Studies in Language and Cognition

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Edited by

Jordan Zlatev, Mats Andrén,
Marlene Johansson Falck and Carita Lundmark

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BRINGING LANGUAGE AND COGNITION BACK TOGETHER AGAIN

JORDAN ZLATEV, MATS ANDRÉN, MARLENE JOHANSSON FALCK AND CARITA LUNDMARK

Introduction

For most of the two millennia or so of reflexive thinking in the West, language and cognition – both broadly conceived – have been considered to be intimately related. At the same time, the nature of this relationship has been rife with controversy. Following the tradition of Aristotle, many philosophers, and more recently psychologists and linguists, have privileged cognition, seeking to explain language as being more or less determined by the nature of the human mind. Since the latter can be argued to owe much to the nature of the human body – under both phenomenological and empirical interpretations (cf. Gallagher 2005) – it follows that language should be considerably determined by human corporeal existence. Today, we find this approach to unravelling the language-cognition nexus most clearly represented within the school of Cognitive Linguistics (cf. Geeraerts and Cuyckens 2007a).

However, also more or less from the start, there has been a realization that language itself plays a substantial role in shaping human thinking. Over the past century this realization has become increasingly prominent. To this effect, a number of factors have contributed: the systematic study of radically different languages in linguistics (e.g. Sapir 1956), the "linguistic turn" in philosophy in the mid 20 century (cf. Rorty 1992), and the socio-cultural approach in psychology (e.g. Vygotsky 1978). After a period of disrepute, the work of Whorf (1956) is once again influential, and various interpretations of "the thesis of linguistic relativity" are constantly being debated (cf. Blomberg and Zlatev, this volume). Even more importantly, they are submitted to empirical scrutiny much more thoroughly than before.

The only clear consensus in these sometimes heated debates is that *language and cognition are tightly connected*. It is not a little ironic, therefore, that when the study of the mind first became "truly scientific" in the 1960s with the rise of cognitive science, the "essence" of language – grammar – and the rest of human cognition were considered separate. Language was declared to be a "mental organ", but one governed by "rules and representations" distinct from structures and processes of consciousnesses, memory and communicative needs (e.g. Chomsky 1986). Psycholinguistics studying the *mechanisms* of the so-called "language faculty" and computational linguistics, attempting to formalize and implement aspects of it *in machines* quite literally, were the two most "cognitive" approaches to language for a few decades. But around the time when the Berlin Wall came down, so did the monopoly of those professing that language needs to be studied separately from cognition. Consequently, new constellations of researchers across traditional departmental boundaries have been formed, and new institutions have arisen to support the study of language and cognition.

The Swedish Association for Language and Cognition (SALC) is one such institution. It was formed on June 16, 2006 at an international conference at Umeå University in Sweden involving mostly linguists, but also psychologists, semioticians and cognitive scientists working on a variety of topics and utilizing different methodologies. In brief, the aim of *SALC* is to promote high quality international research in which language is not treated in isolation (e.g. as a "module"), but as based on structures and processes of cognition, while at the same time affecting such structures and processes. Between November 29 and December 1 2007, *The First International Conference of SALC* was held at Lund University, with 133 participants from 18 countries, offering 93 scientific presentations. All but two chapters in the present volume, those by Kravchenko and Głaz, originate from presentations at this conference. The chapters were subsequently developed and chosen for publication on the basis of editorial and peer reviews and several bouts of revision from the authors, for whose cooperation we are most grateful. In the variety of their topics, the authors' academic backgrounds and methods employed, the chapters of this book give a fair representation of both the spirit of *SALC* and the field of language and cognition as a whole.

The organization of the book

The book is organized in 7 parts, corresponding to some of the major fields in language research today: (I) linguistic meta-theory and general issues, (II) lexical meaning, (III) metaphor, (IV) grammar, (V) pragmatics, (VI) gesture and bodily communication, and (VII) historical linguistics. At the same time, the *non-modular approach to language* adopted by all authors is reflected by the fact that there are no strict boundaries between the parts in terms of the topics addressed in the various chapters. This is also obvious from the brief summaries we provide in this section.

I. Linguistic meta-theory and general issues

This part deals with general, overarching issues and begins with two important chapters by **Itkonen** and **Kravchenko**, which constitute an implicit debate on the nature of language, and correspondingly on the appropriate methodologies for studying it. On the one hand, Itkonen argues that (typological) linguistics, "is based on notions such as analogy, empathy, agent's knowledge, and normativity, making it a fundamentally *human science*, rather than a natural science such as biology" (p. 19). On the other hand, Kravchenko describes such ideas in linguistics as falling prey to Cartesian dualism, and thus regards them as "myths". Instead, he seeks an ontological and explanatory foundation for language precisely in biology, and more specifically in the theory of *autopoiesis* as developed by Umberto Maturana and colleagues. These two positions appear at first glance completely opposed, but there are also points of agreement, particularly on rejecting the generativist-modular tradition. The two chapters may be considered as the different poles of a continuum of possible meta-theoretical stances, with most of the contributions to the book falling somewhere in between.

Blomberg and Zlatev first take a bird's eye view on the field of language and cognition, and present a classification of theories proposing different forms of linguistic influence on cognition. They discuss how several of these apply to the perceptual/conceptual domain of *motion*, and review experiments of others and of their own which may help evaluate these different theories.

Lind et al. focus on a notion that is often discussed and sometimes presumed, but rarely studied empirically, namely *pre-verbal intentions*. In an ingenious experiment, they let subjects hear their voices (through earphones) say "something else" than what they actually said by playing back what was said on a previous trial. The results paint a complex

picture, somewhat intermediary between "pro-intention" theories such as that of Levelt (1989) and "anti-intention" theories such as that suggested by Dennett (1991).

In the final chapter of this part, **Persson** critically reviews studies concerning something that may seem peripheral: the ability of apes to comprehend pictures as true signs, i.e. as standing for whatever it is that they represent. The relevance of this question becomes obvious when one considers how difficult it is for both preverbal children and non-language trained children to demonstrate such competence. As Persson points out, it is possible that the *sign function* (Piaget 1945; Sonesson 2007) needs to be mastered through a conventional semiotic system such as language, before the special type iconic signs that we know as representational pictures can be understood as such, i.e. as picture signs. But only future studies can show whether this conjecture is true.

II. Lexical meaning

This part includes chapters dealing with what has rightly been called the foundation of language: words (cf. Burling 2005). For without an "inventory" of shared lexical signs, none of the more complex forms of language – grammar, metaphors, discourse, indirect speech acts – represented in the following parts of this book, would be possible.

The chapter of **Svanlund** deals with a classical issue in nominal semantics – individuation and (object) permanence – from a fresh perspective, focusing on a particular type of "collective human institutions": sports teams. Based on Swedish data, the author shows how these are construed as being both relatively permanent and flexible entities.

Tribushinina compares dimensional adjectives (such as 'big') and colour adjectives in Russian, and on the basis of corpus and survey data, she demonstrates that it is not the case, as previously claimed, that the former do not display prototype effects. Furthermore, the author distinguishes between two types of prototypicality – as head-nouns and as best exemplars – and argues that different kinds of words may display one type more than the other.

Papp looks further at colour terms, focusing on Hungarian and the 11-12 "basic colour terms" previously proposed for the language. Using the criteria originally suggested by Berlin and Kay (1969), and a quantitative analysis of corpus data, the author shows that there are only 10 such terms, excluding two earlier candidates, and instead adding a rather unusual member to the list: *vörös* 'dark red', "problematic for a strict, universalist interpretation of the Berlin and Kay hierarchy" (p. 139).

The chapter by **Martinek** continues the investigation of colour semantics, moving to Ukrainian, and focusing on a single colour category, GREY, but using different linguistic forms (adjectives, nouns and verbs) conceptualizing it as an attribute, abstract entity or process. Methodologically, the author employs an association experiment and discusses how it can complement the more traditional methods of introspection and intuition to explain how lexical meaning is motivated by everyday experience.

Kirt and Vainik provide a case-study of emotion-concepts in Estonian. The authors assume three levels of representation – symbolic, conceptual and sub-conceptual – inspired by Gärdenfors' (2000) theory of Conceptual Spaces. Two different experiments provide information concerning the first and the third of these levels, respectively. The authors then plot the two sets of data onto Self-Organizing Maps (SOMs), which turn out to be *non*-isomorphic. The authors probe deeper and uncover a certain common structure, which they hypothesize to reflect the intermediate "conceptual" level. In the process they illustrate how semantic analysis, experimentation and computational modelling can be combined.

Finally, in one of the most ambitious chapters of the book, **Fortescue** presents the outlines of a new "templatic" format for modelling the mental lexicon, intended to serve as an interface of sorts between semantic analysis and neural representation. Inspired by a neuroscientific model proposed by Burnod (1990), the author demonstrates how nouns, verbs, adjectives and composite expressions can be represented as templates "each reflecting several interconnected cortical columns, with the component elements widely distributed but located in specifiable cortical areas" (p. 187). The representational format takes into account recent neuroscientific findings based on dissociations in aphasia and neuroimaging and makes a number of testable predictions.

III. Metaphor

This part focuses on metaphor, which is treated by the authors as both a linguistic and a cognitive phenomenon. In the influential *conceptual metaphor theory* (CMT) (Lakoff and Johnson 1980, 1999; Grady 1997) metaphors are primarily regarded as conceptual cross-domain mappings, reflected only secondarily by linguistic expressions such as "our spirits are falling along with the stock market". While influenced by CMT, however, all four chapters of this part show a growing need to either develop this

framework, or to go beyond it, focusing more on factors such as language (use) and culture.

Vandi and Fusaroli discuss advantages and problems of CMT and *blending theory* (Fauconnier and Turner 2002) as theories of metaphor and argue for "a dynamic perspective on embodied cognition, where sedimented conceptual structures are locally deployed as resources and not as determining types" (p. 193). They provide a case-study of the metaphorical expression "that man is a caiman" (referring to the Italian prime-minister Berlusconi), showing how its force derives from a combination of cultural, discursive, lexical and co-textual factors.

The chapter by **Vogel** discusses metaphorical expressions for dying in five European languages, Swedish, Norwegian, Danish, German and French, and finds considerable similarities, such as using highly agentive verbs for the act of dying, locations for the "afterlife" and various euphemisms. While not stated explicitly by the author, the findings seem to point more to commonalities in European cultural models of death, than (only) to universal conceptual metaphors deriving from bodily experience.

Bergström analyzes the meaning of the Swedish adjective *varm* ('warm') along a model for temperature semantics based on 5 dimensions, and distinguishes between 24 "meaning variants" (or senses), 14 of which are literal and 10 metaphorical. When eliciting spontaneous associations to *varm* from a group of university students, the author found associations corresponding to 9 of the 14 literal senses, but only to 3 of the metaphorical ones. Assuming that these associations reflect "what is essential to people, in this case what is central about warmth, in both language and mind" (p. 226), the author suggests that most of the metaphorical senses do not reflect immediate experience, or "primary metaphors" in the sense of Grady (1997), but linguistic conventions typical for Swedish written discourse.

Finally, **Glaznieks** presents a study in which German-speaking children performed comprehension tests on metaphorical expressions for *fear* and *anger*. The results showed that "the understanding of metaphorical expressions develops in a domain-specific way only with respect to target domains" (p. 229). On the other hand, knowledge of the *source* domains did not seem to have any impact on the understanding of the metaphorical expressions, thereby challenging a common assumption in both developmental psychology and conceptual metaphor theory.

IV. Grammar

This part includes four chapters that deal, in part or in whole, with the organization of sentences or morphologically complex words, i.e.

grammar. Though using widely different approaches and methods, all the chapters contribute further evidence that grammar is not a "module" governed by autonomous rules, but is affected by factors such as lexical meaning and frequency.

Pedersen presents a contrastive study of English and Spanish basic clausal constructions, and presents evidence for an analysis that is at variance with both universalist "parametric" models such as those of Chomsky, and with the influential typology of Talmy (2000) due to its too narrow focus on lexicalization patterns. Using the resources of *Construction Grammar* (CXG), it is suggested that English "tends to organize principal clausal information in schematic argument structure constructions, leaving secondary information for lexical (verbal) specification" (p. 241) while Spanish does more or less the converse.

The chapter by **Niemi, Nikolaev and Hugdahl** investigates the mastery of Finnish morphology by speakers with Familial Language Impairment (FLI). The authors show that FLI speakers are much less sensitive to lexical frequencies than controls, and suggest a "possible causal chain" in the impairment: from attention to phonological input, through lexical frequency to morphology. While not entering the debate on the nature of such language impairment, these findings show how a fairly general cognitive impairment could have "specific" effects on linguistic processing.

Morgenstern and Sekali focus on a particular form-class, prepositions, and ask a question that has been controversial for some time: since prepositions (e.g. 'to') often have both more spatial ('He went *to* the bank') and more grammatical meanings ('He gave it *to* Mary'), are the first more primary in child language acquisition? Based on longitudinal data from English and French, the authors support the view that this is not necessarily the case, but rather that grammatical meanings are no less basic, since they "can express and organize social interaction, and are acquired by children thanks to the mediation of adults" (p. 272).

Finally, **Larsen and Johansson** describe an experiment involving anaphora resolution in a set of three Norwegian sentences, with the first sentence having either an SVO or an OVS word order, and the subject noun denoting either a human being, an animal or an inanimate object. The results show a significant effect of "animacy (and/or expectancies from new or given information) on human sentence processing" (p. 287), and no evidence for a purely syntactically driven first stage of parsing.

V. Pragmatics and discourse

This part of the book extends naturally the scope of investigation by addressing linguistic phenomena that necessarily go beyond the sentence boundary, involving context and co-text, falling traditionally within the fields of discourse analysis and pragmatics.

Consten, Knees and Schwarz-Friesel investigate complex anaphors, which refer to situations and similar complex entities, and "establish them as condensed and stable discourse entities" (p. 299), on the basis of a German newspaper corpus. Using an original model of discourse representation, *text-world model theory*, the authors show how the interpretation of the referents of complex anaphors are co-determined by a combination of bottom-up factors relating to lexical meaning and co-text, and top-down processes such as world knowledge and discourse coherence.

Durst-Andersen presents a taxonomy of 8 imperative frames, each consisting of four sub-structures. These frames are claimed to be universal, but realized through various means in different languages. For example, while English predominantly uses indirect speech acts, Russian relies on different aspectual forms and Danish on modal particles, but all (these) languages can ultimately achieve "the same goal by verbalizing one of the four possible places in the structure" (p. 317) of an imperative frame. After providing an original explanation for the more common use of indirect imperatives in English than in Russian, and the role of the modal particles in Danish, which are highlighted in the analysis, the author concludes that "pragmatics seems to be more structure-driven than rule- or principle-driven" (p. 317).

In their contribution, **Glaznieks and Komor** investigate the speech of 5 and 8-year-old German-speaking children for evidence of awareness of discourse structures, in particular with respect to conflicts. Two studies are reported, the first based on interviews about conflict situations, and the second on authentic antagonistic interactions between peers. The results show evidence for mostly *implicit* knowledge about conflicts in the younger group, and much more explicit knowledge in the older group.

Finally, **Głaz** presents a case study in Cognitive Poetics, as "an approach to literary text whose ambition is to bridge the gap between the study of language and the study of literature" (p. 348). The author uses a particular theoretical model, *Vantage Theory* to analyze the shifting perspectives in a poetic text by Bruce Springsteen. The study illustrates both features of the theoretical model, and clarifies some subtle intuitive aspects of the lyrics.

VI. Gesture and bodily communication

This part contains chapters dealing with the relationship between language and gesture, reflecting a growing interest in the topic. While there is a consensus on a close relationship between the two, there is an ongoing debate on the more exact nature of this relationship: do they constitute a "unified system" (McNeill 2005; de Ruiter 2007), or two closely integrated but still distinct semiotic capacities, supported by (partially) distinct cognitive mechanisms (Kita and Özyürek 2003)? While there is no consensus on this question, the chapters provide important clarifications through different perspectives and methods.

Goldin-Meadow presents an overview of her group's well-known studies on deaf children who spontaneously develop a language-like system of communication: *homesign*, as well as ongoing research attempting to determine the roots of the "resilient properties of language". Interestingly, when hearing adults need to communicate without speaking, some (but not all) of these properties emerge, including an ordering of the gestures that cuts across cultures and does not resemble the basic orders of the speakers' languages. Finally, the author suggests reasons why gesture may also be a "stepping stone" to the development of language even among hearing children.

Zlatev and Andrén deal with bodily communication and its relation to language from a developmental perspective, and employ the notion of *developmental stage*, proposing a "rehabilitation" of this notion. Using a stage-based model, *the mimesis hierarchy* (Zlatev 2008), the authors provide a developmental analysis of "acts of bodily communication" in two groups of three children, one in Sweden and the other in Thailand. Despite some cultural differences, the chapter reports major similarities and general developmental patterns, the most significant of which is a rather sharp transition around 20 months, which can be interpreted as a "convention insight", a key step in language acquisition.

Leroy, Mathiot and Morgenstern analyse "pointing events" in a longitudinal corpus of multimodal data from two French children. The authors argue persuasively that since pointing constitutes a social-cognitive "tool" for the child, it should not be analyzed in isolation, but together with "features" such as gaze, the prosody of the vocalization, and the position of the child, addressee and the object pointed to. The interrelation of these features is found to be complex, but prosody appears more significant than gaze for determining the meaning of the pointing gesture, which contradicts some common assumptions in the literature.

In his contribution, **Harrison** investigates the interaction between grammar (or rather, speech) and gesture in the expression of negation.

Through the careful study of elicited "negative speech acts", gestures such as head-shake and two different hand gestures were found to "intensify, render more precise, and more explicit the negation expressed by grammar" (p. 433) and even to complement the meaning of the oral expression in subtle ways with respect to referential content and discourse functions. The full meaning of the acts thus derived from a combination of semiotic resources.

The chapter by **Rossini** addresses the question of the dependency between language, gesture and motor action. A multi-tasking experiment is described in which participants were asked to read Italian prose and poetry texts, while repeating a rhythmic beat which was designed to be asynchronous with the reading rhythm. The results showed a general failure in multitasking, and are interpreted by the authors as evidence for a "strong connection between manual action and language" (p. 450), and against (neural) modularity.

Hirsch uses the interaction between gesture and speech in order to argue for a rather radical position, consistent with the perspective of Kravchenko in Part I: that rather than originating from individual minds, meaning (and "mind") is "embodied and distributed and emerges in the field created by interacting brains-and-bodies" (p. 454). This thesis is supported by detailed analysis of several specific examples of communicative interaction, demonstrating several different collaborative processes of sense-making.

Finally, **Vainik** deals with the theme of this section from the perspective of lexical semantics, and analyzes systematically the semantics of "hand-expressions" in Estonian. The study reveals several features of a particular folk model concerning "bodily communication" in Estonian culture, including different types on the basis of parameters such as distance, co-operative behaviour, and the status of the interlocutors. In all cases, the meaning of the expressions analyzed is argued to be metonymic with respect to the situational frame to which they apply.

VII. Historical linguistics

This part concludes the book by going back in time, using methods and addressing questions of historical linguistics, while still preserving a cognitive perspective.

Andersson contributes to a central topic within historical linguistics: the emergence of epistemic modal meanings in expressions originally expressing "root modality", e.g. capacity and obligation. This is done by investigating the development of the Swedish modal *må* 'may', and using

central cognitive-linguistic concepts such as *force-dynamics* and *image-schemas.* The author proposes a partial re-interpretation of these concepts, and a general image-schema consisting of forces and barriers which "underlies and motivates the root as well as the non-root meanings" (p. 487). Using historical evidence, Andersson suggests possible "bridging contexts" for the meaning transfer from the physical domain to the epistemic mental domain, and thus also connecting to the topic of metaphor of Part III.

Toyota traces a possible path for the emergence of 'yes-no' words in the languages of the world, and proposes the hypothesis that 'no'-words initially emerged from a negation marker, and then an affirmative counterpart was required in order to fulfill the requirement of *binary opposition*. In support of this, it is pointed out that many (human) cognitive and linguistic structures are organized in binary pairs, and that words for 'yes' seem to be a relatively late historical development.

This part, and the book as a whole, concludes with the contribution by **Wyly**, which in a highly original manner combines data – a corpus of Old Norse scaldic verse characterized by extreme degrees of ambiguity – and methods from historical linguistics with recent results from psycholinguistics, showing different capacities and interpretative strategies in coping with ambiguity. To make these widely different traditions cohere, the author provides both a description of Old Norse verse and the social context in which it was used, and a theoretical model of the interrelation between linguistic competence and performance, consisting of four interrelated dimensions, inspired by Tomasello's (2003) usage-based model language acquisition. Finally, a detailed case-study of the initial stanza of the poem *Berodrápa* is presented within the proposed historical-psycholinguistic framework. Wyly's chapter illustrates nicely the kind of synergism that becomes possible once language and cognition are brought together.

Methodologies, models and languages

The overview provided in the preceding section shows the richness in methodology, theoretical models and empirical material employed by the authors of the book, which as stated earlier is indicative of the field of language and cognition. Table 1 attempts to provide a (partial) specification of the methods employed in the studies described in the chapters of the book. Note that several chapters figure in more than one row of the table.

Table 1. Methods employed by the authors of the different chapters, with several chapters using multiple methods, by order of appearance

Method employed	**Chapter**
Meta-analysis	2, 3, 4
Intuition-based semantic/grammatical analysis	4, 7, 12, 13, 14, 15, 17, 21, 22, 31, 32
Psychological experiments	4, 5, 6, 9, 11, 15, 16, 18, 20, 25, 29
Synchronic corpus analysis	8, 10, 31
Computational modelling	11
Neuroscientific evidence	12, 29
Developmental studies	16, 19, 23, 25, 26, 27
Discourse analysis	23, 24
Historical analysis	32, 33, 34
Interaction analysis	26, 27, 28, 30

While the presentation in Table 1 should be considered a rough approximation, it indicates that analyses based on (native) speaker's intuitions and psychological experimentation appear to dominate. While some present this as a "subjective vs. objective" dilemma for e.g. Cognitive Linguistics (Geeraerts and Cuyckens 2007b), i.e. reliance on subjective intuition or on objective data, we would claim that this is a false dilemma, and that the multilevel phenomenon of language (and cognition) ultimately requires both these kinds of methods, as well as others (Zlatev 2007, in press; Itkonen 2008). Meanings and other linguistic norms are not natural phenomena like physical force and mass, and intuition will always remain a basic source of knowledge, to greater or lesser extent, depending on the degree to which what is investigated is of conceptual or causal character.

Concerning models and frameworks, it is stated on the homesite of *SALC* that "[t]he association is intended to be a forum for cooperation and exchange of ideas between disciplines, fields of study and theoretical frameworks." (www.salc-sssk.org) Table 2 lists again a partial list of the theoretical models employed in some of chapters.

Finally, the book presents original data from a wealth of (mostly European) languages, again summarized in table form (Table 3).

Table 2. A list of theoretical models used as explanatory frameworks in the book, by order of appearance

Theoretical model	Chapter
Prototype theory	8
Basic-level theory	10
Conceptual Spaces	11
Template format	12
Conceptual metaphor theory	13, 16, 31
Construction Grammar	17
Text-world model theory	21
Imperative frame theory	22
Vantage theory	24
Mimesis hierarchy model	26
Distributed language	30
Cognitive Semantics	32
Competence-performance dimensions	34

Table 3. Primary data from different languages quoted in the chapters, by order of appearance

Language	Chapter
Swedish	7, 14, 15, 26, 30, 32
Russian	8
Ukrainian	9
Hungarian	10
Estonian	11, 31
Norwegian	14, 20, 21, 23
Danish	14, 22
German	14, 16
French	14, 19, 27, 28
Spanish	17
English	17, 24
Finnish	18
Thai	26
Italian	29
Celtic etc.	33
Old Norse	34

Table 3 represents a good variety of languages, though for natural reasons, biased towards (Northern) Europe. Still, given that nearly all the chapters derive from presentations at *The First International Swedish Association for Language and Cognition*, it is noteworthy that an all too great focus on Swedish and the other Scandinavian language is absent.

Conclusions

The purpose of this introductory chapter was to provide a context for and an overview of the contents of the present volume. Its title is somewhat rhetorical – neither this book, nor *SALC* or similar institutions will by themselves succeed in "bringing language and cognition back together again". However, they reflect a general intellectual tendency that is nowadays pervasive, since the road previously taken leads (in ours and many others' perception) to a dead end. If there is one thing we wish to emphasize, it is our belief that what is needed now is the kind of *open-minded methodological and theoretical pluralism* reflected in this volume. Furthermore, we hold that this is essential, if linguistics is to emerge as a phoenix from the ashes of dogma and institutional stagnation that have plagued it for some decades. We leave it to the reader to determine if this approach is worth pursuing.

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I. LINGUISTIC META-THEORY AND GENERAL ISSUES

THE TRUE NATURE OF TYPOLOGICAL LINGUISTICS

ESA ITKONEN

Abstract. In this chapter I consider the nature of different kinds of typological linguistics, and of typological linguistics as whole. Based on previous work, I argue that it is based on notions such as analogy, empathy, agent's knowledge and normativity, making it a fundamentally *human science*, rather than a natural science such as biology. Only in this way can the proper role of *functional explanation* in typological linguistics be appropriately understood.

Types of linguistic typology

Research in linguistic typology is traditionally based on the following assumption: "All languages deal with approximately the same set of universal concepts, but these are coded and combined in different ways" (Dixon 2002: 56). The semantics of each language contains a repertoire of grammatical meanings (or "functional domains"), which qua basic categories of thought overlap with the items in the "philosophical lexicon" given in Book V of Aristotle's *Metaphysics*. Across languages, the repertoires of grammatical meanings are assumed to be similar to such an extent that their mutual differences may (at least initially) be disregarded. Thus, in principle, one and the same semantic content is expressed in different languages by dissimilar morpho-syntactic means: *same meanings, different forms.*

However, this is *not* the rationale of typology *tout court*, but of *morpho-syntactic* typology (and of *lexical* typology, as this term is generally understood). Morpho-syntactic (and lexical) typology must be supplemented with *semantic* typology. This has been shown most dramatically by Levinson (2003), who (together with his research group) establishes the existence of three distinct spatial frames of reference, namely *intrinsic*, *relative*, and *absolute*. These constitute three dissimilar semantic systems without any possibility of direct translation from one into the other. From the statement "The ball is in front of the chair", it is

impossible to recover the information that the ball is (e.g.) to north of the chair (and vice versa), which entails that one statement cannot be a genuine translation of the other (Levinson 2003: 57–59). Here the typological interest resides in the semantic content while its formal realization is irrelevant: "the frame-of-reference distinctions are as much lexical as grammatical" (p. 301). Hence, *different meanings, indifferent forms*.

Psycholinguistic experiments have shown that distinct spatial frames of reference correlate with behavioral differences, which has been taken to support the Whorfian view that language determines thought. However, the same experimental evidence has been claimed by Palmer (2004) to admit of the more traditional interpretation that *culture* (as mediated by language) determines thought.

Taken together, morpho-syntactic(-cum-lexical) typology and semantic typology constitute what might be tentatively called *metatypology*.

Morpho-syntactic typology is based on cross-linguistic analogy

Analogy is defined as *structural* similarity (Itkonen 2005a: 1-3), and not as *physical* (or perceptual) similarity (or resemblance), as suggested by Chomsky (1966:4) and Evans (2004: 48). It follows that when one and the same sentence-meaning (like "I do not see it") is expressed in different languages, whether spoken or signed, the resulting sentence-forms turn out to be *analogous* (cf. Itkonen 2005a: 6-7). By the same token, the possibility of *translation* is based on cross-linguistic analogy.

It is self-evident, but too seldom explicitly pointed out, that the existence of massive cross-linguistic analogy refutes the structuralist dogma of *où tout se tient*, or the view that each language is a self-contained system which exclusively defines its own categories.

The semantics vs. pragmatics divide in morpho-syntactic typology

It is a well-known fact that the logical connectives *and*, *or*, and *if – then* are lacking in many languages (cf. Itkonen 2003a: 150-151, 2005a: 154-155; Levinson 2003: 292–293). Yet the speakers of such languages behave in ways which, from the logical point of view, are similar to ours. Since this similarity cannot exist at the level of *semantics*, it must exist at the level of *pragmatics*.

We reach the same conclusion, more generally, when we study how the notion of *subordination* is handled in different languages. As I interpret Austin's (1980) data, Diyari has a converb system with three relative tenses (= A[nterior], S[imultaneous], P[osterior]) and switch reference (SS = same subject vs. DS = different subject), producing six converbs: AandSS, AandDS, SandSS, SandDS, PandSS, PandDS (cf. Itkonen 2005b: 28-33). These (temporally-based) distinctions do not correspond to the familiar distinctions between different types of subordinate clause: "It is important to note that the Diyari sentence is simply *vague* as to the semantic connection between the sentences" (Austin 1980: 150, emphasis in original). Yet it can be shown in detail that Diyari is able to convey the familiar subordinate-clause distinctions. Thus, correct understanding of sentences *must* be a matter of context-dependent interpretation which transforms *semantic* indefiniteness into *pragmatic* definiteness.

An even more extreme example of semantic vagueness/indefiniteness is offered by Rembarrnga (cf. McKay 1988). The verb has the structure PAT-AG-V, e.g. *barran-ba-V* (= 'them-they-V'), and the subordinate status of a clause is indicated by the change *a* → *i*, e.g. *birrin-bi-V*. According to McKay (1988), the superordinate vs. subordinate distinction equals that between Figure and Ground. Pragmatically, the subordinate clause has temporal, locational, conditional, causal, complement, and relative uses, but "in Rembarrnga the various "uses" are not differentiated [syntactico-semantically] at all from one another" (p. 8). The upshot of this section is to revitalize Givón's (1979) distinction between "syntactic vs. pragmatic mode".

Explanation in typological linguistics: Empathy

How should one understand the concept of "explanation" in linguistics? However difficult it may feel at first, one must learn to resist the temptation to borrow this notion from elsewhere, e.g. from such disciplines as Newtonian mechanics, evolutionary biology, quantum physics or string theory. In the 70's it was customary to apply the deductive-nomological (= D-N) model of explanation to linguistics. Itkonen (1974) contained a critique of the D-N model while Dahl (1975) presented a passionate defense of it; see also Itkonen (1980). Today it is customary to apply the Darwinist model to linguistics, in spite of its obvious inadequacy: linguistic change is produced by intelligent goal-directed processes (see immediately below), whereas biological change is produced by random mutations (cf. Itkonen 1999, 2005a: 186–189, 2005b: 279–284).

The right way to proceed is to observe what representatives of typological linguistics themselves mean by such expressions as "explaining" or "making understandable". This, and this alone, guarantees a sufficient degree of *authenticity*. Over the years I have collected many examples of how these expressions are used. One of my standard examples is how Mithun (1988) explains why there are, cross-linguistically, so few examples of the construction *N-and-N*. Explaining this fact requires assuming that speakers have performed such mental processes as *introducing* (names of) new referents into discourse and *re-identifying* them with an optimal combination of *efficiency* and *economy*. In order to grasp such processes and such efficiency vs. economy considerations, the only recourse that the linguist has is to rely on *empathy*, i.e. on his/her ability to *re-enact* those processes and considerations (to use Collingwood's 1946 term). The speakers were confronted with a problem of choosing (what they considered as) the best *means* of achieving their *goal* (e.g. re-identifying the previously introduced referents); and when the linguist recapitulates what the speakers did, (s)he makes use of *rational explanation*, exactly in the sense of Itkonen (1983).

The same remarks apply to explaining facts of *grammaticalization*, e.g. to Paul's (1975 [1880]) explanation, in terms of reanalysis and extension, of how the German demonstrative pronoun *das* became grammaticalized as the conjunction *dass*. The point is that we *reject* any proposed reanalysis and/or extension which is such that we cannot imagine performing them *ourselves*. This is confirmed by the fact, known to every student of grammaticalization, that when the change $A > B$ seems incomprehensible, the first move is to try to postulate some intermediate stages C and D, which are such that we can imagine having performed ourselves each of the more specific changes $A > C$, $C > D$, and $D > B$.

At a rather high level of abstraction, the preceding account is supported by Givón (2005): "A bio-organism's first imperative is to understand. That is, to explain — by abductive reasoning — why entities behave the way they do. Agency is but an adaptive hypothesis" (p. 211). "The scientist merely recapitulates the bio-organism ..." (p. 204). Additional, and more direct, support is given by Croft's (2003) view of typological explanations: Because implicational universals are clearly not enough (cf. Itkonen 1998), "deeper explanations" are needed; and on closer inspection, these turn out to rest on such empathy-based notions as "cultural expectedness or salience" (Croft 2003: 115–116), "high salience or topicality" (pp. 178-179), and "cognitive salience" (pp. 181-183); for discussion, see Itkonen (2004).