LIN6049 Advanced Semantics: Puzzles in Meaning
2022/2023

Handout 1: Grammatical number I

Obligatory reading: Corbett (2000), pp. 19-35
Optional readings: WALS chapter 34

Today: in Intro to Semantics, we never worried about semantic differences between singular (*student*) and plural (*students*) nouns. But the meaning of *student* and *students* is not the same. We will see a way of implementing the difference in the system we developed in Intro to Semantics, and we will also be able to address the dual

1 Semantics of nouns up to now

(1) $[\![\textbf{student}]\!]^s = [\![\textbf{students}]\!]^s = \{x\text{: x is a student in s}\}$

But clearly singular and plural nouns do not mean the same thing:

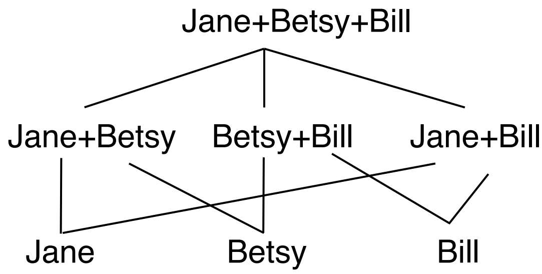
(2) $[\![\textbf{the student left}]\!]^s \neq [\![\textbf{the students left}]\!]^s$

2 Adding to the inventory of semantic categories: simple and complex individuals

To address this problem, we start by distinguishing **simple** and **complex** individuals

(3) Simple individuals: Jane, Betsy, Bill
Complex individuals: Jane+Betsy, Betsy+Bill, Jane+Betsy+Bill

(4)



(5) More generally:
Simple individuals: a, b, c, d… Complex individuals: ab, bc, ad, abc, abcd…

(6) Variable names (x, y, z) continue standing for individuals, but they can now either be simple or complex individuals

3 Language that is sensitive to simple and complex individuals: singular and plural

For the syntax, we assume that there is a Number Phrase inside of NPs:

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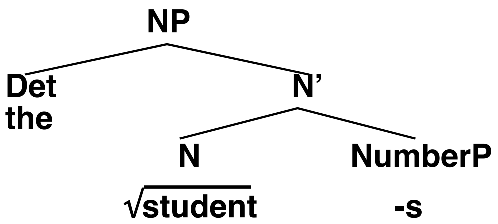

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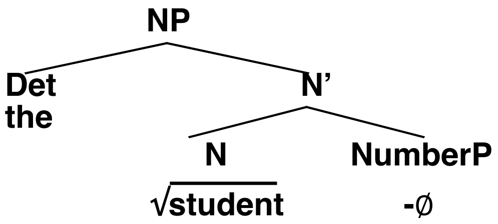

(9) $\sqrt{\textbf{student}}$ = the root for the noun *student*, without suffixes attached

If we want to say that $\sqrt{\textbf{student}}$ is part of **students** (as we should, given the *wug* test), then we need to give a suitable meaning to **-s**, $\sqrt{\textbf{student}}$ and **-∅**. Here is one proposal, where the meaning of N' is calculated via Predicate Modification:

(10) $[\![\sqrt{\textbf{student}}]\!]^s$ = {x: x is a simple or complex student individual in s} = {Jane, Betsy, Bill, Jane+Betsy, Betsy+Bill, Jane+Bill, Jane+Betsy+Bill}

$[\![\textbf{-}\emptyset]\!]^s$ = {x: x is a simple individual in s} = {Jane, Betsy, Bill, Bea, John, …}
$[\![\textbf{-s}]\!]^s$ = {x: x is a complex individual in s} = {Jane+Betsy, …, John+Bill+Jane}

(11) $[\![\sqrt{\textbf{student}}\ \textbf{-}\emptyset]\!]^s = [\![\sqrt{\textbf{student}}]\!]^s \cap [\![\textbf{-}\emptyset]\!]^s$ = {x : x is a simple individual in s and x is a student in s} = {Jane, Betsy, Bill}

$[\![\sqrt{\textbf{student}}\ \textbf{-s}]\!]^s = [\![\sqrt{\textbf{student}}]\!]^s \cap [\![\textbf{-s}]\!]^s$ = {x : x is a complex individual in s and x is a student in s} = {Jane+Betsy, Betsy+Bill, Jane+Bill, Jane+Betsy+Bill}

Languages like English don't have an overt singular morpheme, but other languages do:

(12) English: *cat*/*cats*, *woman*/*women*
(13) Bayso (Afro-Asiatic, Ethiopia): *lubán-titi* (lion-SG)/*luban-jool* (lion-PL)
(14) Imere (Polynesian, Vanuatu): *te-ngata* (SG-snake)/*a-ngata* (PL-snake)

We can treat singular and plural the same across languages, and say that some languages don't realise the singular morpheme overtly. That is, some languages have null morphemes

4 The feature [±atomic]

Now we're going to modify this proposal slightly: we'll say that what appears in NumP are number features, which then get spelled out in different ways, depending on the language:

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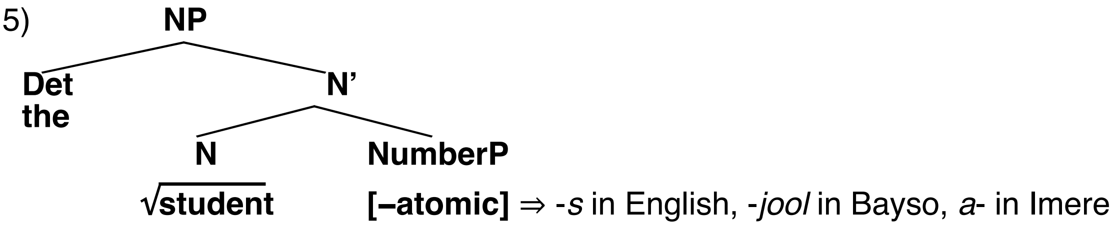

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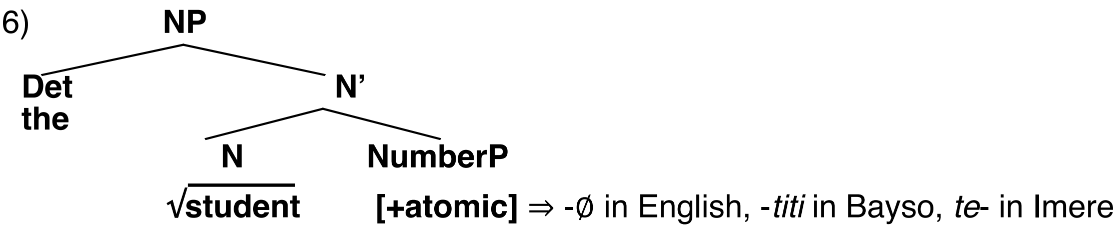

(17) $[\![$**+atomic**$]\!]^s$ = {x: x is a simple individual in s} = {x: x is an atomic individual in s}
$[\![$**−atomic**$]\!]^s$ = {x: x is a complex individual in s} = {x: x is a non-atomic individual in s}

Why features? Two reasons:
Morphologists and syntacticians normally use features to explain agreement. In English, e.g., verbs agree in number with the NPs in subject position, so having number features as part of the NP makes sense

(18) **The student eats/*eat chocolate**
(19) **The students eat/*eats chocolate**

Another reason is that by thinking that NumP hosts features, we can combine different features to generate different number values. To see that, we'll introduce another feature, [±minimal], and combine it with [±atomic]—interesting things will happen then!

5 Another feature: [±minimal]

To express what [±minimal] does, we actually need to use a semantic rule of composition, because we need to be able to relativise meaning with respect to N. We will make use of the idea that it is possible to be a more or less complex individual *in a relative way*

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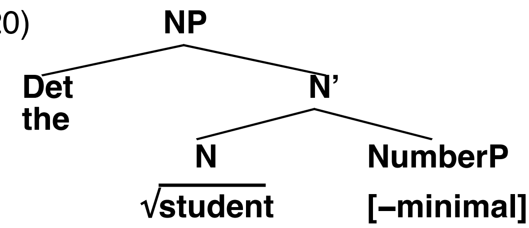

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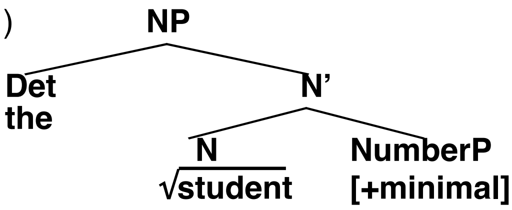

(22) If X = [Y [+minimal]] then for any s: $[\![\mathbf{Y\ [+minimal]}]\!]^s$ = {x: x ∈ $[\![\mathbf{Y}]\!]^s$ and x is simplest in $[\![\mathbf{Y}]\!]^s$} = {x: x ∈ $[\![\mathbf{Y}]\!]^s$ and x <u>has no parts</u> in $[\![\mathbf{Y}]\!]^s$}

(23) If X = [Y [–minimal]] then for any s: $[\![\mathbf{Y\ [–minimal]}]\!]^s$ = {x: x ∈ $[\![\mathbf{Y}]\!]^s$ and x is not simplest in $[\![\mathbf{Y}]\!]^s$} = {x: x ∈ $[\![\mathbf{Y}]\!]^s$ and x <u>has parts</u> in $[\![\mathbf{Y}]\!]^s$}

(24) $[\![\mathbf{\sqrt{student}\ [+minimal]}]\!]^s$ = {x : x is a student in s and x is simplest in $[\![\mathbf{\sqrt{student}}]\!]^s$} = {Jane, Betsy, Bill}

$[\![\mathbf{\sqrt{student}\ [–minimal]}]\!]^s$ = {x : x is a student in s and x is not simplest in $[\![\mathbf{\sqrt{student}}]\!]^s$} = {Jane+Betsy, Betsy+Bill, Jane+Bill, Jane+Betsy+Bill}

6 More language that is sensitive to simple and complex individuals: the dual

Having both [±atomic] and [±minimal] allows us to explain why certain languages have the number value dual (for two N), in addition to singular and plural:

(25) Imere number on nouns

singular	**dual**	**plural**	
te-ngata	ruu-ngata	a-ngata	'snake'
te-fare	ruu-fare	a-fare	'house'
te-soa	ruu-soa	a-soa	'friend'
te-sea	ruu-sea	a-sea	'chair

(26) **Lekina te-sea/ruu-sea/a-sea i-fare**
exist SG-chair/DU-chair/PL-chair LOCATIVE-house
'There is/are a chair/two chairs/chairs in the house'

(27) *Ruu-* is not the number 'two', *eerua* is; verbs agree in the dual with subjects

(28) Other languages with dual on nouns: Slovenian (Slavic, Slovenia), Hopi (Uto-Aztecan, Arizona), Arabic (dialects) (Semitic, Arab countries)

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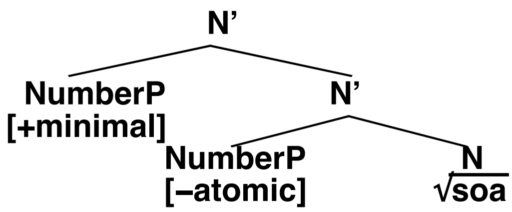

(30) [+minimal, –atomic] (two, dual) (simplest in a set of complex/non-atomic ind)
[–minimal, –atomic] (more than two, plural) (not simplest in a set of complex/non-atomic ind)
[+minimal, +atomic] (one, singular) (simplest in a set of simple/atomic ind)

(31) #[−minimal, +atomic] (impossible to be not simplest out of a set of simple/atomic ind)

(32) [+minimal, −atomic] ⇒ *ruu-*
[−minimal, −atomic] ⇒ *a-*
[+minimal, +atomic] ⇒ *te-*
#[−minimal, +atomic] ⇒ ✗

(33) Correct prediction: plural in a language with duals is *for three or more*

(34) **Lekina a-sea i-fare**
exist PL-chair LOCATIVE-house (✓ in situations with three or more chairs;
'There are chairs in the house' ✗ in situations with two chairs)

Obligatory reading (on QM+): Corbett (2000), pp. 19-35

Optional reading (on QM+): WALS (World Atlas of Linguistic Structures Online) chapter 34