NANOSEMANTICS & THE COMPOSITIONAL ANATOMY OF EXCLUSIVE DISJUNCTION

BACKGROUND There are two meta-theorems: (*i*) hierarchical syntactic structure applies "all the way down" (Halle and Marantz 1993, *int. al.*), and (*ii*) interpretation is determined by a homomorphism between an algebra of syntactic representations and an algebra of semantic objects. Given the two ideas, we should re(in)state and dub *morphosemantics* as the line of enquiry that aims to bridge the field-internal gaps:

(1) Compositional analysis cannot stop at word level. (Szabolcsi, 2010: 189, ex. 1)

Drawing on evidence from disjunction, we ask: How may we rectify morphological *complexity* (of disjunction markers) with the seeming logical-semantic *simplicity* of the *prima facie* atomic meaning behind logical disjunction ('∨'), given what (*i*) and (*ii*) imply in tandem?

THESIS IN A NUTSHELL Axiomatising (1), I demonstrate that there exists empirical evidence to support the view that Logical Forms (LFs) retain the morphosyntactic structure as they enter into composition. That is: the logical complexity of an LF requires isomorphic to morphosyntactic structure.

EVIDENCE The evidence comes form the morphosyntactic makeup of exclusive-disjunction markers. Drawing from a rich collection of (mostly dead) languages (Ancient Anatolian, Homeric Greek, Tocharian, Old Church Slavonic, and North-East Caucasian), I will examine the morphosemantics of exclusive OR markers, i.e. exclusive (or strong/enriched) disjunction markers of the "either … or …"-type, and demonstrate that the morphology of the XOR marker does not only contain the true (generalised) disjunction marker (I dub it κ), as one would expect on the null (Boolean) hypothesis, but that the XOR-marker also contains the (generalised) conjunction marker (I dub it μ). Presented below is a minimal pair from Ser-Bo-Croatian:

(2) **i** Mujo **i** Haso
μ M μ M
'**both** Mujo **and** Haso'

(3) **i-li** Mujo **i-li** Haso
μ-κ M μ-κ M
'**either** Mujo **or** Haso'

ANALYSIS After making the case for a fine-structure of the Junction Phrase (JP), a common structural denominator for *con-* and *dis-junction*, the paper proposes a new syntax for XOR constructions involving five functional heads (two pairs of κ and μ markers, forming the XOR-word and combining with the respective coordinand, and a J-head pairing up the coordinands).

Given below is the proposed compositional/morphosyntactic analysis of the bisyndetic exclusive disjunction (where κ is *-li* and *mu* corresponds to *i*).

(4) $\underbrace{\left[_{\text{JP}}\ \left[_{\kappa\text{P}}\ \kappa^0\ \overbrace{\left[_{\mu\text{P}}\ \mu^0\ \text{coordinand}_1\ \right]}^{\textit{additive}}\right]\ \left[\ \text{J}^0\ \left[_{\kappa\text{P}}\ \kappa^0\overbrace{\left[_{\mu\text{P}}\ \mu^0\ \text{coordinand}_2\ \right]}^{\textit{additive}}\right]\right]\right]}_{\textit{coordination: exclusive disjunction}}$

The paper composes the semantics of the syntactically decomposed structure by providing a compositional account obtaining the exclusive component (SI). To do so, I rely on an exhaustification-based system of 'grammaticised implicatures' (Chierchia, 2013) in assuming silent exhaustification operators in the narrow syntax, which (in concert with the presence of alternative-triggering κ- and μ-operators) trigger local exclusive (scalar) implicature (SI) computation.

The three lexical entries I adopt for μ, κ, and J are as follows:

(5) a. ADDITIVE μ: $[\![\mu]\!](p) = p \wedge \neg\mathfrak{X}(p)$ (following Mitrović and Sauerland 2016)
b. κ AS INQUISITIVE CLOSURE: $[\![\kappa]\!](p) = p \vee \neg p$ (following Ciardelli et al. 2013, *int. al.*)
c. DISJUNCTIVE J: $[\![J]\!](p)(q) = p \vee q$

COMPOSING CONSISTENT ALTERNATIVES: A SKETCH The presence of the altnernative-triggering and exhaustification inducing μ operator, combined with J and κ, will generate a wide set of alternatives, which yields inconsist alternative set. To eliminate inconsistencies, I adopt innocent exclusion ($\heartsuit$) of Fox (2007), and subsume under it Hurford's (1974) constraint (HC) (assuming that HC-violating alternative denotata are $\heartsuit$-excludable). We also assume disjunctions have an existential constraint ($\exists$C), which eliminates non-existential denotata. Assuming disjunctions correspond to alternative sets (Alonso-Ovalle, 2006), then the exlusive component is the only available computational result that the five operators yield.

(6) $[\![\text{JP}^+]\!] = \left\{ \begin{array}{ll} [p \wedge \neg\mathfrak{X}(p)], & [\neg p \vee \mathfrak{X}(p)], \\ [q \wedge \neg\mathfrak{X}(q)], & [\neg q \vee \mathfrak{X}(q)] \end{array} \right\}$

a. $\left\{[p \wedge \neg\mathfrak{X}(p)], [q \wedge \neg\mathfrak{X}(q)]\right\}$ . . $\times$[$\because$HC]

b. $\left\{[\neg p \vee \mathfrak{X}(p)], [\neg q \vee \mathfrak{X}(q)]\right\}$
i. $\{\{\neg p\}, \{\neg q\}\}$ . . . . . $\times$[$\because\exists$C]
ii. $\{\{\mathfrak{X}(p)\}, \{\mathfrak{X}(q)\}\}$ . . . . . ✓

NANO-SYNTAX & -SEMANTICS Methodologically, and conceptually, we first adopt a strongly decompositional stance to morphosyntax, in the templatic sense of Kayne (2005) and nanosyntactic sense of Starke (2009), *int. al.*, and then 'microscopise' the syntactic structure even further so as to allow for a total, or at least as total as possible, mapping between narrow syntactic and logical structures (LFs). Full compositional proof is omitted here.

EXTENSION & CONCLUSION The empirical facts support the advocated view of LF-internal compositional structure. This paper assumes (1) and interprets the complex morphology for, what seems to be, a rather simple meaning of 'or' or '$\vee$'. I will show that five operators (heads) are present in the morphosyntactic expression of exclusive disjunction and that the exclusive component (*qua*, SI) results as a computational consequence of five-head/operator composition ($1 \times J^0, 2 \times \kappa^0, 2 \times \mu^0$) and alternative elimination via a $\heartsuit$-like procedure (including HC) that handles inconsistencies in the generated alternative set.

SELECTED REFERENCES

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

Chierchia, G. (2013). *Logic in Grammar: Polarity, Free Choice and Intervention*. Oxford studies in semantics and pragmatics 2. Oxford: Oxford University Press.

Ciardelli, I., Groenendijk, J., and Roelofsen., F. (2013). Inquisitive semantics: a new notion of meaning. *Language and Linguistics Compass*, 7(9):459–476.

Fox, D. (2007). Free choice and scalar implicatures. In Sauerland, U. and Stateva, P., editors, *Presupposition and Implicature in Compositional Semantics*, pages 71–120. London: Palgrave Macmilan.

Halle, M. and Marantz, A. (1993). Distributed morphology and the pieces of inflection. In Hale, K. and Keyser, S. J., editors, *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, pages 111–176. Cambridge, MA: MIT Press.

Hurford, J. (1974). Exclusive or inclusive disjunction. *Foundations of Language*, 11:409–411.

Kayne, R. (2005). *Movement and Silence*. Oxford: Oxford University Press.

Mitrović, M. and Sauerland, U. (2016). Two conjunctions are better than one. *Acta Linguistica Hungarica*, 63(4):1–24.

Starke, M. (2009). Nanosyntax: A short primer to a new approach to language. *Nordlyd*, 36(1):1–6.

Szabolcsi, A. (2010). *Quantification*. Cambridge: Cambridge University Press.