nominative of *der*); **(iv)** no distinction between the dative and genitive in the singular feminine; **(v)** a parallelism between the singular feminine and plural (disrupted by the plural dative form); and **(vi)** -*e* encodes the singular nominative and singular feminine/neuter accusative, while -*en* fills in the rest of the paradigm.

My proposal is a two-stage (i.e. syntax-morphology and morphology-phonology) account of the German declension paradigms. First, two sets of constraints in Table 5 receive as input the sets of fully specified, syntactic number/gender/case feature values and output their often syncretized, morphological counterparts (e.g. 'Sing/Fem/Gen→Sing/Fem/Dat', 'Sing/Neut/Gen→Sing/Masc/Gen'). I have used HaLP (Potts et al. 2007) to calculate numerical weights of the constraints. Their weights are responsible for observations **(ii)-(iv)**. Second, these morphological outputs are mapped phonological exponents in (5a)-(5g) (some of which crucially involve **underspecification**) in accordance with the **Morphological Blocking Principle** (Andrews 1990; cf. Halle 1997):

(5) a. *kein/der₁*   [Sing, Masc, Nom] b. *das*   [Sing, Neut, Nom]
   c. *keinen/den*   [Ø, Ø, Ø]   d. *keinem/dem*   [Sing, Masc, Dat]
   e. *keines/des*   [Sing, Masc, Gen]   f. *keine/die*   [Ø, Ø, Nom]
   g. *keiner/der₂*   [Ø, Ø, Dat]

(5f,g) are underspecified as regards gender and number and cover the singular feminine and plural. This explains observations **(i)** and **(v)** (except for the plural dative form to be explained below).

It is important to note that most plural nouns in German receive a plural AND dative index and that these indices alone suffice to identify the plural dative uniquely. This suggests the need to broaden the optimization domain from a determiner in isolation to a full NP (Hughes 2003). This move requires the whole phrasal domain to realize the number/gender/case value and explains why the plural dative form of *der/kein* bears no number or case value as in (5c) (the number and case value are realized on the head noun) and why the weak adjective declension is impoverished into (5h) and (5i) (all the other, more marked feature values are realized on the co-occurring determiner and head noun) (observation **(vi)**), on the assumption that morphosyntactic features expressed on head nouns are the least costly, while those expressed on attributive adjectives are the most costly:

(5) h. *gut-e*   [Sing, Ø, Nom]   i.   *gut-en*   [Ø, Ø, Ø]

Finally, I will show that the above two-stage account of the German declensions lends itself to two extensions: an Old English determiner *se* 'the, that' in Table 3 and a Yiddish determiner *der* 'the' involving an impoverished paradigm in Table 4.

Table 1: Declensions of German Determiners (*der* 'the', *kein* 'no')

	Singular			Plural		
	Masculine	Feminine	Neuter	Masculine	Feminine	Neuter
Nominative	der/kein	die/keine	das/kein	die/keine		
Accusative	den/keinen					
Dative	dem/keinem	der/keiner	dem/keinem	den/keinen		
Genitive	des/keines		des/keines	der/keiner		

Table 2: Weak Declension of German Adjectives (e.g. *gut* 'good')

	Singular			Plural		
	Masculine	Feminine	Neuter	Masculine	Feminine	Neuter
Nominative	gut-e	gut-e	gut-e	gut-en		
Accusative	gut-en					
Dative		gut-en	gut-en			
Genitive						

Table 3: Declension of Old English Determiners (e.g. *se* 'the, that') (Mitchell and Robinson 2007)

	Singular			Plural		
	Masculine	Feminine	Neuter	Masculine	Feminine	Neuter
Nominative	se	sēo, sīo	þæt	þā		
Accusative	þone	þā				
Dative	þǣm, þām	þǣre	þǣm, þām	þǣm, þām		
Genitive	þæs	þǣre	þæs	þāra, þǣra		

Table 4: Declension of a Yiddish Determiner (*der* 'the') (Birnbaum 1979)

	Singular			Plural		
	Masculine	Feminine	Neuter	Masculine	Feminine	Neuter
Nominative	der	di	dos	di		
Accusative	dem					
Dative		der	dem			

Table 5: Numerical Weights of the Constraints in (2)-(4) (an irrelevant cell is shaded)

	MAX [Gender]	MAX [Num]	MAX [Case]	IDENT [Gender]	IDENT [Num]	IDENT [Case]	*{N}	*{N, F}	*{N, F, M}	*{Pl}
G *der*	5	4	6	3	3	3	1	1	1	1
G *kein*	5	4	5	3	3	3	3	1	1	1

*{G}	*{G, A}	*{G, A, D}	*Und/F & *{G, A, D}	*Und/N & *{G, A, D}	*Und/Pl & *{G, A, D}	*{G} & *{N, F}	*{Pl} & *{Gen}	*{G, A, D} & *{N}
1	1	1	5	4	5	2	2	2
1	1	1	4	4	4	2	2	1

References

Andrews, Avery. 1990. "Unification and morphological blocking". Natural Language and Linguistic Theory 8, pp.507-557.

Bierwisch, Manfred. 1967. "Syntactic features in morphology: general problems of so-called pronominal inflection in German". In To Honor Roman Jakobson: Essays on the Occasion of His Seventieth Birthday, pp.239-270. The Hague: Mouton.

Birnbaum, Salomo A. 1979. Yiddish: A Survey and A Grammar. Manchester: Manchester University Press.

Blevins, James P. 1995. "Syncretism and paradigmatic opposition". Linguistics and Philosophy 18, pp.113–152.

Calabrese, Andrea. 2005. Markedness and Economy in a Derivational Model of Phonology. Berlin: Mouton de Gruyter.

Corbett, Greville G. 2000. Number. Cambridge: Cambridge University Press.

de Lacy, Paul. 2006. Markedness: Reduction and Preservation in Phonology. Cambridge: Cambridge University Press.

Halle, Morris. 1997. "Distributed Morphology: impoverishment and fission". MIT Working Papers in Linguistics 30, pp.425-449.

Hughes, Michael. 2003. Morphological Faithfulness to Syntactic Representations. Unpublished Ph.D. Dissertation. University of California, San Diego.

Jäger, Gerhard. 2004. "Learning constraint subhierarchies: the bidirectional gradual learning algorithm". In Reinhard Blutner and Henk Zeevat (eds.), Optimality Theory and Pragmatics, pp.251-287. Basingstoke: Palgrave Macmillan.

Krifka, Manfred. 2009. "Case syncretism in German feminines: typological, functional, and structural aspects". In Patrick O. Steinkrüger and Manfred Krifka (eds.), On Inflection, pp.141-171. Berlin: Mouton de Gruyter.

Mitchell, Bruce and Fred C. Robinson. 2007. A Guide to Old English, 7th edition. Oxford: Blackwell.

Müller, Gereon. 2002. "Remarks on nominal inflection in German". In Ingrid Kaufmann and Barbara Steibels (eds.), More than Words: A Festschrift for Dieter Wunderlich, pp.113-145. Berlin: Akademie Verlag.

Pater, Joe. 2009. "Weighted constraints in Generative Linguistics". Cognitive Science 33, pp.999-1035.

Potts, Christopher, Michael Becker, Rajesh Bhatt, and Joe Pater. 2007. HaLP: Harmonic Grammar with Linear Programming, version 2. On-line software available at http://web.linguist.umass.edu/~halp/

Prince, Alan and Paul Smolensky. 2004. Optimality Theory: Constraint Interaction in Generative Grammar. Oxford: Blackwell.

Silverstein, Michael. 1980. "Of nominatives and datives". Reprinted in Robert D. Van Valin, Jr. (ed.) (1993), Advances in Role and Reference Grammar, pp.465-498. Amsterdam and Philadelphia: John Benjamins.

Smolensky, Paul. 1995. "On the internal structure of the constraint component Con of UG". Handout of talk at University of California, Los Angeles (available online from Rutgers Optimality Archive)

Smolensky, Paul and Géraldine Legendre. 2006. The Harmonic Mind: From Neural Computation to Optimality-Theoretic Grammar, (volumes 1 & 2). Cambridge, MA.: The MIT Press.

Steinmetz, Donald. 1985. "Gender in German and Icelandic". In Jan Terje Faarlund (ed.), Germanic Linguistics: Papers from the Symposium at the University of Chicago, pp.10-28. Bloomington, IN.: IULC Publications.

Van Valin, Robert D., Jr. and Randy J. LaPolla. 1997. Syntax: Structure, Meaning, and Function. Cambridge: Cambridge University Press.

Wiese, Bernd. 1996. "Iconicity and syncretism: on pronominal inflection in Modern German". In Robin Sackmann and Monika Budde (eds.), Theoretical Linguistics and Grammatical Description: Papers in Honour of Hans-Heinrich Lieb, pp.323-344. Amsterdam and Philadelphia: John Benjamins.

Competing motivations in ordering 'new' and 'old' information: A psycholinguistic investigation

Bhuvana Narasimhan[a], Christine Dimroth[b], Cecily Jill Duffield[a], Albert Kim[a]
[a] University of Colorado, Boulder; [b] Max Planck Institute for Psycholinguistics

In this paper we present findings from a series of psycholinguistic studies investigating how competing motivations influence the ways in which children and adults linearly order 'old' (or 'given') vs. 'new' referents. The notion of 'competing motivations' has been discussed in the context of patterns of information flow in discourse, in particular the linkage between the discourse-pragmatic status of referents and the speaker's choice of referential form and grammatical role to encode those referents (Du Bois 1985). Gundel (1988:229) also presents an account that links the pragmatic status of referents (as 'old' or 'new') with another formal property: how 'old' vs. 'new' referents are linearly ordered in an utterance. Gundel suggests that adults are motivated by two competing ordering preferences with regard to these properties. The first – 'provide the most important information first' – would result in an order where novel (and therefore salient) information is mentioned first, with 'given' or 'old' information mentioned later in the utterance. A second preference – 'state what is given before what is new in relation to it' – results in an 'old-before-new' order. Presumably both motivations compete during utterance production although the choice of one or the other word order may become conventionalized, resulting in a particular (language-specific) ordering preference. Gundel's account concerns the ordering of 'topic' and 'comment', or what has been referred to as "relational" givenness (topic) or newness (comment) (Gundel, 1988, 1999). In contrast, "referential" newness has to do with the activation of an entity in speakers' and hearers' mental representations. In this paper we discuss whether Gundel's proposal that competing motivations influence word order may be extended to entities whose pragmatic statuses differ *only* with respect to referential newness. That is, how do speakers prefer to order 'old' and 'new' referents when both are the same in terms of topicality (or relational givenness), but differ in their activation status in the minds of speakers and hearers?

In prior research (Narasimhan & Dimroth, 2008) we used a referential communication task where participants labeled new and old objects to assist an experimenter in a picture-matching task. In our experiments, German-speaking adults and children first saw and labeled a single object (e.g. an apple). Then they saw and labeled a pair of objects, one of which had been seen and labeled in the previous trial (e.g. an apple and a bed). In each trial, the experimenter (who could not see the objects) found a corresponding picture that matched the participants' descriptions. The dependent measure was the order in which the participants named the pair of objects ('an apple and a bed' or 'a bed and an apple'). Crucially, in the elicited responses, both nominals in the conjunct noun phrase formed part of the comment, thus avoiding a confound of referential and relational givenness and newness. Our findings showed that adults overwhelmingly prefer the 'old-before-new' order. Interestingly, 3-5-year-old German speaking children exhibit a robust preference for the *opposite* order: 'new-before-old'.

Our findings suggest that the 'old-new' ordering preference does not originate in early childhood but develops (see also Bates, 1976; Baker & Greenfield, 1988). Further, the 'old-before-new' order in adults can be related to the increased conceptual accessibility of the 'given' referent leading to its earlier mention in the utterance (Bock & Warren, 1985). But children's opposite ordering preference suggests that other considerations may play a role: it is easier to mention the new referent first, or it is of communicative importance to first mention a novel referent whose identity is unknown to the hearer. Also notable is the fact that child and adult speakers do not categorically choose one or the other ordering pattern, and in fact, some children prefer the 'old-before-new' order, while some adults prefer the 'new-before-old' order. These observations suggest that speakers' ordering patterns are probabilistic tendencies. The two ordering preferences may compete during production in all speakers, with age being one of the factors that significantly influence the probable outcome. So even adults may switch to the child-like 'new-before-old' under the appropriate conditions.

Our current hypothesis is that speakers will be more likely to use the 'new-old' order under increased processing load. When the speaker is engaged in a processing-intensive secondary recall task and must concurrently identify an object to help an experimenter find the matching picture, the identity of the new object may be most important information that must be communicated first. Alternatively, it may actually be easier to name the new object first (cf. Levelt, 1989). In our current set of studies, we first replicated the referential communication task described above with English-speaking adults and found that they exhibited the same 'old-before-new' preference observed in the German-speaking adults. We then employed the same task with English-speaking adults, adding a secondary recall task to increase participants' cognitive load. Our preliminary findings indicate that speakers do indeed show a greater tendency to use the 'new-before-old' order under these conditions. These results support the hypothesis that motivations such as 'provide the most important information first' and 'state what is given before what is new in relation to it' do compete during utterance production. The choice of one or the other may be manipulated to influence word order preferences even in adults, who have a stable 'old-before-new' preference in other circumstances.

References

Narasimhan, B., & Dimroth, C. 2008. Word order and information status in child language. Cognition, 107, 317-329.

Baker, N. D., & Greenfield, P. M. 1988. The Development of New and Old Information in Young Children's Early Language. *Language Sciences*, 1988, 10:1, 3-34.

Bates, E. 1976. *Language and Context: Studies in the Acquisition of Pragmatics*. New York: Academic Press.

Bock, J. K. & Warren, R. K. 1985. Conceptual Accessibility and Syntactic Structure in Sentence Formulation. *Cognition*, 1985, 21, 47-67.

Du Bois, J. W. 1985. Competing Motivations. In J. Haiman, ed., *Iconicity in syntax*. Amsterdam: John Benjamins, 343-365.

Gundel, J.K. 1999. Topic, Focus, and the Grammar-Pragmatics Interface. *University of Pennsylvania Working Papers in Linguistics*, 1999, 6, 1, 185-199.

Gundel, J.K. 1988. Universals of topic-comment structure. In M. Hammond et al, eds., *Studies in Syntactic Typology*. Amsterdam: John Benjamins, 209-239.

Levelt, W. J. M. (1989). *Speaking: From intention to articulation*. Cambridge, MA: MIT Press.

How are sounds stored?

Geoffrey S. Nathan
Wayne State University

The question of how (or even whether) speakers store speech sounds (segment-sized linguistic units) has been a contentious one for over a century. Since the concept of the phoneme was first introduced as a synchronic notion in the late nineteenth century, conflicting views have proliferated and contended with each other. Along with the mental target view of Baudouin, Sapir and Stampe, the distinctive feature view of Trubetzkoy and various flavors of generative-oriented phonology, including OT, a few new views have gained hold recently, incuding a much more concrete storage-heavy view termed 'usage-based' (Bybee et al.) and one based on exemplar theory (Pierrehumbert and others), as well as historically-based explanations such as Blevins. The issues raised by these competing theoretical standpoints differ along a number of dimensions related to how speech is stored, produced and perceived, and how those three issues relate to each other. Some of the dimensions include:

1   whether variants (however defined) are stored or computed online,
2   if they are computed online, are the computed variants morphophonemically related, allophonically related, phonetically related or something else
3   whether that storage is in fully specified or reduced (e.g. 'distinctive feature') form,
4   whether those features are all specified or whether some are 'later' filled in by rule
5   whether the mode of phonological storage is articulatory, acoustic, perceptual, all three, or some kind of more abstract fusion of one or more of those modes.
6   if speech sounds are a kind of category, what kind of category is it (Aristotelian, fuzzy, prototype, exemplar or other)

This paper will examine the issues that these dimensions raise for synchronic descriptions of phonology and our understanding of how phonology is acquired and produced. It will argue that each of these dimensions constitutes a pair of competing cognitive pressures. The 'solution' human language has chosen is a system based on an understanding of phonological processing similar to that proposed in Natural Phonology. It represents the results of a naturally emergent system consisting of a compromise between the demands of the local speech community and the physical and cognitive demands of the speakers.

References

Blevins, Juliette. 2004. Evolutionary *phonology: the emergence of sound patterns*. Cambridge: CUP.

Bybee, Joan L., 2001. *Phonology and Language Use*. Cambridge and New York: Cambridge University Press.

Donegan, Patricia, and David Stampe, 2009. "Hypotheses of Natural Phonology," *Poznań Studies in Contemporary Linguistics*, Vol. 45, No. 1, 1-31.

Donegan, Patricia J., 1986. *On the Natural Phonology of Vowels*. New York: Garland.

_____, and David Stampe, 1979. "The Study of Natural Phonology," in *Current Approaches to Phonological Theory.*, ed. by Dan Dinnsen. Bloomington: Indiana University Press.

Fowler, Carol, 2004. "Speech as a Supramodal or Amodal Phenomenon," in *The Handbook of Multisensory Processes*, eds Gemma A. Calvert, Charles Spence and Barry E. Stein. Cambridge: MIT Press, pp. 189-202.

Jones, Daniel, 1967. *The Phoneme: Its Nature and Use*. Cambridge: Heffer.

Levitin, Daniel J., 2006. *This is Your Brain on Music*. New York: Dutton.

Nathan, Geoffrey S., 2008. *Phonology: A Cognitive Grammar Introduction*. Amsterdam/Philadelphia: Benjamins.

_____, 2009. "Where is the Natural Phonology Phoneme in 2009," Poznań Studies in Contemporary Linguistics, Vol. 45, No. 1:141-148.

Pierrehumbert, Janet, 2002. "Word-Specific Phonetics," in *Laboratory Phonology 7*, ed. by Carlos Gussenhoven and Natasha Warner. Berlin, New York: Mouton de Gruyter, pp. 101-139.

Smith, Neilson V., 1973. *The Acquisition of Phonology: A Case Study*. Cambridge: Cambridge University Press.

Stampe, David, 1979. *A Dissertation on Natural Phonology*. New York: Garland Press.

Studdert-Kennedy, Michael, 2000. "Evolutionary Implications of the Particulate Principle: Imitation and the Dissociation of Phonetic Form from Semantic Function.," in *The Evolutionary Emergence of Language*, Chris Knight, Michael Studdert-Kennedy and James R. Hurford. Cambridge: Cambridge University Press, pp. 161-176.

WHERE DO MOTIVATIONS COMPETE?

Frederick J. Newmeyer
U of Washington, U of British Columbia, & Simon Fraser U

This paper takes as a starting point the following two ideas. The first is that major aspects of natural language morphosyntax are motivated by external functional pressure on grammars, such as pressure for rapid parsing and pressure for form and meaning to be kept in alignment. The second is that these external pressures can 'compete' with each other, in the sense that they can pull grammars in different directions. The paper is devoted to identifying the locus of this competition. There are, broadly speaking, two positions on this issue, which I call 'direct competition' (DC) and 'indirect competition' (IC):

Direct competition' (DC): There is direct synchronic linkage between properties of particular grammars and functional motivations for those properties. Hence the competing factors are 'registered' internally to grammars.

Indirect competition' (IC): There is no direct linkage between external functions and grammatical properties. The competition between external factors is played out in language use and acquisition and (therefore) language change and is manifested only typologically.

DC is implicit or explicit in a wide variety of approaches to syntax, ranging from much of mainstream functional syntax, which attributes great importance to functionally-motivated hierarchies, to the approach known as 'emergent grammar', and to many implementations of optimality theory. The purpose of the paper, however, is to defend IC. A number of considerations support IC over DC:

1.   DC underplays or ignores the role of conventionality as an explanatory factor. A structure may enter a language primarily to serve a particular function, but be retained by that language by force of conventionality even after that function ceases to be served.

2.   DC exaggerates the function-drivenness of language change. An important result of historical sociolinguistics is that social factors are more important than (user-based) functional ones in the propagation of a change.

3.   DC is forced to downplay the (nonfunctional, in the ordinary use of the term) structural-systematic pressures on grammars.

4.   DC has difficulty dealing with the incidentally dysfunctional consequences of an otherwise functionally-motivated change (e.g. Lightfoot's discussion of the strategies that languages develop for extracting subjects).

The paper concludes by sketching a view of grammars consistent with IC. The centerpiece of the argument is an analogy between grammars and pathological

conditions such as lung cancer. We can pinpoint smoking as a cause of lung cancer in general, even though the complexity of any pathology prevents us from conclusively attributing any individual case to smoking. Along the same lines, we can pinpoint parsing ease, iconicity, etc. as motivating factors for grammatical structure, even though, contra DC, there is no hope of identifying parsing or iconicity as motivators for particular structures or rules in particular languages.

Martin C. Pfeiffer
Hermann Paul School of Language Sciences
University of Freiburg
martin.pfeiffer@hpsl.uni-freiburg.de

Formal vs. functional motivations for the structure of self-repair in German

In the study of self-initiated self-repair in spoken language, there are two main strands of research. In Conversation Analysis, self-repair is perceived as one part of a larger functional resource for dealing with problems in speaking, hearing and understanding (cf. Schegloff, Jefferson, Sacks 1977). Adopting a more structural point of view, recent comparative studies in interactional linguistics (e.g. Fox, Hayashi, Jasperson 1996; Fox, Maschler, Uhmann 2009, Birkner, Henricson, Lindholm, Pfeiffer, in prep.) have shown that the syntactic organization of self-repair is influenced by the different morphosyntactic characteristics of the respective languages (e.g. word order, morphological complexity, strength of bonds between constituents). However, it is yet largely unknown to what extent functional motivations compete with the formal motivations mentioned above in determining the syntax of self-repair in a specific language. By focusing on the influence of certain cognitive and interactional needs of speakers and hearers on the structure of self-repair, this paper addresses an aspect of self-repair that has not yet been subject to systematic investigation.

Uhmann's (2001, 2006) *Extended Head Rule* claims that the structure of self-repair in German is determined by a purely syntactic property, namely the functional head immediately c-commanding the repairable. Somewhat simplified, Uhmann's basic assumption is that speakers who carry out self-repair in German start, depending on the respective phrase, with the determiner, preposition or finite verb directly preceding the repairable. However, as my syntactic analysis of 262 instances of naturally occurring self-repair in German shows, the functional head cannot explain the structural diversity in self-repair. In particular, the part of the *Extended Head Rule* which primarily concerns content-word-repairables has profound shortcomings and cannot account for 59% of the examples in my data (see ex. 1 below, where the speaker does not retrace to the preposition 'durch' *through* and thereby contradicts the *Extended Head Rule*).

Therefore, following Du Bois (1985), I will argue that an adequate explanatory model for the syntactic structure of self-repair cannot be based on purely language-internal features, but will have to recognize the interaction of competing formal (morphosyntactic) and functional (cognitive and interactional) motivations. On the basis of several patterns of self-repair that occur in my corpus, I will demonstrate how formal and functional motivations respectively shape the structure of self-repair in certain contexts. An example for the former is the general tendency to retrace to prepositions, which are grammatically important positions in German. The latter include the economic tendency to avoid recycling of polysyllabic constituents in the German front field (see ex. 2 below, where the monosyllabic constituent 'die' *she* is recycled prior to the substitution of the finite verb, and ex. 3, where the polysyllabic constituent 'gartenseite' *garden side* is not recycled prior to the substitution of the finite verb) as well as the use of word cut-off and minimal retraction span to signal error repair to the hearer (see ex. 1 for the prototypical pattern of phonetic error corrections in German). In this type of repair, the otherwise strong formal motivation to retrace to prepositions is regularly overridden by the functional motivation for quick error correction.

These findings suggest that competing motivations, besides their importance for grammaticization in general (cf. Du Bois 1985), are also crucial to the formation of the repair system, which operates within and is constrained by a language-specific grammatical framework, but additionally adapts to the cognitive and interactional needs of participants engaged in the activity of self-repair.

Examples

```
(1)

1      HH04: äh es waren auch schon VIEle aus (-)
             uh there were also quite a lot from
2            die also NICH aus hamburch kamen
             who (particle) did not come from hamburg
3            die also durch die FLÜCKlich*(-)
             who (particle) through the (intended noun with phonetic errors)
4            FLÜCHTlingstrecks °h nach hamburch gekommen sind
             refugee treks to hamburg have come


(2)

1      HH04: die kam äh (-)
             she came uh
2            die kommt aus sachsen ANhalt
             she comes from sachsen anhalt


(3)

1    i-mu05: witzigerweise auf der straßenseite is=es HÖher
             funnily enough on the street side it is higher
2            und gartenseite liegt* äh i is TIEfer
             and garden side lies uh is lower
```

References

Birkner, Karin / Henricson, Sophie / Lindholm, Camilla / Pfeiffer, Martin C. (in prep.): Retraction patterns and self-repair in German and Swedish prepositional phrases.

Du Bois, John W. (1985): Competing Motivations. In: Haiman, John (Ed.): *Iconicity in Syntax*. Amsterdam/Philadelphia: John Benjamins Publishing Company, 343-365.

Fox, Barbara A. / Hayashi, Makoto / Jasperson, Robert (1996): Resources and Repair: A Cross-Linguistic Study of Syntax and Repair. In: Ochs, Elinor / Schegloff, Emanuel A. / Thompson, Sandra (Eds.): *Interaction and Grammar*. Cambridge: Cambridge University Press, 185-237.

Fox, Barbara A. / Maschler, Yael / Uhmann, Susanne (2009): Morpho-syntactic resources for the organization of same-turn self-repair: Cross-linguistic variation in English, German and Hebrew, in: Gesprächsforschung – Online-Zeitschrift zur verbalen Interaktion 10, 245-291.

Schegloff, Emanuel A. / Jefferson, Gail / Sacks, Harvey (1977): The Preference for Self-Correction in the Organization of Repair in Conversation. In: *Language* 53, 361-382.

Uhmann, Susanne (2001): Some arguments for the relevance of syntax to same-sentence self-repair in everyday German conversation. In: Selting, Margret / Couper-Kuhlen, Elizabeth (Eds.) (2001): *Studies in Interactional Linguistics*. Amsterdam: John Benjamins, 373-404.

Uhmann, Susanne (2006): Grammatik und Interaktion: Form follows function? Function follows form? In: Deppermann, Arnulf / Spranz-Fogasy, Thomas / Fiehler, Reinhard (Ed.): *Grammatik und Interaktion*. Radolfzell: Verlag für Gesprächsforschung, 95-122.

Testing Two Processing Principles with Respect to the Extraction of Elements out of Complement Clauses in English

Günter Rohdenburg, University of Paderborn

This paper sets out to contrast two processing principles, the Complexity Principle (e.g. Rohdenburg 1996, 2007) and the Domain Minimization Principle (e.g. Hawkins 1999, 2004) in cognitively demanding environments such as (1).

(1) a. This is a task we don`t know how to deal with.

    b. * This is a task we don`t know how we should/could deal with.

Examples (1a-b) illustrate the structure produced by the extraction of (mostly postverbal) elements out of competing complement clauses.

The Complexity Principle represents a correlation between two dimensions, cognitive complexity and grammatical explicitness, and it has been described as follows:

> In the case of more or less explicit constructional options the more explicit one(s) will tend to be preferred in cognitively more complex environments.

The principle covers a great variety of grammatical manifestations of cognitive complexity including those in (2).

(2) a. discontinuous structures involving various kinds of insertions

    b. voice contrasts

    c. complement negation

    d. the length of the complement clause

    e./f. gapping and right node raising

The Domain Minimization Principle may be described as a processing tendency which consists in minimizing the size and complexity of various domains including the filler-gap domain in cases like (1). For our purposes, Hawkin`s most important insight is expressed in terms of an implicational scale for gaps in clause embeddings:

> It appears that infinitival phrases are most hospitable to gaps, while finite subordinate clauses are more resistant, while complex NP environments are most resistant of all. (Hawkins 1999:263; cf. also Hawkins 2004:193)

Unlike the Complexity Principle, which makes the wrong prediction in (1), the Domain Minimization Principle accounts for the acceptability contrast in a natural way.

Going beyond the three kinds of subordinate clauses discussed by Hawkins, this paper investigates two novel sets of competing complements. The behaviour of the first group of clausal alternatives is well in line with Hawkin`s prediction, though again incompatible with the Complexity Principle. The group is exemplified in (3).

(3) a. We would like the event (to be) rescheduled.

    b. This is the event we would like (to be) rescheduled.

In (3) the textual frequency of the shorter and less explicit variant is found to be increased in the extraction context provided in the b-example.

However, there is also a sizeable range of complement pairs whose distribution inside and outside of extraction contexts is predicted by the Complexity Principle but unaccounted for by the Domain Minimization Principle. Some relevant phenomena include the following:

(4) a. marked infinitives vs unmarked ones (after *help*)

    b. perfective gerunds vs non-perfective gerunds (e.g. after *recall*, *remember* and *admit*)

    c. *should* + infinitive vs subjunctive after mandative predicates like *recommend*

Corpus analyses leave no doubt that in all of these cases it is the more explicit and typically more complex option that shows a special affinity with extraction contexts. Thus the visible effects of the two antagonistic principles are found with largely complementary ranges of complement types. It follows that we cannot dispense with the basic insights afforded by either principle.

The paper concludes by attempting to account for the kind of division of labour observed between the two principles under scrutiny. It will be suggested that the marked infinitive (on its own or with an associated NP) enjoys a privileged or target status in extraction contexts. For instance, with the verbs of knowing, thinking and saying the marked infinitive in so-called raising structures is preferred over both the finite clause, which is too complex, and the object predicative (produced by *to be*-deletion), which is less explicit.

References

Hawkins, John A. (1999)."Processing complexity and filler-gap dependencies across grammars". *Language* 75. 244-285.

--- (2004). *Efficiency and Complexity in Grammars*. Oxford: Oxford University Press.

Rohdenburg, Günter (1996)."Cognitive complexity and increased grammatical explicitness in English". *Cognitive Lingustics* 7. 149-182.

--- (2007)."Functional constraints in syntactic change: The rise and fall of prepositional constructions in Early and Late Modern English". *English Studies* 88. 217-233.

Competing cues in the acquisition of semantic roles: New evidence from the dative in English and Welsh

Caroline Rowland
University of Liverpool
Claire Noble
Max Planck Child Study Centre, University of Manchester

A central task in acquiring a language is learning the way in which the individual components of a sentence are combined to convey meaning (the form-function mapping problem). Competing motivations approaches to this question (e.g. the competition model) have had a great deal of success at explaining not only cross-linguistic variation but also within-language developmental differences in how children and adults assign meaning (e.g. why English speakers rely on word order cues more than Italian speakers when assigning agent and patient semantic roles (Bates et al, 1984), why French children rely more on word order cues than French adults (Kail & Combier, 1983). The aim of the present study was to apply a competition model approach to the acquisition of semantic roles in dative structures to test two predictions; a) that cross-linguistic variation in cue strength is determined by the frequency with which different cues are heard in the language, and b) that cue strength should be calculated based on the behaviour of cues within a particular syntactic structure rather than calculated across the language as a whole.

We employed a novel verb forced-choice pointing paradigm to investigate 3- and 4-year old Welsh and English children's ability to assign the semantic roles of theme and recipient correctly in standard prepositional (*theme-1st*) datives (e.g. I'm [agent] glorping the duck [theme] to the teddy [recipient]) and reversed order datives (*recipient-1st* datives: I'm [agent] glorping the teddy [recipient] the duck [theme]). The cross-linguistic design allowed us to assess the role of three cues to dative interpretation: a) the presence of a local cue – the preposition (*to*) - that always precedes and thus marks the recipient role, b) the relative frequency of the two different word orders in dative sentences (*theme-1st* vs *recipient-1st* datives), and c) the overall frequency of the *theme-1st* word order in the language as a whole (sentences in which the 1st post-verbal noun is the theme/patient are the most frequent multi-noun structures in both languages).

The results demonstrated that the relative frequency of the two word orders in dative sentences straightforwardly predicted the Welsh data. The Welsh children were able to interpret the highly frequent *theme-1st* datives by age 3 years but were unable to interpret the much lower frequency *recipient-1st* datives at either age, despite the fact that Welsh *recipient-1st* datives contain a preposition (*Y bachgen rhoddodd i'r ferch y llyfr* [The boy gave **to the girl** the book]). In fact, the Welsh 4-year-olds misinterpreted *recipient-1st* datives as if they were standard *theme-1st* datives, assigning the theme role to the first post-verbal noun. However, relative frequency of use did not straightforwardly predict acquisition in English. Despite the fact that the *recipient-1st* datives are twice as frequent in the language, the two datives were acquired at the same time. The English 4-year-olds interpreted both dative types at above chance levels (p < 0.05). The English 3-year-olds were unable to interpret either dative type.

We draw two conclusions from the results. First, although the position of the preposition in datives is both a highly available and reliable cue to recipient identity, neither the 3- nor the 4-year-old children had learnt the significance of this cue (though they may, of course, be aware of its meaning). We conclude that the multi-functionality of prepositions may delay acquisition (e.g. *to* can be used to indicate other semantic roles such as goal). Second, to explain why, in English, the lower frequency *theme-1st* dative was acquired in tandem with the higher frequency *recipient-1st* dative, we suggest that the learning mechanism is not only learning cues to meaning from prior experience of particular dative structures but is also generalizing from prior experience across different syntactic structures.

There are two (not mutually exclusive) explanations for how this might occur, both provided by Abbot-Smith & Behrens's (2006) idea of "*construction conspiracies*". The first is that the children's extensive experience of syntactic structures in which the first noun after the verb takes a theme/patient role (e.g. the transitive), *helped* them acquire the lower frequency *theme-1st* dative earlier than might be expected (i.e. strengthened the *theme-1st* cue). The second explanation is that, because the two dative structures are used to express similar meanings, they compete with each other; *hindering* the acquisition of both (the *theme-1st* cue competes with the *recipient-1st* cue). This latter explanation may also account for why the Welsh 4-year-olds seem to perform worse with the *recipient-1st* datives than the Welsh 3-year-olds. As the Welsh children's representation of the dominant, early learnt, *theme-1st* dative becomes more robust with age, it increasingly interferes with their ability to interpret the alternative *recipient-1st* dative; an error that is only corrected when the children learn the significance of the cue to recipient identity provided by the preposition.

The Winner Gets it All: *Strategies for Object Naming in Russian*

Tatiana Yu. Sazonova
TSazonova@gmail.com
Northern Illinois University (USA)
Kursk State University (Russia)

The data collected in the object-naming experiment for 520 black-and-white line drawings were analyzed to examine the universal and language-specific processes that ensure lexical recognition and guide word meaning access. Depending on the formal and/or semantic cues competing to trigger a word for naming, the following naming strategies were brought to light:

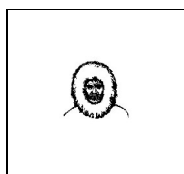*Categorization strategy* (presenting all levels of categorization)

most (10) – "bridge"
Golden Gate Bridge

statuya (7) – "statue"
Venera Milosskaya (4)
Venera – "Vinus"

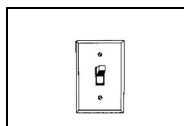*Strategy of naming by synonymous word* (synonyms and similars considered)

eskimos (5) – "Eskimo"
chukcha (2) – "Chukchi man"
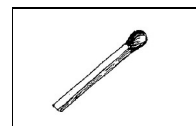nenetz, - "Nents"
polyarnyi zhitel – "Polar inhabitant"

palatka (5) – "tent"
shalash (4) – "shelter of branches"
yurta (3) – "normad's tent"
chum – "chukchi man's tent"

Strategy of naming in accordance with formally identified features

vyklyuchatel' (11) – "switch"
dver' – "door"
seif – "safe"

spichka (10) – "match"
papirosa – "sigarette"
kistochka – "brush"

Word-formation strategy, mostly represented by target word derivatives.

The central ideas of Competition Model [Bates & MacWhinney 1989] were expanded to account for the results.The discussion of the naming strategies is carried out within the suggested word identification model framework [Sazonova 2000]. It is an interactive model which treats mental lexicon as a dynamic functional system and an integral part of human cognitive abilities. The items in the mental lexicon are viewed as products of a complex interaction of perceptual, cognitive, emotional, and verbal experience stored in one's memory and simultaneously utilized at different levels of consciousness when a word provides access to interconnected fragments of the personal knowledge. Within this framework picture naming process is studied as the phenomena of "natural semiosis". Naming is viewed as a process which occurs «here and now» and largely depends upon the features recognized in the picture as well as on the wider context of all mental processes participating in maintenance of successful lexical access.

The acquisition of the Japanese imperfective aspect marker:
What do children do when universals and input frequency compete?

Yasuhiro Shirai (University of Pittsburgh) & Yoko Suzuki (University of Tokyo)

The acquisition of tense-aspect markers has been a fertile testing ground for the theory of language acquisition for the past 40 years. One important observation has been that crosslinguistically, children associate past-perfective marking with telic verbs, general imperfecitve marking to atelic verbs, and progressive marking with activity verbs at the early stages of development (Brown, 1973, Bloom et al., 1980, for English; Antinucci & Miller, 1976 for Italian; Stephany, 1981 for Greek; Aksu-Koç, 1988 for Turkish, among others). Although researchers generally agree on this descriptive observation (e.g. Shirai, Slobin & Weist, 1998), the explanation for this observation has been controversial. One major hypothesis appeals to a universal predisposition (e.g., Bickerton, 1981), which presupposes that children have bias in mapping tense-aspect markers with particular semantic content; namely, they look for punctuality/telicity on the one hand, and durativity/atelicity on the other, on which to map morphology. Another major hypothesis appeals to input (the Distributional Bias Hypothesis, e.g. Shirai & Andersen, 1995), which argues that children make particular associations based on input frequency; that is, associations in acquisition is based on skewed input frequency, which they supported by analyzing input data in mother-child interaction in English.

These two competing hypotheses, however, cannot easily be tested because for most languages that have been investigated, universal explanation and input explanation essentially make the same prediction because the telic-perfective/past, atelic-imperfective, and activity-progressive associations are highly frequent universal prototype/default, coming from discourse motivation of conveying temporal information in real time (Andersen & Shirai, 1994; Bohenmeyer & Swift, 2004; Wu, 2002). Therefore, it is essential to investigate a language where two forces – universal and input – compete, not corroborate. Japanese is one such language.

This is because of a unique feature of the Japanese imperfective marker *-te i-*. Although the perfective-imperfective distinction is the most basic aspectual distinction crosslinguistically, Japanese *-te i-* combines these two distinct notions in one form. That is, when it is attached to durative verbs (accomplishment, activity, and state), it denotes progressive meaning, which is a type of imperfective aspect, but when it is attached to achievement verbs, it denotes resultative meaning, which is closely associated with perfective aspect (Shirai, 1998). Further, it has been observed that in adult-adult discourse, the most frequent use of *-te i-* is not progressive meaning or activity verbs, but resultative state meaning denoted by achievement verbs (Shirai & Nishi, 2005). Therefore, the universalist hypothesis predicts that children will associate it with activity verbs to denote progressive meaning, while the distributional bias hypothesis predicts that it will follow frequency and associate it with achievement verbs to denote resultative meaning. Although the previous studies that looked at input frequency to Japanese children (Shirai, 1993, 1998) indicate that mothers used *-te i-* somewhat more frequently with activity verbs, they used the corpora that did not completely recorded adult input. The present study used newly available data on CHILDES (MacWhinney, 2000) from three boys (Hamasaki, 2002; Ishii, 2004; Miyata, 2004) to investigate how children and their caretakers use imperfecitive *–te i-* in their interaction. The results indicate that there is no preponderance of activity verbs and thus progressive meaning (states and accomplishments are very infrequent). For all three children, the use of *-tei-* with achievements is more frequent than with activities (average 66.2% vs. 32.2%). In addition, caretaker speech also showed the same tendency, exhibiting more frequent use of achievements (average 62.4% vs. 32.5%). The results suggest that frequency is more important than universal predisposition in the acquisition of tense-aspect markers, thus supporting the distribution bias hypothesis, and the usage-based model, more generally.

Table 1. The percentage of *-te i-* used with achievement verbs by the children and caretakers (token count)

Hamasaki	pre-emergence (average)	post-emergence					
	2;2 – 2;10	2;11	3;0	3;1	3;2	3;3	3;4
Child (Taro)	N/A	0	100	50	88.9	71.4	0
caretakers	61.8	57.8	62.5	69.2	60.6	78.3	63.2

Ishii	pre-emergence (average)	post-emergence			
	1;5 – 2;1	2;2	2;3	2;4	2;5
Child (Jun)	N/A	50.0	57.1	62.5	68.8
caretakers	52.6	66.7	50.0	57.6	64.3

Miyata	pre-emergence (average)	post-emergence											
	1;3 – 2;0	2;1	2;2	2;3	2;4	2;5	2;6	2;7	2;8	2;9	2;10	2;11	3;0
Child (Ryo)	N/A	100.0	40.0	93.3	75.0	88.9	100.0	81.8	60.4	66.7	83.3	48.3	85.7
caretakers	86.7	43	50	82.4	70	40	90.9	37.5	38.9	71.4	71.4	81.3	100

References

Aksu-Koç, A. (1988). *The acquisition of aspect and modality: The case of past reference in Turkish.* Cambridge: Cambridge University Press.

Andersen, R. W., & Shirai, Y. (1994). Discourse motivations for some cognitive acquisition principles. *Studies in Second Language Acquisition*, *16*, 133-156.

Antinucci, F., & Miller, R. (1976). How children talk about what happened. *Journal of Child Language*, *3*, 169-189.

Bickerton, D. (1981). *Roots of language.* Ann Arbor, MI: Karoma.

Bloom, L., Lifter, K., & Hafitz, J. (1980). Semantics of verbs and the development of verb inflection in child language. *Language*, *56*, 386-412.

Bohnemeyer, J., & Swift, M. (2004). Event realization and default aspect. *Linguistics and Philosophy*, *27*, 263-296.

Brown, R. (1973). *A first language: The early stages.* Cambridge, MA: Harvard University Press.

Hamasaki, N. (2002). The timing shift of two-year-olds' responses to caretakers' yes/no questions. In Y. Shirai, H. Kobayashi, S. Miyata, K. Nakamura, T. Ogura & H. Sirai (Eds.), *Studies in language sciences (2)* (pp. 193-206). Tokyo: Kurosio Publishers.

Ishii, T. (2004) Ishii-Corpus. Pittsburgh, PA: TalkBank. ISBN 1-59642-054-5.

MacWhinney, B. (2000). The CHILDES project: Tools for analyzing talk. Mahwah, NJ: Erlbaum.

Miyata, S. (2004). Ryo-Corpus. Pittsburgh, PA: TalkBank. 1-59642-056-1.

Shirai, Y. (1993). Inherent aspect and the acquisition of tense/aspect morphology in Japanese. In H. Nakajima & Y. Otsu (Eds.), *Argument structure: Its syntax and acquisition* (pp. 185-211). Tokyo: Kaitakusha.

Shirai, Y. (1998). The emergence of tense-aspect morphology in Japanese: universal disposition? *First Language*,*18*, 281-310.

Shirai, Y., & Andersen, R. W. (1995). The acquisition of tense-aspect morphology: A prototype account. *Language, 71*, 743-762.

Shirai, Y., & Nishi, Y. (2005). How what we mean impacts how we talk: The Japanese imperfective aspect marker -*teiru* in conversation. In J. Frodesen & C. Holten (Eds.), *The power of context in language learning and teaching* (pp. 39-48). Boston, MA: Thomson Heinle.

Shirai, Y., Slobin, D., & Weist, R. M. (1998). Introduction: The acquisition of tense-aspect morphology. *First Language, 18,* 245-253.

Stephany, U. (1981). Verbal grammar in modern Greek early child language. In P. S. Dale & D. Ingram (Eds.), *Child language: An international perspective* (pp. 45-57). Baltimore, MD: University Park Press.

Wu, R-J. R. (2002). Discourse-pragmatic principles for temporal reference in Mandarin Chinese conversation. *Studies in Language, 26,* 513-541.

Differential vs. consistent object marking: Convergent and competing motivations

Kaius Sinnemäki
University of Helsinki

In this presentation I discuss case marking of objects and the motivations behind its typological distribution. Two types of case marking are distinguished for the purpose of this study, namely differential and consistent marking. In many languages only a subset of objects are overtly case-marked, usually animate objects, as in Malayalam (1). Constructions of this type are generally referred to as differential object marking (DOM), a phenomenon which has received a lot of attention in linguistics during the past 30+ years (e.g. Comrie 1989; Bossong 1991; Aissen 2003). In some case-marking languages all objects receive the same case regardless of e.g. the semantic properties of the object, as in Imbabura Quechua (2). This type of construction is here called consistent object marking. Based on a stratified sample of roughly 700 languages, DOM is universally preferred over COM, that is, independently of confounding genealogical and areal factors (Sinnemäki 2009, (in preparation)).

My aim here is two-fold. Firstly, I argue that the universal preference to DOM is affected by a convergence of multiple motivations instead of it being caused by a single motivation, such as ambiguity avoidance (Comrie 1989), transitivity (Næss 2004), or e.g. frequency (Haspelmath 2008). The reason for this is that DOM can have both an indexing function – to index the most affected or prominent participant – and a differentiating function – to distinguish the arguments of a transitive verb from one another (e.g. de Swart 2007) – while at the same time being restricted to a subset of objects that are comparatively rare in discourse, namely animate and/or definite nouns. As a result, limiting ones explanation of DOM to a single cause would destroy the natural multicausality of the phenomenon. Secondly, I argue that the existence of COM in a sizable proportion of languages (roughly 25%) can be attributed to a single motivation that competes with those behind DOM, namely structural simplicity. Since all objects are marked analogously in COM, it is simpler than DOM, which restricts case marking to a subset of objects and consequently requires greater contextual specification in its description. Yet, simplicity alone is a weak motivation, accounting much less data than the convergent motivations behind DOM. Alternatively, one could couch the varying degrees of motivation of DOM and COM in terms of efficiency of language processing (Hawkins 2004), but since efficiency can be affected by several different factors, this does not affect the argument based on convergent motivations.

As a conclusion, there is good reason to believe that universal preference to DOM derives from being motivated by a greater number of structural and semantic factors than COM. Finally, I also discuss the possibility that typological preferences and correlations could be more generally caused by convergent motivations.

Examples:

Malayalam (Southern Dravidian; Asher & Kumari 1997: 203)
(1)   a.   *Avan   kuTTiy-e   aTiccu.*
            he   child-ACC beat:PST
            'He beat the child.'
    b.   *Avan   pustakam vaayiccu.*
            he   book   read:PST
            'He read the book.'

Imbabura Quechua (Quechuan; Cole 1985: 66, 98)
(2)   a.   *Juzi   Marya-ta   juya-n-mi.*
            José   María-ACC   love-3-VAL
            'José loves María.'
    b.   *Ñuka-ka aycha-ta   miku-ni ñuka wawki tanda-ta   miku-j-shna.*
            1-TOP   meat-ACC eat-1   1   brother bread-ACC eat-NMLZ-as
            'I eat as much meat as my brother eats bread.'

Abbreviations: 1 first person, 3 third person, ACC accusative, NMLZ nominalizer, PST past, TOP topic, VAL validator.

References:
Aissen, Judith 2003. Differential object marking: Iconicity vs. economy. *Natural Language and Linguistic Theory* 21(3): 435-483.
Asher, Ronald E. & T. C. Kumari 1997. *Malayalam*. London: Routledge.
Bossong, Georg 1991. Differential object marking in Romance and beyond. In Dieter Wanner & Douglas A. Kibbee (eds.), *New analyses in Romance linguistics*, 143-170. Amsterdam: John Benjamins.
Cole, Peter 1985. *Imbabura Quechua*. London: Croom Helm.
Comrie, Bernard 1989. *Language universals and linguistic typology: Syntax and morphology*, 2nd edn. Oxford: Blackwell.
Haspelmath, Martin 2008. Frequency vs. iconicity in explaining grammatical asymmetries. *Cognitive Linguistics* 19(1): 1-33.
Hawkins. John A. 2004. *Efficiency and complexity in grammars*. Oxford: Oxford University Press.
Næss, Åshild 2004. What markedness marks: the markedness problem with direct objects. *Lingua* 114(9-10): 1186-1212.
Sinnemäki, Kaius 2009. Differential object marking: A cross-linguistic study. Presentation in workshop *Differential object marking: Theoretical and empirical issues*, [conference *Case in and across languages*], Helsinki, 27.8.2009.
Sinnemäki, Kaius (in preparation). DOM in a cross-linguistic perspective. An article based on Sinnemäki (2009).
de Swart, Peter 2007. *Cross-linguistic variation in object marking*. Ph.D. thesis, Radbound University Nijmegen.

A Statistical Model of Competing Motivations Affecting Relative Clause Extraposition in German

Jan Strunk

Sprachwissenschaftliches Institut

Ruhr-Universität Bochum, Germany

E-mail: `strunk@linguistics.rub.de`

Relative clauses in German and other languages are usually realized *integrated* in the noun phrase that they modify but they can also be separated from their antecedent by intervening material and occur further to the right in *extraposed* position, mostly at the end of the matrix clause. It is usually assumed that the integrated and extraposed variants of relative clauses are semantically equivalent.

Relative clause extraposition has mostly been studied within generative grammar using introspective data (e.g. Baltin, 2006). Although a few corpus studies have also been published (Shannon, 1992; Uszkoreit et al., 1998; Hawkins, 2004), they have mostly concentrated on individual factors and have not tried to account for relative clause extraposition as a syntactic alternation using an integrated (statistical) model – as proposed, for example, for the English dative alternation by Bresnan et al. (2007).

Authors working within a formal generative paradigm like Baltin (2006) have identified different factors affecting (relative clause) extraposition than authors working within a functional and/or corpus-linguistic paradigm such as Hawkins (2004) and Shannon (1992); cf. the lists in (1). Generative linguists have also traditionally regarded constraints as categorical, whereas functionally oriented linguists have tended to regard proposed factors as gradient or probabilistic.

(1)   **Generative studies:** syntactic locality, definiteness of the antecedent, restrictiveness of the relative clause

      Functionalist studies: linear distance between relative clause and antecedent, length of the relative clause, information structure in the matrix clause

In earlier studies (e.g. Strunk 2010), I was able to show using corpus data and univariate statistical methods that the constraints proposed in generative studies based on intuitions do indeed go in the right direction but go too far in assuming categorical constraints.

In my contribution to this conference, I would like to present the results of a more detailed corpus study using an integrated logistic regression model that combines various competing factors and predicts whether a relative clause will be extraposed or not. This model is built on the basis of a treebank of written German that is enriched with an additional annotation level and additional features relevant for relative clause extraposition. The corpus currently contains 2,603 sentences including 2,789 relative clauses in all. In the statistical model, I combine the factors proposed in generative and functionalist studies as well as additional predictors in order to determine which of the different proposed factors are indeed needed to account for the linearization decision and which can be reduced to other factors.

Table 1 gives coefficients and p-values for significant predictors in a preliminary statistical model (prediction accuracy: 85%). These preliminary results already show that both "formal" factors such as syntactic locality (*embedding*) and also functional factors such as *length of the relative clause* and the position of the antecedent (*Nachfeld/Vorfeld*) have a significant impact. The most important predictor in the model is the position of the antecedent within the topological structure of the German clause: Specifically, the likelihood of extraposition decreases dramatically if the antecedent is located in the *Vorfeld* ("prefield") in front of the finite verb (cf. Shannon, 1992). This is also in accordance with Uszkoreit et al. (1998), who found that the linear distance between the antecedent and the relative clause in words was the strongest factor influencing extraposition (cf. also Hawkins, 2004).

Even though the position of the antecedent within the matrix clause affects relative clause extraposition very strongly, quite a few authentic examples can be found in which a relative clause is extraposed from an antecedent in the *Vorfeld* over a relatively long distance; cf. examples (2) and (3). As an additional topic, I would therefore like to discuss, based on further corpus and experimental evidence, how very strong constraints can sometimes be exceptionally overridden, either by the cumulative force of weaker competing constraints or by special marking strategies (such as cataphoric demonstratives).

Factor	Coeff.	Std. Err.	z value	p value
(Intercept)	-1.59	0.30	-5.23	<0.001
embedding	-0.34	0.14	-2.37	0.018
indefinite antecedent	1.44	0.23	6.28	<0.001
appositive relative clause	-0.63	0.21	-3.03	0.002
length of the relative clause	0.15	0.03	5.70	<0.001
accusative case	1.81	0.26	7.05	<0.001
dative case	1.22	0.28	4.35	<0.001
genitive case	2.16	0.46	4.72	<0.001
complex name	2.11	1.06	1.99	0.046
cataphoric	0.61	0.52	1.18	0.238
Nachfeld	-20.76	554.35	-0.04	0.97013
Vorfeld	-5.13	0.49	-10.55	<0.001

Table 1: Preliminary logistic regression model of relative clause extraposition

(2) $[_{PP}$ In $[_{NP}$ welches SKigebiet ___ $]]$ kann man über die Osterferien fahren
in what skiing region can you over the spring break drive
$[_{RC}$ das noch Schneesicher ist$]$ $[...]$
that still snow-sure is

"In what skiing region can you travel over spring break that is guaranteed to have snow?"

(www.bergfex.at/forum/allgemein/?&msgID=1000049637, 2007-02-19)

(3) $[_{NP}$ Nur derjenige ___ $]$ kann eine Anrechnung einer Maßnahme bei künftigen
only DEM can a consideration of.a measure during future
Eingriffen in Natur und Landschaft verlangen (Ökokonto), $[_{RC}$ der ...$]$
interference in nature and landscape demand (eco-account), who ...

"Only he can demand the consideration of a measure during future interference with nature or landscape (eco-account) who ..."

(Natur und Recht, Volume 28, Number 7, July 2006, pp. 471-472(2))

References

Baltin, M. R. (2006). Extraposition. In M. Everaert and H. C. van Riemsdijk (Eds.), *The Blackwell Companion to Syntax*, Volume 2, pp. 237–271. Blackwell, Malden, Massachusetts.

Bresnan, J., A. Cueni, T. Nikitina, and H. Baayen (2007). Predicting the dative alternation. In G. Bouma, I. Krämer, and J. Zwarts (Eds.), *Cognitive Foundations of Interpretation*, pp. 69–94. Royal Netherlands Academy of Science, Amsterdam, The Netherlands.

Hawkins, J. A. (2004). *Efficiency and Complexity in Grammars*. Oxford University Press, Oxford, UK.

Shannon, T. F. (1992). Toward an adequate characterization of relative clause extraposition in modern German. In I. Rauch, G. F. Carr, and R. L. Kyes (Eds.), *On Germanic Linguistics. Issues and Methods*, pp. 253–281. Mouton de Gruyter, Berlin/New York.

Strunk, J. (2010). Enriching a treebank to investigate relative clause extraposition in German. In *Proceedings of the Seventh Conference on International Language Resources and Evaluation (LREC'10), May 19-21, 2010, Valletta, Malta*, pp. 1911–1917.

Uszkoreit, H., T. Brants, D. Duchier, B. Krenn, L. Konieczny, S. Oepen, and W. Skut (1998). Studien zur performanzorientierten Linguistik: Aspekte der Relativsatzextraposition im Deutschen. *Kognitionswissenschaft 7*(3), 129–133.

The role of containment and rules in the acquisition of underlying forms
Ruben van de Vijver & Dinah Baer-Henney
Universität Potsdam
vijver.rubenvande@googlemail.com, dinah.baerhenney@googlemail.com

Simple lexical representations are motivated by economy. Such representations require less storage space, and are easier to retrieve. For children, who have a smaller lexicon, is might be more important, however, to store lexical items with more details making it easier to connect items with one another. We will show that the latter is more important than the former in acquisition. We propose that a lexical entry contains all allomorphs and that these allomorphs are connected by rules (Albright & Hayes, 2003) whose application is constrained by containment (Prince & Smolensky, 1993).

In a wug test (Berko-Gleason, 1958) we asked 10 5 year old children to produce a plural for a given singular, and 30 5 year olds to produce a singular for a given plural. We used both existing words and phonotactically legal nonsense words. Children produce plurals from singular existing words, from singular nonsense words and singulars from existing plurals. They do not, however, produce singulars from nonsense plurals. Instead they repeat the given plural as singular. This effect has been observed for Dutch children (Kerkhoff, 2007) as well as for American adults (Pierrehumbert, 2006).

To explain this asymmetry, we propose a theory of the acquisition of underlying forms that is based on the principle of *containment* (McCarthy & Prince, 1993). This principle says that the input must be contained in the output. We specifically propose that underlying forms contain all members of a paradigm, in our study the singular and the plural of nouns, and children gradually use their underlying forms to isolate affixes from roots. The members of a paradigm are linked by means of rules, whose application is constrained by containment.

Containment says that no element may literally be removed from the input, and, as a consequence, the input is contained in every candidate form (McCarthy & Prince, 1993). In the case of nonsense words, children will assume that the output form is the input form. If they are asked to form a plural from a given singular, they avoid removing elements from the input, but they may add material. If their lexicon contains singular plural pairs, they perform a phonological analysis to establish the rules which connect the pairs (Albright & Hayes, 2003).

The underlying forms are richer than is assumed in standard generative phonology (Chomsky & Halle, 1968; Prince & Smolensky, 1993). The underlying form of a noun contains all members of its paradigm, for example, the underlying form of the German noun [tɪʃ] "table" is < /tɪʃ/, /tɪʃə/>. At first, the plural suffix is not isolated; there is evidence that children first use either form as singular or plural (Brown, 1973). If a child is asked to form a plural for the nonsense singular [kɪʃ], she will use her lexicon and try and find a rule that derives it. Since [kɪʃ] and [kɪʃ] only differ in the place of articulation of the onset, the rule she uses to link the singular [tɪʃ] with the plural [tɪʃə] is used to derive the plural of [kɪʃ]: [kɪʃə]. All material of the singular is present in the plural and containment is not violated. She cannot form the singular [kɪʃ] from the plural [kɪʃə], since this would violate containment.

In the standard phonological theory, a single underlying form derives all allomorphs. The motivation for this theory of unique underlying representations comes from economy. It is easier to store and retrieve a single form from a small lexicon and it relates the allomorphs of a paradigm to one another. If applied to our data it leads to a dilemma: Children are able to produce a plural from a given singular word and a plural for a given nonsense word. They are able to use the given form as input and add a suffix. They also recognize a given plural word as consisting of a base, used as underlying form, and a suffix. They cannot do this with a given plural nonsense form. To solve this dilemma we assume richer underlying representations, the members of which are linked by rules whose application is constrained by containment.

References

Albright, A. & Hayes, B. (2003). Rules vs. analogy in English past tenses: a computational/experimental study. *Cognition*, *90*(2), 119–161.

Berko-Gleason, J. (1958). The child's learning of English morphology. *Word*, *14*, 150–177.

Brown, R. (1973). *A first language: The early stages*. Cambridge, MA: Harvard University Press.

Chomsky, N. & Halle, M. (1968). *The Sound Pattern of English*. New York: Harper and Row.

Kerkhoff, A. (2007). *Acquisition of Morpho-Phonology: The Dutch voicing Alternation*. PhD thesis, University of Utrecht, Landelijke Onderzoeksschool Taalkunde.

McCarthy, J. & Prince, A. (1993). Prosodic morphology I: constraint interaction and satisfaction. Ms. University of Massachusetts, Amherst and Rutgers University, New Brunswick [Technical Report No. 3, Rutgers University Center for Cognitive Science. To appear, Cambridge, Mass.: MIT Press].

Pierrehumbert, J. B. (2006). The statistical basis of an unnatural alternation. In L. Goldstein, D. H. Whalen, & C. Best (Eds.), *Papers in Laboratory Phonology VIII* (pp. 81–107). Berlin: Mouton de Gruyter.

Prince, A. & Smolensky, P. (2004/1993). *Optimality theory: Constraint interaction in generative grammar*. Malden, MA, Oxford, UK, Victoria, Australia: Blackwell. (Ms. Rutgers University, New Brunswick and University of Colorado at Boulder [Technical Report No. 2, Rutgers University Center for Cognitive Science.).

Linguistic and cognitive constraints on the use of referring expressions

Jacolien van Rij, Hedderik van Rijn, and Petra Hendriks
University of Groningen

In this paper we argue that the use of referring expressions is determined by the interplay between the speaker's perspective and the listener's perspective, and that this interplay is subject to cognitive constraints such as speed of processing and working memory capacity. We investigate this interaction between linguistic and cognitive constraints using cognitive modeling. Cognitive models are computational simulations of the cognitive processes involved in performing a task, for example comprehending a sentence. By implementing a linguistic theory in a cognitive model, a cognitively plausible explanation can be provided for prior empirical observations and new testable predictions can be generated. We present two case studies providing evidence that the acquisition and use of referring expressions is determined by the interaction between linguistic and cognitive constraints.

1. Acquisition of referring objects.
Up to the age of 6, English-speaking children have been shown to experience difficulties in the interpretation of pronouns (but not reflexives), and incorrectly allow an object pronoun to corefer with the local subject (the so-called Delay of Principle B Effect, e.g., Chien & Wexler, 1990). We simulated these children's acquisition of object pronouns by implementing a bidirectional optimality theoretic (OT) account of pronoun interpretation, according to which adult listeners take into account the speaker's perspective (Hendriks & Spenader, 2005/2006; see Figure 1). The model predicts that children are unable to do so during on-line sentence comprehension because they lack sufficient processing speed. We tested this prediction by giving children more time for interpretation by slowing-down the speech rate. We found that a slower speech rate has a beneficial effect on children's comprehension of sentence-internal pronouns, but not on their comprehension of reflexives (Van Rij, Van Rijn, & Hendriks, 2010). These results suggest that the interplay between the speaker's and the hearer's perspective is part of the grammar rather than an end-of-the-sentence pragmatic process, and is crucially dependent on sufficient processing speed.

2. Acquisition of referring subjects.
Up to the age of 6, children also show non adult-like performance on their use of referring subjects. In certain discourse contexts, children produce unrecoverable pronouns where a full NP would have been the adult choice (see Wubs, Hendriks, Hoeks, & Koster, 2009, for Dutch). The same children also fail to interpret full NPs as signaling a topic shift. We developed a cognitive model capturing these phenomena, again implementing a bidirectional OT account of the data. Based on our computational simulations, we argue that the mature use of referring subjects not only requires sufficient speed of processing, but also requires sufficient working memory capacity to identify the discourse topic (Van Rij, Van Rijn, & Hendriks, submitted). On the basis of these results, we predict that even adults will make errors in their use of referring subjects if their working memory capacity is (permanently or temporarily) inhibited.

We thus argue that the speaker's choice of referring expression is delimited by the listener's preferences, and the listener's interpretation of referring expressions is delimited by the speaker's options. Whether speakers and listeners are able to take into account each other's perspective is dependent on sufficient cognitive resources.

References

Chien, Y. C., & Wexler, K. (1990). Children's Knowledge of Locality Conditions in Binding as Evidence for the Modularity of Syntax and Pragmatics. *Language Acquisition, 1*(3), 225-295.

Hendriks, P., & Spenader, J. (2005/2006). When production precedes comprehension: An optimization approach to the acquisition of pronouns. *Language Acquisition, 13*(4), 319-348.

Van Rij, J., Van Rijn, H., & Hendriks, P. (2010). Cognitive architectures and language acquisition: A case study in pronoun comprehension. *Journal of Child Language, 37*(3), 731-766.

Van Rij, J., Van Rijn, H., & Hendriks, P. (submitted). Production and comprehension of referring subjects: A computational model of the interaction between linguistic and cognitive constraints.

Wubs, E., Hendriks, P., Hoeks, J., & Koster, C. (2009). Tell me a story! Children's capacity for topic shift. In J. Crawford, K. Otaki & M. Takahashi (Eds.), *Proceedings of the 3rd Conference on Generative Approaches to Language Acquisition North America (GALANA 2008)* (pp. 313-324). Somerville, MA: Cascadilla Press.
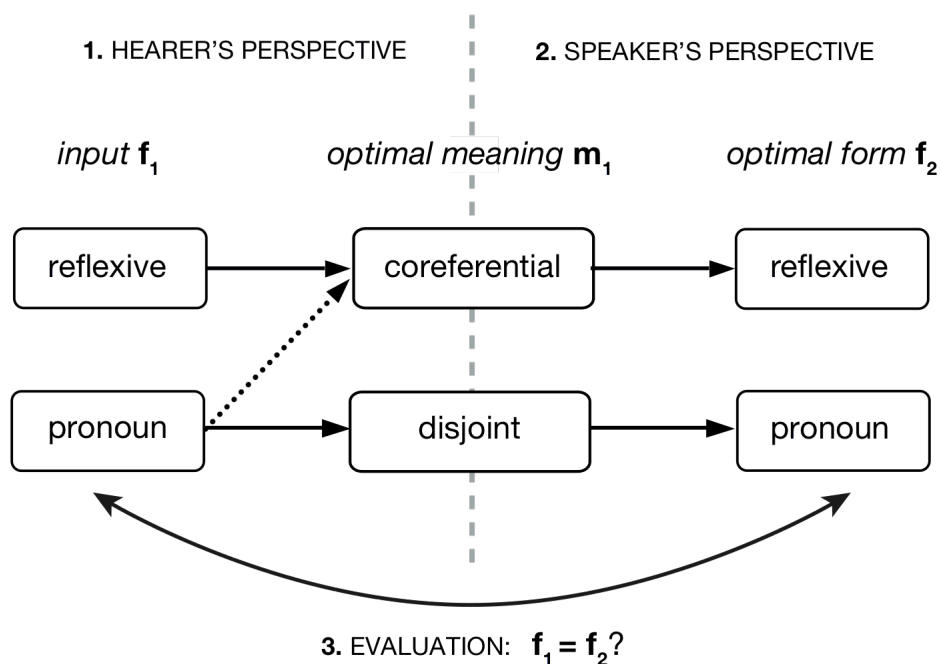
Figures

Figure 1. Taking into account the speaker's perspective in comprehension. The coreferential interpretation for pronouns (represented by the dotted line) is blocked because a coreferential interpretation is best expressed by a reflexive.

Parameters are epiphenomena of grammatical architecture
## Hedde Zeijlstra, University of Amsterdam

1. Following current minimalist reasoning the study to natural language is guided by the Strongest Minimalist Thesis (SMT) (1). Under such a view language is a perfect solution to the task of relating sound and meaning (Lasnik 2002). However, if language is an optimal solution to conditions imposed by interface conditions, why does natural language exhibit the wide range of variation that is attested? In this paper I argue that the source of cross-linguistic variation is not constituted by a number of innate parameters, part of the genetic endowment (factor I), but that it follows from the fact that different mental components impose different economy conditions on the Faculty of Language (FL) (factor III).

2. I adopt the standard grammatical architecture in (2). It is the Conceptual-Intentional system(s), the Sensor-Motor system(s) and the Lexicon, an instance of memory, that impose conditions on FL. Since these mental systems are autonomous, their requirements on FL, i.e. the conditions they impose at the respective interfaces, do not necessarily have to be compatible. In fact, full compatibility would be a completely unexpected option. A much more natural assumption is that several of the conditions that the different mental systems impose on FL are in conflict. Now one must distinguish two kinds of conditions: hard conditions, which may not be violated (e.g. Compositional Interpretation) and soft conditions. This means that each grammar has to obey all hard conditions and the SMT demands that every hard condition be satisfied in an optimal way.

3. Every hard condition thus comes along with a simplicity metric, which acts as a soft condition that favours simpler solutions over more complex ones. However, if two soft conditions are in conflict, FL creates a choosing point as to which simplicity metric is going to be satisfied most. This means that grammars may vary w.r.t. which simplicity metric they overrules the other one. This means that in these cases FL provides different expressing strategies to convey the same meaning. Thus, the existence of conflicting interface conditions, a fact that immediately follows from the modularity of grammar, already predicts the existence of grammatical variation, i.e. it creates a parametric space. In other words, the SMT invokes the entire parametric space by constituting a limited set of possible expressing strategies that are each maximally optimal solutions to conflicting interface condition. Grammars on their turn then select from these expressing strategies, driven by the same simplicity criteria that govern the SMT and thus ensure that during the process of language acquisition the simplest grammar that is compatible to the target language is selected (see (3)).

4. If the SMT is taken to constitute the entire parametric space, each grammar should be a 'mental equilibrium.' This means that language allows a restricted number of possibilities to express a particular semantic notion. For instance, negation, tense, or other grammatical categories representing semantic content can only be expressed in particular ways that satisfy LF, PF or lexical economy conditions to different extents. But which conditions are exactly in competition with each other? In my paper I argue that simplicity metrices as in (4)-(6) form such economy conditions.

5. In order to illustrate this take the example of negation. Negative markers can either be negative adverbs, particles or affixes. The most C-I system biased is negation being an adjunct (e.g. of *v*P) thus not requiring additional structure such as NegP. Such structures are lexically or phonologically less economical, since they contain feature syncretisms ([NEG]+[ADV]) and heavy prosodic structure. A more lexically biased way would be an expression of negation with a negative particle occupying Neg°, thus reducing a feature syncretism, but requiring additional abstract structure and prosodic structure. A more SM system oriented way would be an expressing strategy using an affix, but such a way of

expressing negation requires feature syncretisms ([NEG] on V) and abstract structure (the prefix itself is too deeply embedded in the structure that the negative operator must be hosted at a higher position for scopal reasons).

6. In my paper I demonstrate that the above does not only hold for categories, such as negation or tense, but also for other categories like case following new insights by (Svenonius 2006). The crucial point remains however that adopting the RMST allows us to remove the notion of parameter from the biological endowment of natural language and to think of parametric variation as the result of conflicting language-independent economy conditions. Consequently, parameters are no longer linguistic primitives, but derived notions, a minimalist desideratum.

(1)   Strongest Minimalist Thesis (SMT) (Chomsky 2005): *Language is an optimal solution to interface conditions that the Faculty of Language (FL) must satisfy*

(2)   Grammatical architecture (Chomsky 1995):
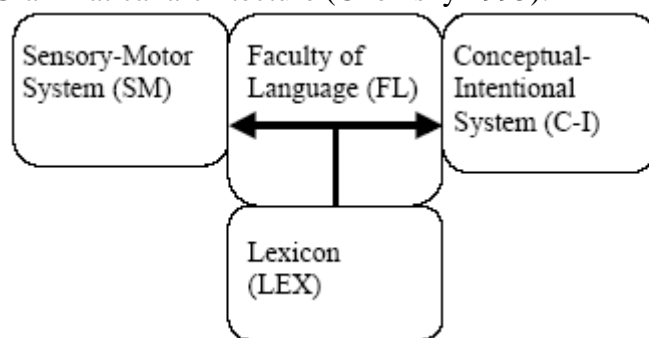
(3)   The parametric space:
.
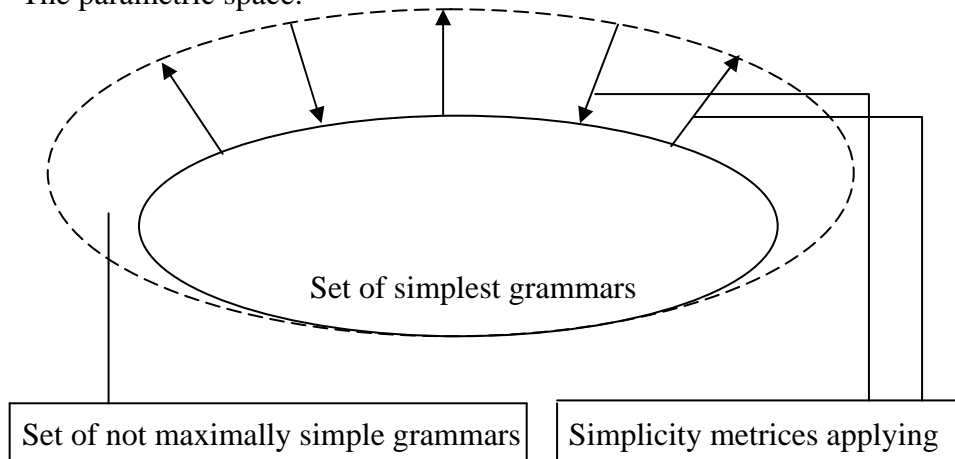
(4)   Phonological Simplicity Metric: *A structural representation R for a substring of input text S is simpler than an alternative representation R' iff R contains less prosodic structure than R'*

(5)   Semantic Simplicity Metric (Zeijlstra 2009): *A structural representation R for a substring of input text S is simpler than an alternative representation R' iff R contains less abstract structure than R'*

(6)   Lexical Simplicity Metric ((Roberts and Roussou 2003): 201, after (Longobardi 2001)): *A structural representation R for a substring of input text S is simpler than an alternative representation R' iff R contains fewer feature syncretisms than R'*

References:

Chomsky, N. (1995). <u>The Minimalist Program</u>. Cambridge, MA, MIT Press.

Chomsky, N. (2005). "Three factors in language design." <u>Linguistic Inquiry</u> **36**: 1-22.

Lasnik, H. (2002). "The Minimalist Program in syntax." <u>Trends in Cognitive Sciences</u> **6**: 432-437.

Longobardi, G. (2001). "Formal syntax, diachronic mimimalism and etymology: the history of French chez." <u>Linguistic Inquiry</u> **25**: 609-665.

Roberts, I. and A. Roussou (2003). <u>Syntactic Change. A Minimalist Approach to Grammaticalisation</u>. Cambridge, Cambridge University Press.

Svenonius, P. (2006). "Interpreting uninterpretable features." <u>Linguistic Analysis</u> **To appear**.

Zeijlstra, H. (2009). "Dislocation Effects, Uninterpretable Features, Functional Heads, and Parametric Variation: Consequences of Conflicting Interface Conditions". In: Grohmann, K. Interhases. Phase-Theoretic Investigations of Linguistic Interfaces. Oxford: Oxford University Press.