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Superparticles

A Microsemantic Theory, Typology, and History of Logical Atoms

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To the academic precariat.

Preface

This book is all about the captivating ability that the human language has to express intricately logical (mathematical) meanings using tiny (microsemantic) morphemes as utilities. Languages mark meanings with identical inferences using identical particles and these particles thus creep up in a wide array of expressions. Because of their multi-tasking capacity to express seemingly disparate meanings, I dub them superparticles. These particles are perfect windows into the interlock of several grammatical modules and the nature of the interaction of these modules through time. With a firm footing in the module where grammatical bones are built and assembled (narrow morphosyntax), superparticles acquire varied interpretation (in the conceptual-intentional module—semantics) depending on the structure they feature in. What is more, some of the interpretations these particles trigger are inferential and belong, under the standard account, to the realm of pragmatics. How can such tiny particles, rarely exceeding a syllable of sound, have such powerful and over-arching effects across the inter-modular grammatical space? This is the Platonic background against which this book is set.

Why This Book? Well, because there is not one out there in its stead, or even close to dealing with the range, and nature, of things that this book deals with. One thing that is fresh about it is the level of detail for variation in old languages it tries to attain. I cannot wager too much money on the idea that it does succeed, but in case it does not, it sets a trail for future work. The second, and presumably bolder, claim it makes concerns the ways in which logical meanings change, dependent on or independent of the morphosyntactic module. It showcases evidence from a wide array of Indo-European languages, as well as the Japonic family. As it turns out, Old Japanese can shed light onto Indo-European. As can Avar, Hungarian, and Tibetan, also. In fact, the facts emerge more fully outside the language-particular box and the problem becomes captivatingly theoretical. Because of this, this book is theoretical, also.

Who Is This Book For? Several groups of people. Historical Indo-European linguists will find it fresh for at least two reasons. One, it brings together as wide an empirical range of Indo-European languages as it can. Traditional philological facts and speculations are transplanted, translated, and interpreted using formal

methods from modern generative linguistics. Two, it tries to distil from that data a theory and an analysis of the micro-meanings encoded by some special particles (and particles are parts of the language that tend to go unnoticed). This book is also for modern formal linguists interested, more generally, in how the interaction of syntactic structure and semantics works, in both synchronic and diachronic perspectives (since the formal approach to both of these dimensions is missing in the field, still). Generally, those linguists that are interested in the overall architecture of grammar that the theoreticians build. Lastly, non-linguists might find it insightful for two reasons: the book shows how linguists analyse data and what wild yet evidence-based models we construct. After all, time will tell how our models and ideas about the human language, and the human mind generally, might be verified materialistically using some high-tech machinery that look inside the brain, perhaps the mind itself, in the future (I keep hoping for a lambda-sensitive and tree-detecting EEG-like contraption, accompanied by an app). So we cannot be sure for sure, but we provide some very strong considerations for some intrinsically human mechanics of thought processes that underlie linguistic expressions. This book tries to do that, too.

Bled, Slovenia Moreno Mitrović
1 May 2018

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This book marks the reincarnation of my doctoral work and, therefore, inherits all the thanks I listed in the dissertation. There are too many thank so let me the following people who have helped through instruction or absorption in significant ways: Edith Aldrige, Theresa Biberauer, James Clackson, Gennaro Chierchia, Noam Chomsky, Kai von Fintel, Danny Fox, Bjarke Frellesvig, Jovana GajiÄĞ, Laura Grestenberger, Nina Haslinger, Xuhui Hu, Angelika Kratzer, Manfred Krifka, Adam Ledgeway, Andrew Nevins, Andreea Christina Nicolae, David Pesetsky, Maria Polinsky, Ian Roberts, Kerri Russell, Uli Sauerland, Viola Schmidt, Prods Oktor Skjaervo, Anna Szabolsci, George Tsoulas, Calvert Watkins, Jefferey Watumull, John Whitman, David Willis. My copyeditors Kaylie MacKenzie and Maite Seidel have been instrumental.

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Berlin, October 2020

Contents

Acronyms, Symbols, and Abbreviations

1P	First-position
2P	Second-position
2FUT	Secondary future
$\mathfrak{A}$	Alternatives (alternative set)
ADN	Adnominal
ALL	Allative
ALTR.ALL	Alternating allative
AO	Disjunction to set conversion (following Alonso-Ovalle 2006)
ATTR	Attributive
CAUS	Causative
CL	Clitic
CNCS	Concessive
CON	Conjunctive gerund
COND	Conditional
CONJ	Conjunction marker
COREL	Correlative marker
CI	Conceptual–intentional interface
CS	Coordinate structure
CSC	Coordinate structure constraint
CR	Chain reduction algorithm
CSPRT	Case particle
δ	Sub-domain (alternative)
D	Determiner
DE	Downward entailing(ness)
DEB	Debitative
DV	Defective verb
EPP	Extended projection principle
EPP	Extra peripheral position (a.k.a. extended projection principle)
EV	Evidential
EVN	*Even*-based exhaustification operator
EXH	Exhaustification operator

EXT	External (coordinand, conjunct)
FA	Functional application
FC	Free-choice (freedom of choice)
FCI	Free-choice item
FOC	Focus
HON	Honorific particle
IE	Indo-European
GC	Generalised conjunction
GD	Generalised disjunction
IND	Indefinite
INDET	Indeterminate (pronoun)
INT/Q	Interrogative
INTRJ	Interjectional particle
J	Junction
κ	*ka*-type superparticle
KM	*Kakari musubi*
KPRT	*Kakari* particle
Λ	Label
LF	Logical form
μ	*mo*-type superparticle
MASD	Masdar
MP	Mediopassive
NML	Nominaliser
NOM	Nominative case
NPI	Negative polarity item
PERLT	Perlative
PF	Phonological form
PI	Permutation (automorphism) invariance
PLUP	Pluperfect
POL	Polite
PPI	Positive polarity item
PRES8	Present
PRES8	8th class present stem
PRT	Particle
PRS	Proper strengthening
PS	Polarity sensitivity
PSI	Polarity sensitive item
PSM	Polarity sensitive morpheme
PR	Predicate
PST	Past
PV	Preverb(al element)
PQ	Proto-question
PWFA	Point-wise functional application
QR	Quantifier raising
REL	Relative

REPR	Representative
RESTR	Restrictive particle
RETR	Retrospective
σ	Scalar (alternative)
SG-ACT	Singular active
SI	Scalar implicature
Spec(XP)	Specifier of some XP category
SUB	Subordinate
SUBJC	Subjunctive
SUPP	Suppletive base
TENT	Tentative
TOP	Topic
VCE	Visibility condition for extension

References

Alonso-Ovalle, L. 2006. Disjunction in alternative semantics. PhD thesis, UMass Amherst.

Languages

Alb	Albanian (family and language)
Ant	Anatolian (family)
Arm	Armenian (family and language)
Av	Avestan
BSl	Balto-Slavonic (family)
CArm	Classical Armenian
Cel	Celtic (family)
Celtib	Celtiberian
CJ	Classical Japanese (Heian period)
CLuw	Cuneiform Luwian
ClSkt	Classical Sanskrit
Gaul	Gaulish
Eng	English (modern)
Gmc	Germanic (family)
Gr	Classical Greek
Grk	Greek (family)
Gth	Gothic
Hit	Hittite
Hom	Homeric
IE	Indo-European
IIr	Indo-Iranian (family)

Itl	Italic (family)
Lat	Latin
MB	Middle Breton
MdIA	Modern Indo-Aryan
MdJ	Modern Japanese
MdW	Modern Welsh
MIr	Middle Irish
MW	Middle Welsh
Myc	Mycenaean
OB	Old Breton
OE	Old English
OC	Old Cornish
OCS	Old Church Slavonic
OIr	Old Irish
OJ	Old Japanese (Nara period)
ON	Old Norse
OW	Old Welsh
PAlb	Proto-Albanian (family and language)
PCel	Proto-Celtic
PGmc	Proto-Germanic (family)
PIE	Proto In-do-European
PSl	Proto-Slavonic
PToch	Proto-Tocharian
Russ	Russian
SBC	Ser-Bo-Croatian
Sl	Slavonic
Slov	Slovenian
TA	Tocharian A
TA	Tocharian B
Toch	Tocharian (family)
Ven	Venetic

Symbols: Semantics, Logic, and Other Technicalia

^{0}	Head, minimal category
$[i\,\mathrm{F}]$	Interpretable feature
$[u\mathrm{F}]$	Uninterpretable feature
$\alpha_{[\pm\text{♪}]}$	Optional phonological realisation of α
$\alpha_{[-\text{♪}]}$	No phonological realisation of α
$\alpha_{[+\text{♪}]}$	Phonological realisation of α
$\mathfrak{D}$	Domain
$*$	Ungrammatical form
$\star$	Reconstructed form

h_2	The *a*-colouring laryngeal
♡	Innocent exclusion
$\gg$	Result of diachronic development/change
$\ll$	Source of diachronic development/change
f	Focus semantic (alternative) value
o	Ordinary semantic (alternative) value
n	Example number (in citations, following the page number)
$\Rightarrow$	Cross-categorical or generalised entailment
$\Leftrightarrow$	Biconditional (logically), or vocabulary insertion correspondence (morpho-/post-syntactically), for which also $\Updownarrow$ may be used
$\prec$	Covering relation
r	Rank function
l	Likelihood function
#	Cardinality (count function)
ϖ	Probability measure
$\lhd_{\varpi}$	'Less likely than', given a ϖ-ordering
R	Recursive function
$\circ$	Function composition
\\	Line break in inscriptions
~~	Missing fragment of the text

Orthographic Notations

ABC	Transliterated sumerogram in Hittite
ABC	Transliterated akkadogram in Hittite
abc	Supplied grammatical words in Old Japanese
abc	Phonographic text in Old Japanese
abc	Logographic text in Old Japanese

Chapter 1
Introduction

Abstract The chapter introduces the main goals this book sets out to achieve, the decompositional methodology and conception of microsemantics, recognising that compositional analysis cannot stop at word boundary. Languages mark meanings, which have identical inferences, using identical particles and these particles thus creep up in a wide array of expressions. Due to their multi-tasking capacity to express seemingly disparate meanings, I dub them Superparticles. These particles are perfect windows into the interlock of several grammatical modules. With a firm footing in the module where grammatical bones are built and assembled (narrow morphosyntax), superparticles acquire varied interpretation (in the conceptual-intentional module; semantics) depending on the structure they feature in.

This book is all about the captivating ability that human language has to express intricately logical (mathematical) meanings using tiny (microsemantic) morphemes as utilities. Languages mark meanings, which have identical inferences, using identical particles and these particles thus creep up in a wide array of expressions. Due to their multi-tasking capacity to express seemingly disparate meanings, I dub them Superparticles. These particles are perfect windows into the interlock of several grammatical modules. With a firm footing in the module where grammatical bones are built and assembled (narrow morphosyntax), superparticles acquire varied interpretation (in the conceptual-intentional module; semantics) depending on the structure they feature in. What is more, interpretations triggered by these particles are inferential and belong to the realm of pragmatics. How can such tiny particles, rarely exceeding a syllable of sound, have such powerful and over-arching effects across the inter-modular grammatical space? This is the Platonic background against which this book is set (or at least wants to be set).

M. Mitrović, *Superparticles*, Studies in Natural Language and Linguistic Theory 98,
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1.1 Microsemantics and Decomposition

Conceptually and methodologically, decomposition is a way of attaining as high a level of detail as possible. This level of detail is relevant for our understanding of the basic building blocks that feature in (morphosyntactic) construction and (semantic) interpretation.

The morphosyntactic enterprise has moved toward blurring the lines that are traditionally associated with the notion of 'word' and 'word' boundaries. Three research programmes are relevant in this respect. The first is the enterprise of Distributed Morphology (DM), as galvanised by Halle and Marantz (1993) and culminating in state-of-the-art work such as Arregi and Nevins (2012), who devote a monograph to analysing the internal structure of a couple of auxiliary verbs in Basque and, in doing so, answer some more theoretical questions about the nature of Spellout and the structure of grammar. The second is work by Kayne (2005), who has been independently postulating silent elements in syntax for decades, with great success. The third is the decompositional programme of Nanosyntax (Starke 2009), which treats syntactic terminals as corresponding to submorphemic elements. For our purposes, all latter approaches may be considered methodologically and conceptually on a par and, in tandem, constitute a body of strong motivations, both theoretical and empirical, against the atomicity of 'wordhood' in general.

In this programmatic respect, this book is aligned with the methodological promise of such decompositional analyses. As an example of this, take Kayne (2005, Chap. 4), who considers the seemingly locative *there* in English to not in fact be intrinsically locative. Rather, the locative flavour of *there* is acquired in structural presence of an unpronounced nominal head PLACE, itself the locus of locativity. Such (sub-) morphemic dissection into conspicuous and soundless constituents of a seemingly simplex word is far more than fanciful generative gymnastics. Firstly, this not only assimilates the cases of locative and non-locative incarnations of *there*, but also naturalises the very diachronic relationship between the contemporarily locative and archaically non-locative semantics of *there*. Comparatively, this also allows Kayne (2005, Chap. 4) to illuminate and make sense of the morphological connection between the co-occurrence of *there* with overt prepositions across Germanic. The crucial conclusion here is that synchronic dissections can not only illuminate word-histories and diachronic microsemantics generally, but comparative facts and typological distribution also.

By allowing for the preposition to be unpronounced in such cases, we can bring directly into the fold the evidently non-locative uses in French and Italian of the apparently and seemingly locative clitics *y* and *ci*.

Kayne's (2005) morphosyntactic exemplar of decomposition achieves two unexpected results. First, the decomposition of a lexical item itself sheds light onto the item's history. Secondly, it allows one to capture cross-linguistic variation with greater success since the level of structural detail allows for discrete parametric comparison of a new kind. In this book I try to follow these methodological

and conceptual guidelines by paying special attention to the consequences for interpretation of such micro-structures.

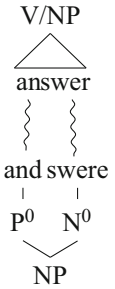
So what are the ramifications for semantics? Szabolcsi (2010, 189) states the Microsemantic Principle which describes the microsemantic programme that this book tries to execute.

(1) **The Microsemantic Principle**
Compositional analysis cannot stop at the word level. (Since there is no word-level boundary.)

Everything else being equal, interpretational composition should abide by the morphosyntactic structure that is provided to the conceptual intentional interface. To equip our theory with stipulations that would 'skip' nodes or ignore nodes would mean ridding that theory of the principle-based power of explanation it is designed to provide. Naturally, one can pull a cheap trick to salvage this and adopt a view according to which most nodes in a complex structure are vacuous. While I am not bold enough to assume that every morpheme in a structure must contribute to meaning, it seems an undesirable consequence to me to end up with a theory in which most morphemes are void of meaning or some kind of contribution to meaning.

Function words sometimes show a fossilised internal structure, which etymologies elucidate and make sense of. Consider the following pieces of evidence, presented using a 'diamond' tree, which is doubly rooted. These anti-gravitational trees are simply notational devices. Take the English conjunction and, which, according to McMichael (2006) (but see Lühr 1979), has its semantic roots in a preposition meaning 'back' or 'against' (cf. Latin *ante*). As a reviewer kindly notes, this is not entirely undoubtful. The ulterior etymology of 'and', as the Oxford English Dictionary notes, as well as its precise semantic development are uncertain. Most scholars assume a development from an adverb or a preposition with originally locative sense to a conjunction, given the comparative evidence from other Indo-European languages. I entertain a naïve prepositional etymology of *and-* in order to sketch the conception and methodology of the approach I develop in this book, not to commit myself to any particular philological school of thought on English 'and' (on which I will actually have nothing to say). Consider, then, the word *answer*, now a noun or a verb, which historically decomposes into *and-swere*, 'to swear or declare back' (McMichael 2006, 48).

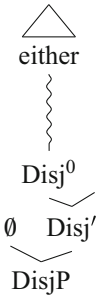
(2)



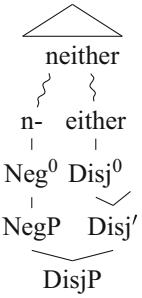
While nouns/verbs such as 'answer' in (2) have presumably inactive and no longer existing internal morphosyntactic structure it once used to have, there are function words in English with active syntactic and semantic insides. Higginbotham (1991) provided one of the first analyses of *either/or*, showing that *whether* is the *wh*-counterpart of *either*. What is more, the *neither/nor* form falls well within this series.

(3) Toy decompositions 'either/neither/whether'

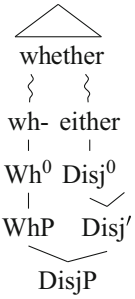
a. Adv/QP



b. Neg/QP



c. CP[+Q]



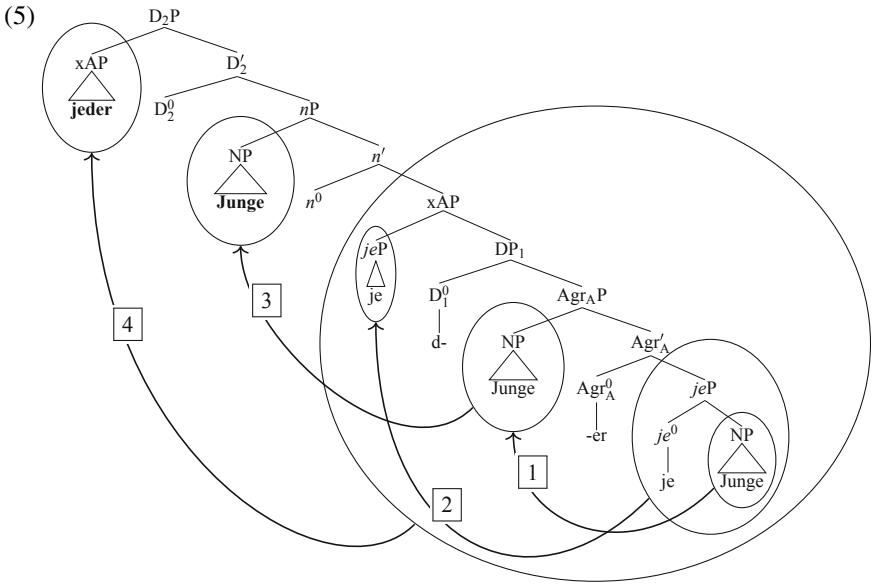
Historically, all three modern English forms contain *whether*, which can be traced back to Old English (OE) *hwæðer*, which can itself (as a reviewer tells me) be further dissected into 'who' + the comparative suffix (< PIE ⋆*-tero*). *Hwæðer* in OE further built other logical expressions, such as *æg(e)hwæðer* (or *ægðer* in contracted form), which is the predecessor of Modern English *either*.

Consider, then, the following data in (4) from Old English (taken from Gast 2013, 87n23) and assume that the emboldened *g(e)* morphemes are semantically identical and non-homophonic realisations of (what I will call) the 'μ' category. (I return to arguments against homophony later.)

(4) se was æ**g[e]**ðer, **ge** heora cyning, **ge** heora biscop
DET was both=PART.DL-μ-WH μ their king μ their bishop
'He was both their king and their bishop.' (Or 238, 14; c893)

The OE *ge* above is, in turn, related to the modern German universal quantifier *je*, which constitutes an 'active' example, that brings us closer to the set of words we will be examining. Rather than functioning as an atomic word, the German quantifier *jeder, jede, jedes* 'every.M/F/N' shows rich internal structure, as Leu (2009) demonstrates. The morphemic ingredients of the quantifier are the independently known distributive particle *je-* (cf. *je-weils* 'each time'), the definite article morpheme *d-* (featuring in the determiner expressions *der, die, das*), and the relevant ϕ-agreement morpheme (*-r/-e/-s*, 'M/F/N').

Sketched in (5) is Leu's (2009) derivation of the quantifier phrase *jeder Junge* 'every boy', which starts out its derivatinal life as a QP (*je*P) but moves up the extended adjectival spine (xAP), resembling a small relative clause-like structure.



The former examples of decompositional approaches served as a model for the kind of microsemantic analyses I pursue in this book. With this conceptual and methodological stance, let us now turn to the data we will be concerned with, namely the superparticles, and the theoretical context (namely, the relation between syntax and logic) in which they are best understood.

1.2 Superparticles and Logical Syntax

How logical and meaning-sensititve is syntax? Some expressions, such as (6) are logical in nature and 'demand' they be accompanied by sanctioning meanings. In this case, the sanctioning meaning is necessarily a downward-entailing (DE) one, as Ladusaw (1979), building on Fauconnier (1975), discovered.

(6) ∗ There are *any* cookies left.

The morpheme relevant to discussion is the Negative Polarity Item (NPI) *any*, which cannot yield any grammatical—or for that matter, logical—expression without additional logical markers or structures (such as negation or interrogation, for instance). *Any* can be said to belong to a special class class of logical words. Logical words can, to the same effect, be defined as "a set of rules or principles that concerns a limited list of special words," such as *any*, *and*, *every*, etc. (Chierchia 2013, 445)

Here is the twist. In many languages, this limited list of special words is a singleton set, containing a single morpheme—a superparticle (I will call this type of

superparticle μ). Consider now the implication of there being a single grammatical-logical formative, μ, that has a special status in grammar. Firstly, it is worth investigating for the latter considerations alone. Secondly, how can clearly distinct meanings of *any*, *every*, and *and* be built from a single μ superparticle? The μ meanings I exhibit in fact contain *any*, *every*, *and*, *even*, and *also*. The burden is then to unify not only the morphosyntactic status of the microsemantic superparticle μ but also its multi-tasking semantic nature. To put it simply: How can μ mean so many things? How are *also* and *every* connected?

Note that I assume (and later buttress the view) that these meanings are 'simultaneously spontaneous': that is, there is a single micro-meaning of μ. The various incarnations of meaning are rooted in, and derive from and build on, the common denominational meaning of μ.

A reason for my alluding to μ as microsemantic is therefore indicative of the solution to this second problem. I will adopt, and minimally adapt, an interpretational apparatus that can provide us with the desired meaning, in a principled and highly constrained manner. (The apparatus is essentially that of Chierchia 2013.)

This apparatus is also the one that bars (6) on both structure-sensitive and inference-verifying grounds. A structural account for the ungrammaticality of (6) can be predicated on the idea that *any* demands there be a DE operator (a marker of negation, or a question-forming formative) present. Algorithmically, a grammatical principle would search the derivational space for an agreeable operator and return 'grammatical' if found, or 'error' if not. While this utility is principled and simple (and still a predominant school of thought in the morphosyntactic analyses of NPIs), it does not, and cannot, account for *why* a logical word like *any* would require the presence of another word (operator) that ensures DE meaning of the entire expression.

The limited list of special words this book investigates are, actually, not words at all, but morphemes that *build* logical words like *any*, *all*, *and*, demonstrating that there is a common microsemantic denominator to those expressions. Natural language incarnates logical constants such as conjunctive and disjunctive connectives or interrogative, additive and quantificational expressions (i.e., that special logical vocabulary) using a single set of two morphemes—superparticles. Previous research by Szabolcsi (2010, 2015), Kratzer and Shimoyama (2002) and Slade (2011), among many others, has established that languages like Japanese may use only two morphemes, *mo* and *ka*, to construct universal/existential as well as conjunctive/disjunctive expressions respectively. Throughout this book, I abbreviate the Japanese *mo* particle and *mo*-like particles cross-linguistically as μ and the Japanese *ka* and *ka*-like particles cross-linguistically as κ.

In Japanese, *mo* also serves as an additive and *ka* as an interrogative element. Consider the following three pairs of examples in (7) and (8) featuring the two superparticles. The left column (7) shows the *mo*-series and the right column (8) shows the *ka*-series of meanings.

(7) The μ-system

a. **Universal quantifier**

i. Dare-**mo** hanashi-ta
who-μ talk-PST
'**Every**-/**any**$_{DE}$-one talked'

ii. Dono gakusei **mo**
which student μ
hanashi-ta
talk-PST
'**Every**-/**any**$_{DE}$-student talked'

b. **Additive marker**

Mary-**mo** hanashi-ta
Mary-μ talk-PST
'**Also** Mary talked'

c. **Conjunction marker**

Mary-**mo** Bill-**mo** hanashi-ta
Mary-μ Bill-μ talk-PST
'(**Both**) Mary **and** Bill talked'

(8) The κ-system

a. **Existential quantifier**

i. Dare-**ka** hanashi-ta
who-κ talk-PST
'**Some**-one talked'

ii. Dono gakusei **ka**
which student κ
hanashi-ta
talk-PST
'**Some** student talked'

b. **Interrogative marker**

Hanashi-ta **ka**
talk-PST κ
'Did you talk**?**'

c. **Disjunction marker**

Mary-**ka** Bill-**ka** hanashi-ta
Mary-κ Bill-κ talk-PST
'(**Either**) Mary **or** Bill talked'

The compositional recipes for the meanings above, using the two superparticle ingredients, seem to be roughly as follows. When a superparticle like *mo* or *ka* in Japanese combines with two nominal arguments, like *Bill* and *Mary*, coordination obtains (i.e. an expression of conjunction and/or disjunction, respectively). When *mo* combines with just one determinate, or definite, argument, like 'Mary', an additive (antiexhaustive) expression comes about. When a proposition combines with *ka*, we end up with a polar question (i.e., a set of two propositions). A combination of a superparticle with an indeterminate or indefinite *wh*-expression, like *dare* 'who' above, delivers a quantificational expression, either with an existential flavour ('*some*one', dare-*ka*) or a universal flavour ('*every*one', dare-*mo*). A combination of a *wh*-term with μ is, at least *prima facie*, ambivalent between a universal distributive and a (negative) polar indefinite expression, depending on the polarity of the context in which it features (whether it is DE or not).[1] I will show in Chap. 4 that the universal distributive meaning of *wh*-μ is diachronically primary in the history of Japonic. I will accordingly sketch a diachronic analysis of how polarity sensitivity arose from universal meaning.

[1] Prosodic cues to disambiguation have been proposed: see Szabolcsi (2010, 202), Nishigauchi (1990), Yatsushiro (2002), Shimoyama (2006, 2007), among others, for an account of the synchronic distribution of facts.

Similarly, quantificational expressions like '*some/every* student(s)' in Japanese are constructed by combining an indeterminate *wh*-phrase, like *dono* ('which'), with an NP like 'student(s)'.

I have assumed that the μ and κ superparticles in the three pairs of meaning are, respectively, identical. This is a fundamental assumption and one that is contra many analyses on the topic. Let me discuss this in greater detail in the following paragraph.

Against Homophony

The pattern underlying the examples in (7) and (8) allows for two contrasting explanations. The first hypothesis is that the semantic contribution of the two kinds of superparticles is uniform in all four of their respective constructions. If this is true, then there is something deeply interesting lying in the morphosyntax and semantics of the two superparticles. On the other hand, the second hypothesis, is that the multifunctional meanings behind the different incarnations of the superparticles in (7) and (8) could simply result from homophony, as Hagstrom (1998) suggests, and Cable (2010) even more explicitly defended on the basis of his analysis of Tlingit. The fact that the Japanese superparticle *mo*—under this view just a particle—features in conjunction, universal quantification and focal-additives, is a superficial and accidental matter. The different roles that *mo* performs in (7) stem from the fact that different *mo*'s are at play. Under such a view, there is nothing 'super' or multi-tasking about the μ and κ particles: they are homophonous vanilla particles with different meanings. They just end up sounding the same across many constructions.

I oppose this view and defend the first 'superparticle' viewpoint. One argument in favour of this view is typological: why would languages consistently manifest homophony of coordinate and quantificational markers? (I will introduce the typological argument below.) Another argument concerns the inconsistency of a pro-homophony analysis in a language like Japanese, as presented in Mitrović and Sauerland (2014).

Under a homophony story, there are, at least, two kinds of *mo* particles: a conjoining one and a quantificational one. In a similar vein, Shimoyama (2006) contends that the universal quantificational and additive *mo* in Japanese are distinct, given their configurational differences. The same reasoning may extend to *ka*, which is, under these assumptions, ambiguous between two homophonous particles: a disjunctive one and an existential one. This predicts that *mo* and *ka* should not be able to express coordination and quantification simultaneously. As the following two pairs of Japanese examples from Mitrović and Sauerland (2014, 41, ex. 3–4) show, this is not the case.

(9) a. dono gakusei **mo** dono sensei **mo** hanashita
INDET student μ INDET teacher μ talked
'Every student and every teacher talked.'

b. $*$ dono gakusei **mo mo** dono sensei **mo mo** hanashita
INDET student μ μ INDET teacher MO MO talked
'**Every** student **and every** teacher talked.'

(10) a. dono gakusei **ka** dono sensei **ka** ga hanashita
INDET student κ INDET teacher κ NOM talked
'**Some** student **or some** teacher talked.'

b. $*$ dono gakusei **ka ka** dono sensei **ka ka** hanashita
INDET student κ κ INDET teacher κ κ talked
'**Some** student **or some** teacher talked.'

The data in (9) and (10) is clear evidence homophonous pairs of coordinate and quantificational μ and κ particles do not exist in Japanese. The homophony analysis that Hagstrom (1998) and Cable (2010) most notably defend predicts that coordination of quantificational expressions (9), (10) should, *ceteris paribus*, yield particle 'reduplication': one particle expressing quantification and another expressing coordination. For further arguments against homophony of these two (classes of) particles, see Szabolcsi (2015) and, especially, Slade (2011) for a detailed historical argument based on his diachronic analyses of Japanese, Sinhala and Malayalam particles. In sum, I submit Slade's (2011) general and methodological argument against homophony: "*Entia non sunt multiplicanda praeter necessitatem*: let us not suppose the existence of homophonous particles unless we uncover compelling evidence for such multiplicity." (Slade 2011, 8)

Another independent argument which strengthens this view comes from typology. Japanese is by no strech alone in boasting the two superparticles μ and κ. The multi-tasking nature of the two types of superparticles is cross-linguistically well attested. Superparticles are in fact far more common cross-linguistically that it may seem from the European linguistic perspective: Gil (2011) reports that the majority of languages (66% out of the 76 he investigated) that were studied for the *World atlas of language structures* shows formal similarity between quantificational, focal and coordinate constructions.

Why would the grammars of most languages exhibit accidental homophony? If the allegedly homophonous meanings are logically connected, then perhaps it is not homophony but *allosemy*: a shifting of a common meaning depending on context. (Obviously, understanding the nature of this common meaning is crucial.)

Logical Allosemy

Superparticles that are cross-linguistically prominent in expressions of various logical meanings and marked with superparticles are not homophonous but rather are best analysed as possessing intrinsic alternative-triggering meaning which may

have differential realisations. Such differential meanings are better understood in the sense of *allosemy*, being conceptually and theoretically on a par with *allophony* or *allomorphy* (following Marantz 2012), depending on the structural context.

The various 'special meanings' in (7) and (8) can be thought of as being *allosemes* of the two superparticles. In this regard, consider Marantz's (2012) ideas on which I will build:

(11) a. It is the structure of the grammar itself that determines the domain of contextual allomorphy: derivation by phase. So the domain of contextual allosemy should also be the phase.

b. The additional constraint on contextual allomorphy of phonological adjacency follows if contextual allomorphy is sensitive to a phonological notion of "combines with"—adjacent items combine with each other (directly) phonologically. If we apply this idea to the semantic domain, we predict that contextual allosemy should be restricted to semantic adjacency, i.e., to elements that combine (directly) semantically.

The first desideratum is therefore to unify not only the semantic but also the syntactic distribution of the contextual incarnations of the two kinds of superparticles. From a detailed syntactic structure, the semantic interpretation follows compositionally, in line with Marantz (2011). Coordination will be shown to involve more syntactic material than overt realisations suggest. Under my analysis, the silent structure provides enough room for such non-coordinate meanings as the pairs in (7) and (8) show. Constructions such as quantification, questions and additive focus form substructures of coordination. Evidence will be predominantly drawn from a morphologically rich collection of ancient and modern Indo-European (IE) languages, which—through their morphology—reveal otherwise silent syntactic material that we fail to spot in a language like Japanese. The silent syntax will show itself though a cross-linguistic examination, pivoting on the syntactically and semantically *neutral* concept of *junction*. I will take the latter to be structurally and interpretationally the foundational building block of conjunction and disjunction. By breaking down coordination into separate layers, we will capture the syntactic and semantic differences, laying in the amount of layered projections, as well as the core components of the kinds of meanings the two pairs of μ and κ particles dictate.

The Historical Dimension

All languages change: at the level of sound, word, sentential structure and, presumably necessarily, compositional interpretation. It therefore follows from this that superparticles change, too. The rate, direction, and general nature of change in the superparticle system thus provides excellent grounds for observing, and 'in fact' studying, diachronic behaviour of the interfaces between several grammatical modules.

Can superparticles die? (Yes.) This book predominantly focuses on Indo-European, which had a superparticle system detectable in the early stages of nearly all Indo-

European languages. Unlike modern Japanese, with a fully harmonic superparticle semantics for both μ (7) and κ (8) particles, Indo-European had (and rarely still has) the μ-series only—why κ never fully developed across the branches is unclear (and will remain so in the conclusion).[2] In time, the multi-tasking capacity of μ declined in intriguing patterns.

Can superparticles be born? (Also yes.) While there is no clear evidence that old Indo-European developed the μ system from an inherited grammar, this is clearly detectable in Japonic. Old Japanese, as the oldest attested form of Japonic, had both μ and κ particles, which were not as 'super' as they are in modern Japanese. Instead, the two particles were generally focus markers which, in time, developed the harmonic superparticle system in the Classical period.

This leads to another, and more general, question: when and how can superparticles be born? The conclusions I reach are consistent with the claim that the birth of superparticles may result (at least sometimes) from the reanalysis of other elements as a superparticle. Does this indicate that language learners are 'looking for superparticles'? Furthermore, assuming they are universal micro-building blocks of logical meanings, are superparticles part of our human linguistic endowment? I will return to these questions with some conjectural answers in the conclusion, but many thanks to a reviewer who raises these pertinent points and questions.

Insofar as this book is primarily concerned with providing, or describing, an explanatorily adequate theory of superparticles with respect to the wide array of cross-linguistic data, a true answer to the question of the nature of superparticles is meta-theoretical. Answers concerning conditions on genesis of superparticles must, or at least should, after all be tied to and derived from the nature of universality of language (UG) and its division of labour (in the sense of Hauser et al 2002) between what is truly and uniquely linguistic, what is epiphenomenal of the linguistic data, and the general extra-linguistic properties of efficiency (nature).

Scope and Limitations of This Book

The goal of this book is to arrive at a convincing morphosyntactic, semantic, and pragmatic theory of superparticles in both typological (synchronic) and diachronic perspectives, which is immodest and comes at a cost of depth. In order to provide as complete as possible a microsemantic blueprint of superparticles, I sometimes compromise depth for breadth (I hope this does not frustrate semanticists too much). In future work, the intricacies of how exactly some meanings are calculated and related to other facts and questions, which I revisit in the Conclusion, are left to be worked out in future research.

[2]From Slade (2011) it would seem that at least one IE language (Sinhala) did develop (and retain) κ-particles (more than one realisation of, in fact). In this context, as a reviewer points out, this does raise interesting questions about the role of Dravidian contact, though the pieces in Sinhala κ-marked expressions are all apparently Indo-Aryan. I refer the reader to Slade (2011) for an extensive discussion of the facts.

Roadmap and the Structure of the Book

The book comes in three core parts. The first concerns *construction* (Chap. 2) which examines the morphosyntactic perspective on the superparticle systems specifically and the structure of coordination generally. The second part concerns *interpretation* (Chap. 3) where the structural morphosyntactic ideas are mapped onto an interpretational and compositional system, deriving the semantics and pragmatics of the superparticle meanings. The last part on *grammaticalisation* (Chap. 4) takes both morphosyntax and semantics/pragmatics and provides for them a diachronic story which aims to explain the synchronic distribution and historical pathways of variation and change. The reader may want to consult first the *conclusion* (Chap. 5) and see the major claims of this book, before referring back to the particulars.

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