

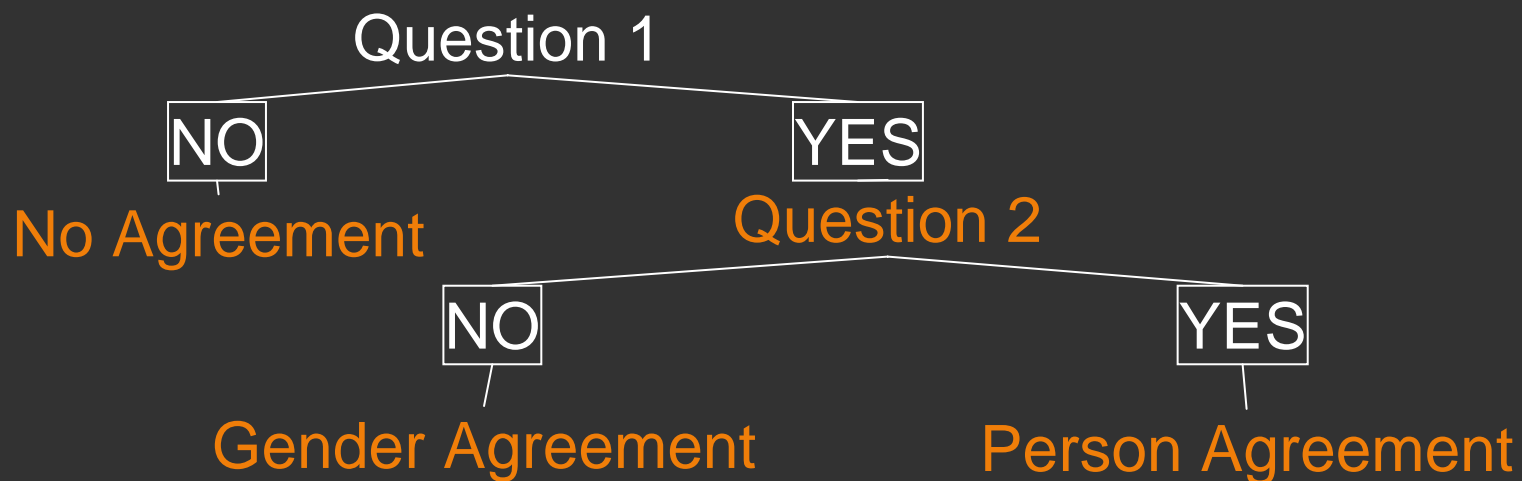
Word features and word concatenation

Gina Cook
Engineering & Computer Science
Concordia University
Montréal, Canada



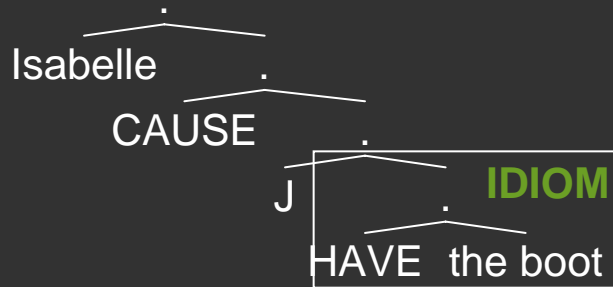
Overview

- Structure? Words or meaning
 - Structure is built from semantic **features**
 - (Harley 2006, Marantz 1993)
- Agreement? Structural positions or meaning
 - Agreement is calculated from semantic **operators**
 - **Goal of this talk**



Word Features

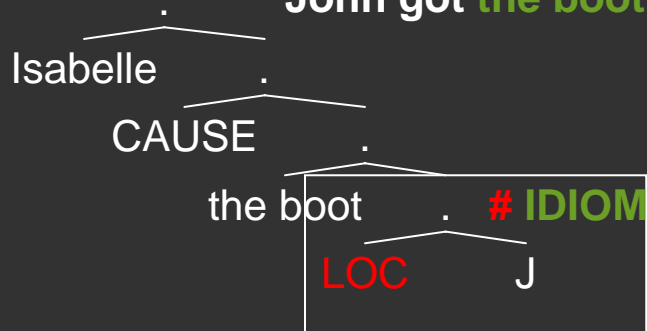
(Harley 2006, Richards 2001, Marantz 1997, Pesetsky 1995, Larson 1988)



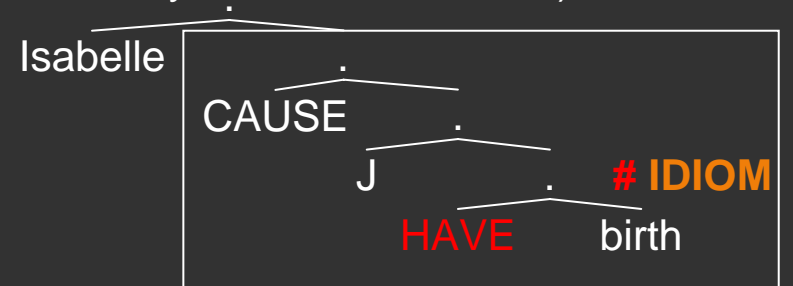
Isabelle gave John **the boot**



John got **the boot**



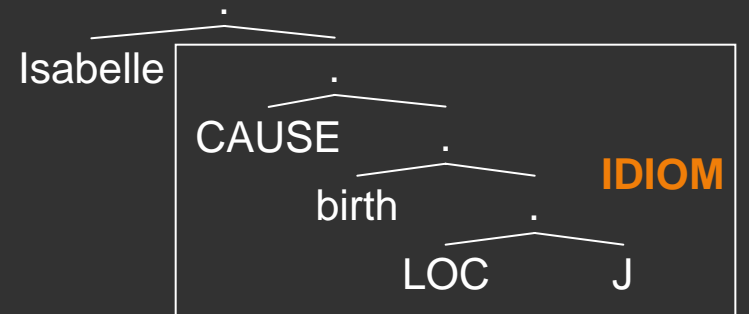
Isabelle gave **the boot** to John



Isabelle gave Joey **birth**



Joey got **birth**



Isabelle gave **birth** to Joey

Word Features

Examples

English

Kill = Action (CAUSE DEAD)

Suicide = Action (CAUSE DEAD(self))

English

Marry = Action (CAUSE MARRIED)

Get Married = Description (BECOME MARRIED)

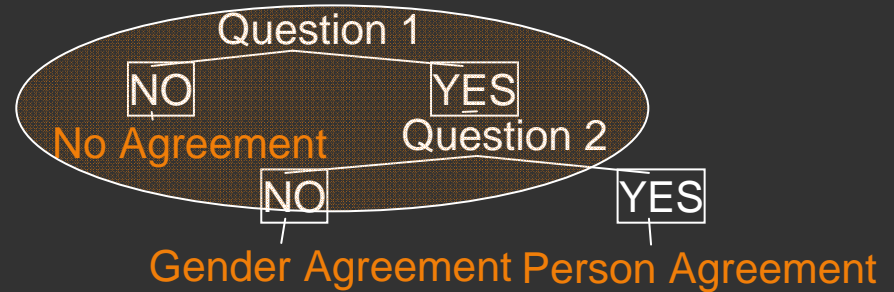
French

Se Marier = Action (CAUSE MARRIED RECIPROCAL)

Hindi

Shadi Kar = Event (DO MARRIAGE)

Question 1



Hypothesis 1: **Subjects** give off agreement features
(Chomsky 1989)

- But ... sometimes **objects** give off agreement

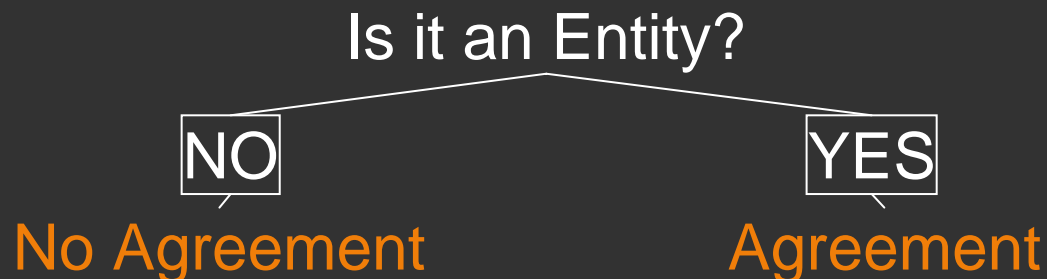
1. **Three sailors are** in a boat.

Entity $\exists x: \text{THREE}(x) \ \& \ \text{SAILOR}(x)$

2. **There are three sailors** in a boat.

Predicate THERE

Hypothesis 2: Entities give off agreement (Heycock & Zamparelli 2005)



Examples

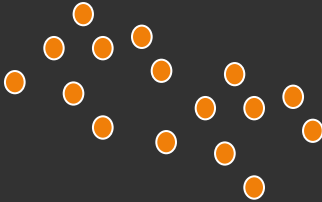
Entities are usually nouns, but can be verbs too

- John Person
- A table Thing
- He ran three times around the block Sentence

Predicates are usually verbs, but can be nouns too

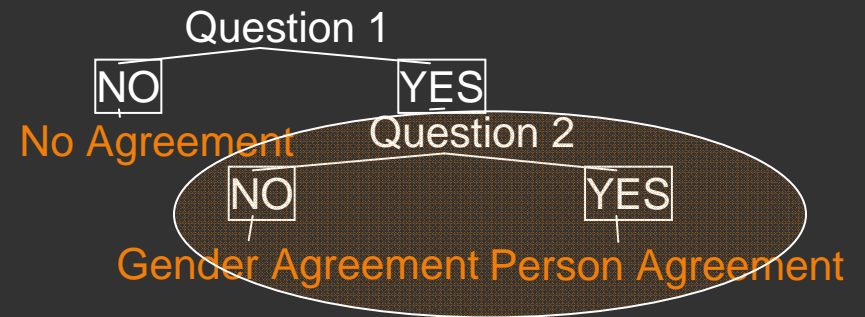
- Love Verb
- Be Auxiliary
- From Preposition
- White Adjective
- Paper Noun

Predicate vs. Entity

Material paper 	Package $\exists x : \text{paper}(x)$ 	Collection $\exists x : \text{paper}(x)$ 
Beef	Cow	Herd
I have two paper flowers.	I found two little papers	I have two papers to submit
States play 	Accomplishments $\exists w : \text{play}(w)$ 	Activities $\exists w : \text{play}(w)$ 
Believe, Know	Finish, Start, Jump	Read, Play
Play ing is fun. Play time is good for kids.	He play ed two games in 1 hour.	He play ed two games for the entire day.

Question 2

Hypothesis 1:



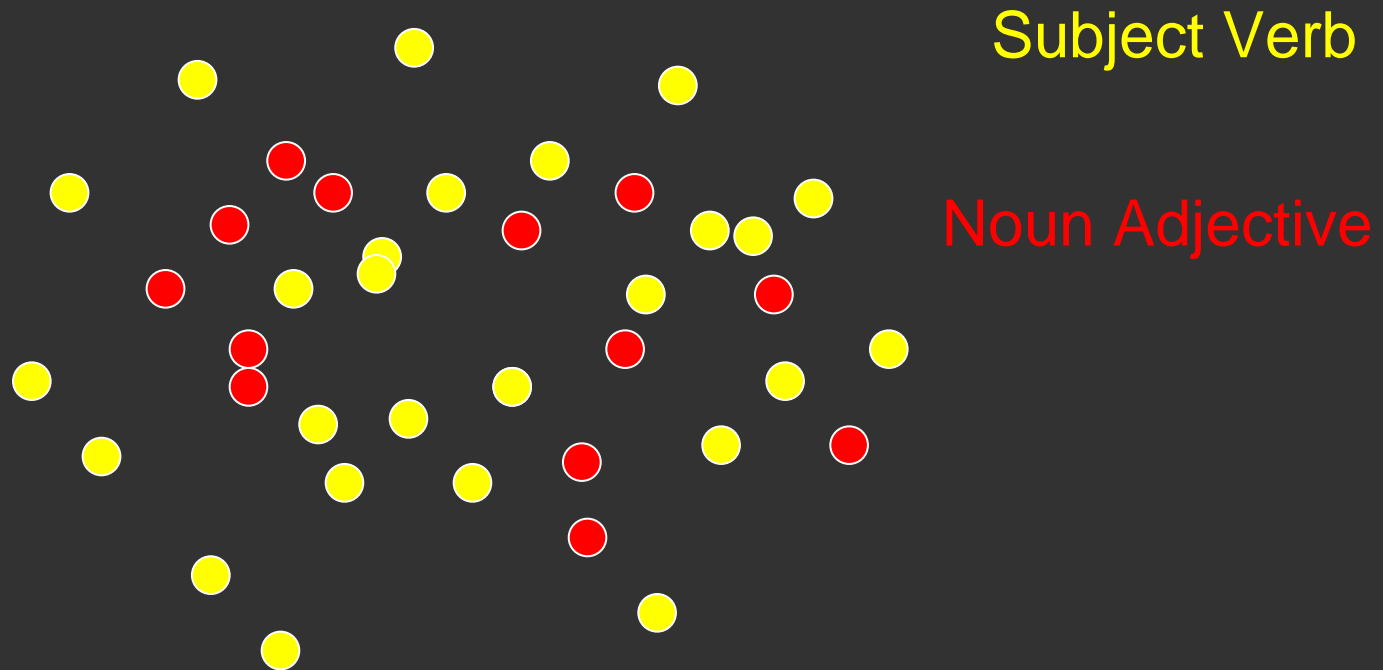
Subject Verb

- | | | | | | |
|----|-----------------|--------------|-------------|------------------|--------|
| 1. | Mathieu | prends | souvent | le metro | French |
| | <i>Mathieu</i> | <i>takes</i> | | <i>the metro</i> | |
| 2. | Isabelle | est | tombée | | French |
| | <i>Isabelle</i> | <i>is</i> | <i>fell</i> | | |
| 3. | Mira | has | rehi | hai | Hindi |
| | <i>Mira</i> | <i>laugh</i> | <i>-ing</i> | <i>is</i> | |

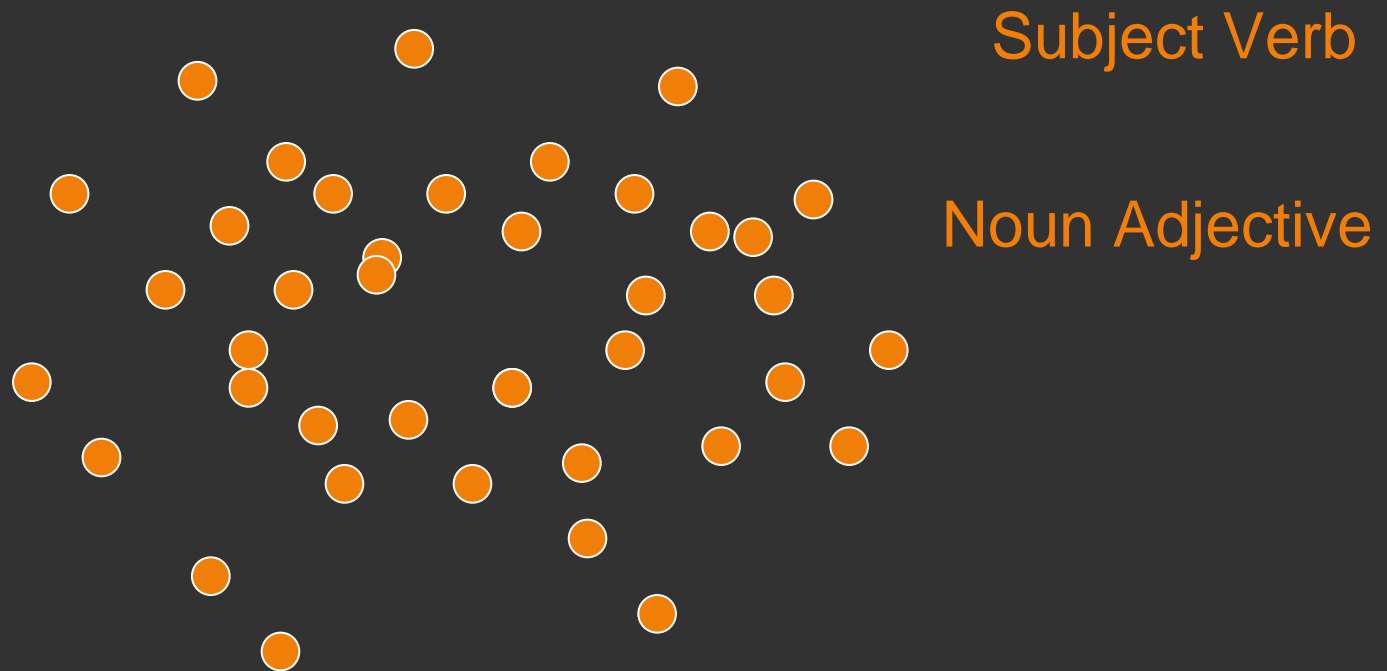
Noun Adjective

- | | | | | | | |
|----|-----------|-------------|--------------|---------------|----------------|--------|
| 1. | Mes | bell | grand | tables | blanches | French |
| | <i>My</i> | <i>nice</i> | <i>large</i> | <i>tables</i> | <i>white</i> | |
| 2. | Mere | at | bad | kale | gadhe | Hindi |
| | <i>My</i> | <i>nice</i> | <i>big</i> | <i>black</i> | <i>donkeys</i> | |

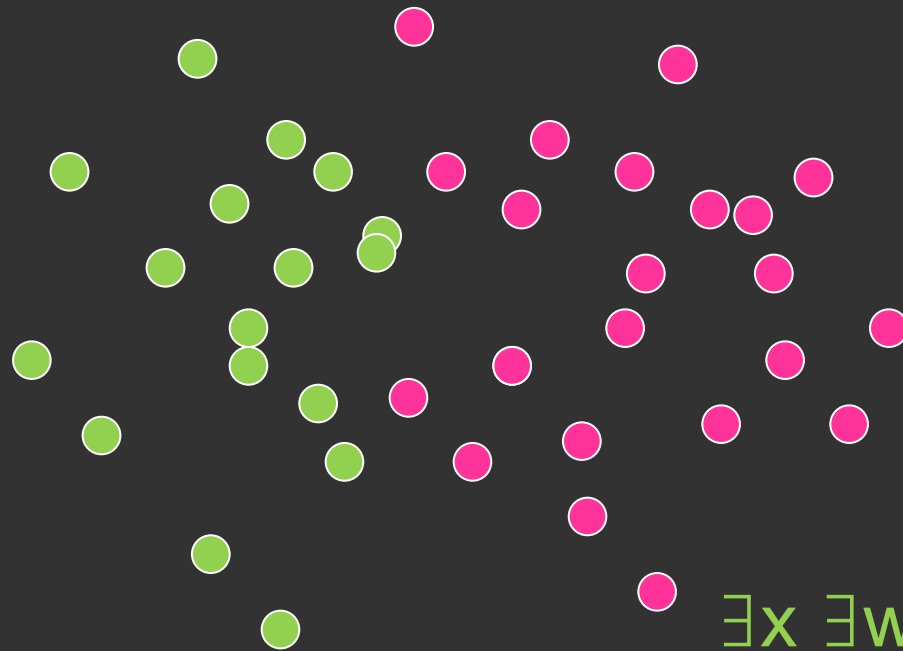
Indistinguishable Agreement?



Indistinguishable Agreement?



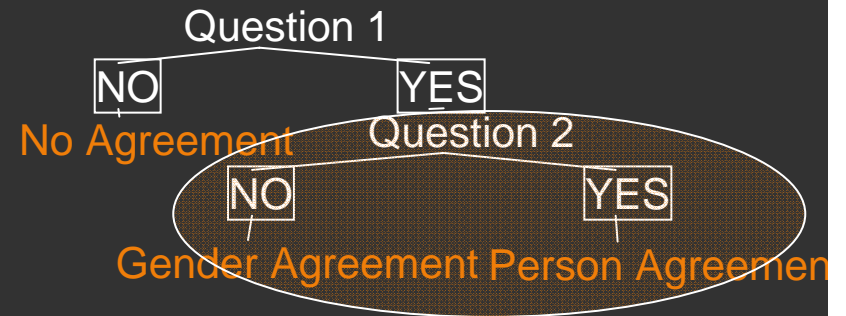
Claim: Two Types of Agreement



$$\exists x \exists w : P(x) \ \& \ Q(w) = 1$$

$$\exists x : (P \ \& \ Q)(x)$$

Hypothesis 2: Is it Finite?



Person Agreement: finite verbs

1. Mathieu prends souvent le metro
Mathieu takes the metro

2. Isabelle est tombée
Isabelle is fell

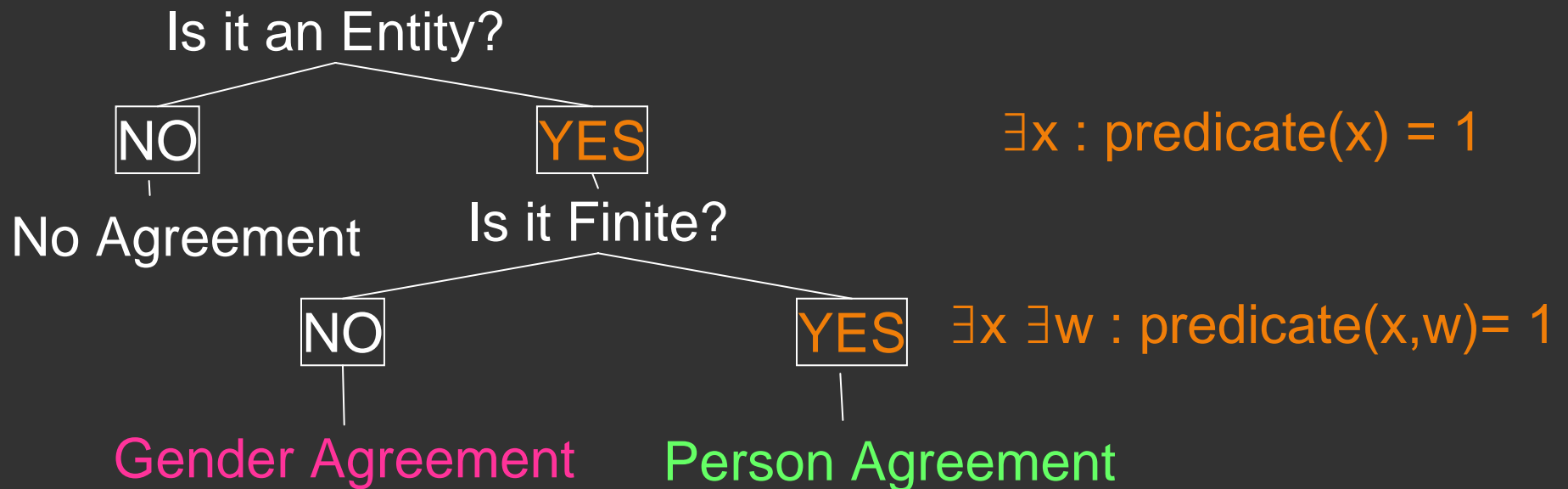
3. Mira has rehi hai
Mira laugh -ing is

Gender Agreement: non-finite verbs, adjectives

1. Mes belles grandes tables blanches
My nice large tables white

2. Mere atfe baqe kale gadhe
My nice big black donkeys

Agreement = word features + semantic operators



References

- Harley, H. (2004). Wanting, having, and getting: a note on Fodor and Lepore 1998. *Linguistic Inquiry*, 35(2), 255—267.
- Dayal, V. (2004). Number marking and (in)definiteness in kind terms. *Linguistics and Philosophy*, 27(4), 393-450.
- Krifka, M. (2003). Bare NPs: Kind-referring, indefinites, both, or neither? *Proceedings from Semantics and Linguistic Theory*, 13, 180-203.
- Richards, N. (2001). An idiomatic argument for lexical decomposition. *Linguistic Inquiry*, 32(1), 183-192.
- Heycock, C., & Zamparelli, R. (2005). Friends and colleagues: Plurality, coordination, and the structure of DP. *Natural Language Semantics*, 13(3), 201-270.

References (in more detail)

Agreement

- Anton-Mendez, I., Nicol, J. L., & Garrett, M. F. (2002). The relation between gender and number agreement processing. *Syntax*, 5(1), 1-25.
- Badecker, W., & Kuminiak, F. (2007). Morphology, agreement and working memory retrieval in sentence production: Evidence from gender and case in slovak. *Journal of Memory and Language*, 56(1), 65-85.
- Baker, M. C., Aranovich, R., & Golluscio, L. A. (2005). Two types of syntactic noun incorporation: Noun incorporation in mapudungun and its typological implications. *Language*, 81(1), 138-176.
- Barber, H., & Carreiras, M. (2005). Grammatical gender and number agreement in spanish: An ERP comparison. *Journal of Cognitive Neuroscience*, 17(1), 137-153.
- Belnap, R. K. (1999). A new perspective on the history of arabic variation in marking agreement with plural heads. *Folia Linguistica*, 33(1-2), 169-185.
- Benmamoun, E. 1999. *Spec-head agreement and overt case in Arabic*.
- Benmamoun, E. (2000). *The feature structure of functional categories*. Oxford: Oxford University Press.
- Benmamoun, E., & Lorimor, H. (2006). Featureless expressions: when morphophonological markers are absent. *Linguistic Inquiry*, 37(1), 1— 23.
- Bobaljik, J. D., & Thráinsson, H. (1998). Two heads aren't always better than one. *Syntax*, 1(1), 37— 71.
- Brown, C. M., Van Berkum, J. J. A., & Hagoort, P. (2000). Discourse before gender: An event-related brain potential study on the interplay of semantic and syntactic information during spoken language understanding. *Journal of Psycholinguistic Research*, 29(1), 53-68.
- Carstens, V. (2001). Multiple agreement and case deletion: Against (phi)-(in)completeness. *Syntax*, 4(3), 147-163.
- Chung, S. (1998). *The design of agreement*. Chicago: University of Chicago Press.
- Davison, A. (2002). Agreement features and projections of TENSE and ASPECT. *Yearbook of South Asian Languages and Linguistics*, , 27-57.
- Deutsch, A., & Dank, M. (2009). Conflicting cues and competition between notional and grammatical factors in producing number and gender agreement: Evidence from hebrew. *Journal of Memory and Language*, 60(1), Jan-143.
- Fudeman, K. (2004). Adjectival agreement vs. adverbial inflection in balanta. *Lingua*, 114(2), 105-123.
- Gollan, T. H., & Frost, R. (2001). Two routes to grammatical gender: Evidence from hebrew. *Journal of Psycholinguistic Research*, 30(6), 627-651.
- Heycock, C., & Zamparelli, R. (2003). Coordinated bare definites. *Linguistic Inquiry*, 34(3), 443-469.
- Heycock, C., & Zamparelli, R. (2005). Friends and colleagues: Plurality, coordination, and the structure of DP. *Natural Language Semantics*, 13(3), 201-270.

References (in more detail)

Agreement continued

- Hoen, M., Deprez, V., & Dominey, P. F. (2007). Do you agree? electrophysiological characterization of online agreement checking during the comprehension of correct french passive sentences. *Journal of Neurolinguistics*, 20(5), Sept-421.
- Kabuya, N. (1999). The noun classes and concord of congo copperbelt swahili. *Studies in African Linguistics*, 28(1), 93-108.
- Levinson, L. (2007). Finding arguments for pseudo-resultative predicates. *University of Pennsylvania Working Papers in Linguistics*, 13(1), 155-168.
- Koopman, H. J., & Sportiche, D. (1983). Variables and the bijection principle. *The Linguistic Review*, 2, 139— 160.
- Kayne, R. S. (1989). *Notes on English agreement*. Paper presented at CIEFL Bulletin, Hyderabad, India.
- Mohanan, K. P. (1991). On the bases of Radical Underspecification. *Natural Language and Linguistic Theory*, 9(2), 285— 325.
- Poser, W. J. (2005). Noun classification in carrier. *Anthropological Linguistics*, 47(2), 143-168.
- van de Velde, Mark L.O. (2006). Multifunctional agreement patterns in bantu and the possibility of genderless nouns. *Linguistic Typology*, 10(2), 183-221.
- Saksena, A. (1983). A case marking constraint. *Lingua*, 60(1), 41— 52.
- Wechsler, S., & Zlatic, L. (2000). A theory of agreement and its application to serbo-croatian. *Language*, 76(4), 799-832.
- Wicha, N. Y. Y., Moreno, E. M., & Kutas, M. (2004). Anticipating words and their gender: An event-related brain potential study of semantic integration, gender expectancy, and gender agreement in spanish sentence reading. *Journal of Cognitive Neuroscience*, 16(7), 1272-1288.
- Wicha, N. Y. Y., Orozco-Figueroa, A., Reyes, I., Hernandez, A., Gavaldon de Barreto, L., & Bates, E. A. (2005). When zebras become painted donkeys: Grammatical gender and semantic priming interact during picture integration in a spoken spanish sentence. *Language and Cognitive Processes*, 20(4), 553-587.
- Wilson, J. (2002). From preposition to plural marker and more: Grammaticalization of kuche bana. *Studies in African Linguistics*, 31(1-2), 155-175.
- Zamparelli, R. (2004). Flexibility principles in boolean semantics: The interpretation of coordination, plurality and scope in natural language. *Journal of Linguistics*, 40(1), 205-213.
- Zamparelli, R. (2005). The structure of (in)definiteness. *Lingua*, 115(6), 915-936.
- Zamparelli, R. (2008). Dei ex machina: A note on plural/mass indefinite determiners. *Studia Linguistica*, 62(3), Dec-327.
- Zamponi, R. (2002). Notes on betoi verb morphology. *International Journal of American Linguistics*, 68(2), 216-241.

References (in more detail)

Clause structure:

- Bobaljik, J. D., & Wurmbrand, S. (2005). The domain of agreement. *Natural Language and Linguistic Theory*, 23(4), 809— 865.
- Cinque, G. (2002). A note on "restructuring" and quantifier climbing in french. *Linguistic Inquiry*, 33(4), 617-636.
- Dayal, V. (1999). Bare NP's, reference to kinds, and incorporation. *Proceedings from Semantics and Linguistic Theory*, 9, 34-51.
- Dayal, V. (2004). Number marking and (in)definiteness in kind terms. *Linguistics and Philosophy*, 27(4), 393-450.
- Krifka, M. (1995). Common nouns: A contrastive analysis of chinese and english. In G. N. Carlson, & F. J. Pelletier (Eds.), *The generic book* (pp. 398-411). Chicago, IL: The U of Chicago Press.
- Krifka, M. (1998). The origins of telicity. In S. Rothstein (Ed.), *Events and grammar* (pp. 197-235). Dordrecht, Netherlands: Kluwer.
- Krifka, M. (2003). Bare NPs: Kind-referring, indefinites, both, or neither? *Proceedings from Semantics and Linguistic Theory*, 13, 180-203.
- Larson, R. K. (1988). On the double object construction. *Linguistic Inquiry*, 19(3), 335— 392.
- Pollock, J.-Y. (1989). Verb movement, UG and the structure of IP. *Linguistic Inquiry*, 20, 365— 424.
- Pollock, J. (2006). Functional structure in DP and IP: The cartography of syntactic structures, vol. 1. *Language*, 82(2), 425-428.
- Raposo, E., & Uriagereka, J. 1995. *Two types of small clauses (toward a syntax of theme/rheme relations)*.
- Pullum, G. K. (1997). The morpholexical nature of english to-contraction. *Language*, 73, 79— 102.
- Richards, N. (2001). An idiomatic argument for lexical decomposition. *Linguistic Inquiry*, 32(1), 183-192.
- Wurmbrand, S. (2004). Two types of restructuring-lexical vs. functional. *Lingua*, 114, 991— 1014.
- den Dikken, M. 2004. *Agreement and 'clause union'* in: Verb clusters: A study of Hungarian, German, and Dutch, pages 445-498, John Benjamins Publishing Company, 2004.
- Wurmbrand, S. (2007). Infinitives are tenseless. *U. Penn Working Papers in Linguistics*, 13, 1— 14.

Syntax/Semantics of want

- Iatridou, S. (2000). The grammatical ingredients of counterfactuality. *Linguistic Inquiry*, 31(2), 231— 270.
- Harley, H. (2004). Wanting, having, and getting: a note on Fodor and Lepore 1998. *Linguistic Inquiry*, 35(2), 255— 267.

References (in more detail)

Hindi

- Pray, B. (1970). *Topics in Hindi-Urdu grammar*. Berkeley: University of California.
- Glassman, E. H. (1977). *Spoken Urdu*. Lahore: Nirali Kitabon.
- Kachru, Y. (1980). *Aspects of Hindi grammar*. New Delhi: Manohar Publications.
- Saksena, A. (1981). Verb agreement in Hindi. *Linguistics*, 19, 467— 474.
- Mohanan, K. P. (1982). Infinitival subjects, government, and the abstract case. *Linguistic Inquiry*, 13(2), 323— 327.
- Comrie, B. (1984). Reflections on verb agreement in Hindi and related languages. *Linguistics*, 22, 857— 864.
- Comrie, B. (1985). Reply to Saksena: further reflections on verb agreement in Hindi. *Linguistics*, 23, 143— 145.
- Saksena, A. (1985). Verb agreement in Hindi, part II. *Linguistics*, 23, 137— 142.
- Davison, A. (1988). *Constituent structure and the realization of agreement features*. Paper presented at Papers from the 24th Regional Meeting of the Chicago Linguistics Society, Chicago.
- Srivastav, V. (1991). The syntax and semantics of correlatives. *Natural Language and Linguistic Theory*, 9(4), 637— 686.
- Davison, A. 1991. *Feature percolation and agreement in Hindi-Urdu*.
- Mohanan, T. (1995). Wordhood and lexicality: noun incorporation in Hindi. *Natural Language and Linguistic Theory*, 13(1), 75— 134.
- Butt, M. (1995). *The structure of complex predicates in Urdu*. Stanford: CSLI Publications.
- Mohanan, T. 1997. *Multidimensionality of representation: NV complex predicates in Hindi*.
- Bhatt, Rajesh. 1997. Counterfactual morphology in modern Indo-Aryan languages: Semantic and typological issues. Ms., University of Pennsylvania, Philadelphia, and MIT, Cambridge, Mass.
- Dayal, V. S. (1999). *Bare NPs, reference to kinds, and incorporation*. Paper presented at Proceedings of SALT IX, Ithaca.
- Bickel, B., & Yadava, Y. P. (2000). A fresh look at grammatical relations in Indo-Aryan. *Lingua*, 110, 343— 373.
- Butt, M. 2003. *The light verb jungle*. in: Harvard Working Papers in Linguistics, 9: Papers from the GSAS/Dudley House Workshop on Light Verbs, Harvard, 2003.