

# Person, Number, and the Architecture of Grammar

## *PART TWO: The geometry of $\varphi$ -features*

Omer Preminger, University of Maryland

LOT 2018, Groningen

<b>Lessons from phonology</b>	<b>2</b>
Privative vs. multivalent features . . . . .	3
Feature geometries. . . . .	5
<b>And now back to <math>\varphi</math>-features...</b>	<b>9</b>
Harley & Ritter (2002). . . . .	10
<b>PERSON</b>	<b>12</b>
Harley & Ritter (2002). . . . .	13
McGinnis (2005). . . . .	17
<b>NUMBER</b>	<b>24</b>
Harley & Ritter (2002). . . . .	25
<b>Markedness, valence, and modularity</b>	<b>28</b>
Some properties of these feature structures, and how to evaluate them . . . . .	29
<b>References</b>	<b>35</b>
References . . . . .	36

**Privative vs. multivalent features**

- Let's start with phonology
  - and not for nothing: the ideas we're about to discuss *originated* in phonological theory
    - beginning with work by Archangeli (1988), Avery & Rice (1989), Clements (1985) and Sagey (1986)
- OBSERVATION: While there are phonological processes that target only *labial* segments —
  - (and there are phonological processes that don't care about *labiality*)
  - there are no phonological processes that apply exclusively to *non-labial* segments.
- **This is unexpected on a model where there's a feature [ $\pm$ labial]**
  - since a rule could specify either [+labial] or [–labial] in its description

LOT 2018, Groningen

 Person, Number, and the Architecture of Grammar  
 PART TWO: *The geometry of  $\phi$ -features*  
 Omer Preminger, University of Maryland

– 3 / 36

**Privative vs. multivalent features**

- ⇒ SOLUTION: assume that [labial] is a **privative feature** —
- there's no such thing as [+labial] and [–labial];
  - only [labial] or absence thereof ( $\emptyset$ )
- If we add the assumption that a rule cannot refer to the *absence* of a feature —
    - we get the correct typology: rules can either apply only to labials, or not care about labiality at all;
    - but there is no way for them to apply exclusively to non-labials.

LOT 2018, Groningen

 Person, Number, and the Architecture of Grammar  
 PART TWO: *The geometry of  $\phi$ -features*  
 Omer Preminger, University of Maryland

– 4 / 36

**Feature geometries**

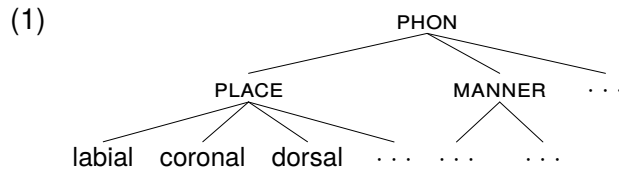
*Alas, where one problem dissolves, another reveals itself . . .*

- In this case: how can we model place assimilation in this kind of system?
  - assimilation of one *labial* to another *labial* is easy to model
    - as spreading of the [labial] feature
  - but what does (generalized) place assimilation amount to, in this system?
    - e.g. *en-able* vs. *em-power* (vs. *en-close*)
    - as it stands, all we would have is a collection of separate, disparate privative place features
      - e.g. [labial], [coronal], [dorsal]
- ⇒ what does it mean, in featural terms, for a [coronal] segment to undergo assimilation and become [labial]?

**Feature geometries**

⇒ SOLUTION: Features are organized in a *hierarchy*

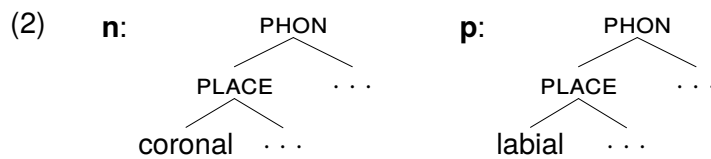
- for example, [labial], [coronal], [dorsal] are all child nodes of a parent node named [PLACE]



- A particular segment will only have one child node under [PLACE] (unless there is co-articulation...)  
 ○ corresponding to its actual place-of-articulation

**Feature geometries**

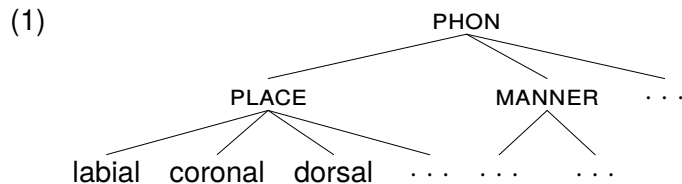
⇒ So, for example, [n] and [p] will be represented as in (2):



- Now, place-assimilation consists of simply overwriting one segment's [PLACE] node with another's (*en-able* → *em-power*)

**Feature geometries**

- A structure like (1), repeated below, is called a **feature geometry**:

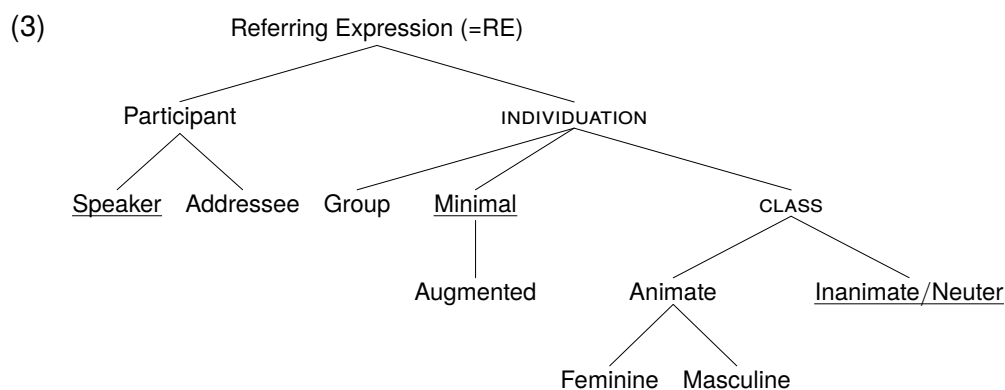


**Harley & Ritter (2002)**

- Okay, after this brief excursus into phonology, let us fast-forward ~15 years
  - and return to our domain of interest,  $\varphi$ -features
- Harley & Ritter (2002), taking their explicit inspiration from the phonological work cited earlier, propose:
  - **$\varphi$ -features are also organized in a feature geometry**
- They propose this for the representation of  $\varphi$ -features in the morphology
  - and they motivate their proposal on (mostly) morphological grounds

**Harley & Ritter (2002)**

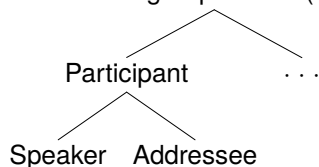
- The geometry proposed by Harley & Ritter is given in (3):



**Harley & Ritter (2002)**

- Let's start by looking at the PERSON-related side of the geometry:

(4) Referring Expression (=RE)



- This geometry works just like the phonological geometry we saw earlier
  - so, for example, [Participant] is what distinguishes 1st/2nd person expressions (=speech-act participants) from all others
  - ⇒ 1st/2nd person expressions have a [Participant] feature; 3rd person ones lack it altogether
  - **crucially**, there is no such thing (on this proposal) as “[−Participant]”

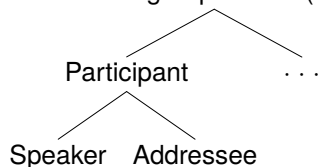
LOT 2018, Groningen

Person, Number, and the Architecture of Grammar  
 PART TWO: *The geometry of φ-features* – 13 / 36  
 Omer Preminger, University of Maryland

**Harley & Ritter (2002)**

- Let's start by looking at the PERSON-related side of the geometry:

(4) Referring Expression (=RE)



- What about [Speaker] and [Addressee]?
  - on H&R's proposal, these are what distinguish 1st and 2nd person expressions from one another
  - ⇒ **QUESTION:** given the logic of privativity (cf. [labial] vs. the absence thereof) — why do we need both [Speaker] and [Addressee]?
    - couldn't we just have one subfeature for [Participant], and its presence vs. absence would be the difference between 1st and 2nd person?

LOT 2018, Groningen

Person, Number, and the Architecture of Grammar  
 PART TWO: *The geometry of φ-features* – 14 / 36  
 Omer Preminger, University of Maryland

## Harley & Ritter (2002)

- **ANSWER:**

(5)		SINGULAR	DUAL	PLURAL	(Chinook [Pacific NW])
1st ex		<i>naika</i>	<i>ntaika</i>	<i>ntcaika</i>	
1st in			<i>tχaika</i>	<i>lχaika</i>	
2nd		<i>maika</i>	<i>mtaika</i>	<i>mcaika</i>	
3rd		<i>áχka</i> (f.)	<i>ctáχka</i>	<i>táska</i>	

[Boas 1911:626, via Harley & Ritter 2002:493]

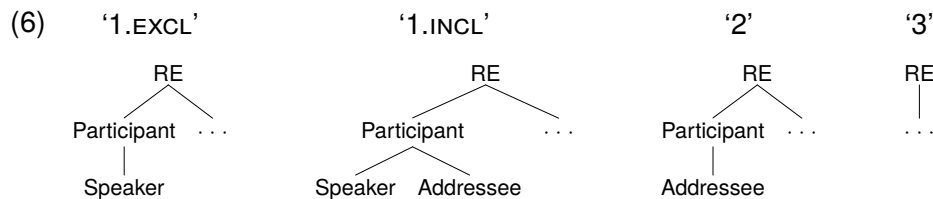
- we need both [Speaker] and [Addressee] to model *1st person inclusive* expressions
  - like *tχaika* (“1du.INCL”) and *lχaika* (“1pl.INCL”)
- this is known as a ‘**clusivity**’ distinction

LOT 2018, Groningen

Person, Number, and the Architecture of Grammar  
 PART TWO: *The geometry of φ-features* – 15 / 36  
 Omer Preminger, University of Maryland

## Harley & Ritter (2002)

⇒ For Harley & Ritter:



LOT 2018, Groningen

Person, Number, and the Architecture of Grammar  
 PART TWO: *The geometry of φ-features* – 16 / 36  
 Omer Preminger, University of Maryland

## McGinnis (2005)

- McGinnis (2005) observes a “bug” in Harley & Ritter’s (2002) geometry
  - if [Speaker] and [Addressee] are both universally available features;
  - and this is, after all, a theory of morphology;
- ⇒ then there can be a language where the morphology *only pays attention to [Addressee]*
  - ignoring [Speaker]
    - (just like there are languages where the morphology does not pay attention to, say, [ACCUSATIVE])
- what would such a language look like?

LOT 2018, Groningen

Person, Number, and the Architecture of Grammar  
 PART TWO: *The geometry of φ-features* – 17 / 36  
 Omer Preminger, University of Maryland

## McGinnis (2005)

- Here's a way to think about it:
  - let's use (as we have implicitly already been doing) the labels '1.EXCL', '1.INCL', and '2' as descriptive categories
    - carving out particular sets of speech-act participants

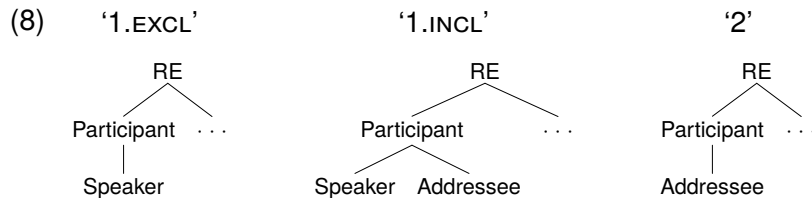
LOT 2018, Groningen

Person, Number, and the Architecture of Grammar  
PART TWO: *The geometry of φ-features* – 18 / 36  
Omer Preminger, University of Maryland

## McGinnis (2005)

⇒ Then English morphologizes these categories as follows:

(7)  $\frac{\text{'1.EXCL'} \mid \text{'1.INCL'}}{\text{we}} \parallel \parallel \frac{\text{'2'}}{\text{y'all}}$



- this can be thought of as a language choosing to morphologize [Speaker] (using the form *we*)
  - and ignoring [Addressee] — instead using *y'all* as the ELSEWHERE spellout for [Participant] in the absence of [Speaker]

LOT 2018, Groningen

Person, Number, and the Architecture of Grammar  
PART TWO: *The geometry of φ-features* – 19 / 36  
Omer Preminger, University of Maryland

## McGinnis (2005)

- And of course we've seen this:

(9)  $\frac{\text{'1.EXCL'}}{\text{ntcaika}} \parallel \parallel \frac{\text{'1.INCL'}}{\text{lχaika}} \parallel \parallel \frac{\text{'2'}}{\text{mcaika}}$

(Chinook, pl. paradigm)

LOT 2018, Groningen

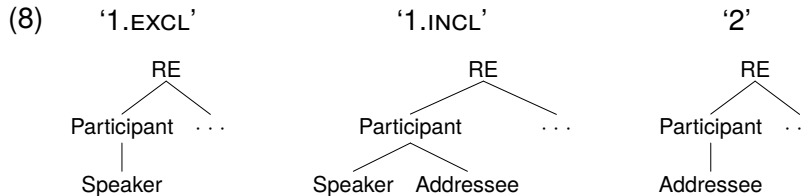
Person, Number, and the Architecture of Grammar  
PART TWO: *The geometry of φ-features* – 20 / 36  
Omer Preminger, University of Maryland

### McGinnis (2005)

➤ But here's what we never see:

(10) \*  $\frac{'1.EXCL' \quad || \quad '1.INCL' \quad | \quad '2'}{shwe \quad || \quad shy'all}$  (unattested)

- Crucially, however, Harley & Ritter's system can generate this language
  - as the mirror image of English:
    - *shy'all* is the spellout of [Participant] in the context of [Addressee]
    - and *shwe* is the ELSEWHERE spellout of [Participant]

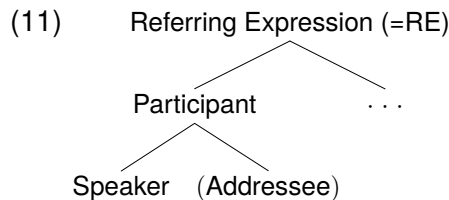


### McGinnis (2005)

⇒ This leads McGinnis to propose that there are certain features in the φ-feature geometry that are initially unavailable
 

- and which the learner only activates in the face of positive evidence

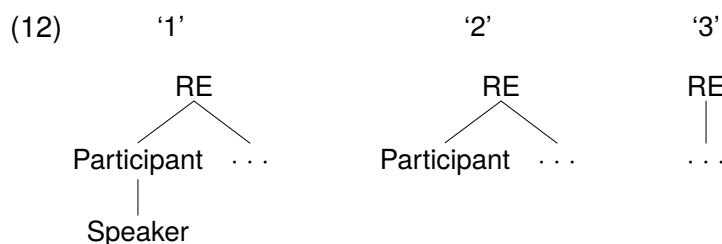
- On the PERSON side of the φ-geometry:



- the feature [Addressee] is unavailable *unless the language exhibits a clusivity distinction*

### McGinnis (2005)

⇒ So a language without a clusivity distinction (e.g. English) would look like this:





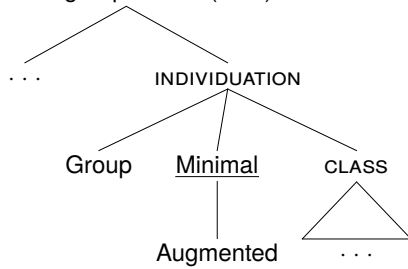
**NUMBER**

24 / 36

**Harley & Ritter (2002)**

- The NUMBER side of Harley & Ritter’s geometry looks like this:

(13) Referring Expression (=RE)



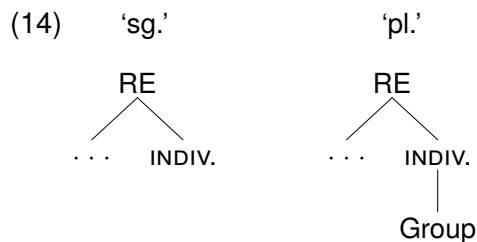
NB: The node [CLASS] corresponds to what I have been calling GENDER/NOUN-CLASS and, consequently, falls outside the scope of this course. H&R place this as a dependent of their NUMBER node (=INDIVIDUATION) for reasons that have more recently come into question.

**Harley & Ritter (2002)**

- I won’t spend much time on the finer details of H&R’s analysis of NUMBER —
  - in part because work since then has revealed various inadequacies, and made superseding proposals
    - see, in particular, Harbour (2007, et seq.)

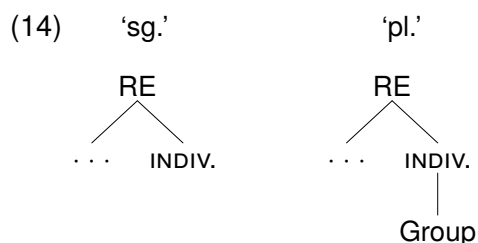
**Harley & Ritter (2002)**

➤ Instead, I will only discuss what an H&R-style representation of a simple, two-number system (‘sg.’ vs. ‘pl.’; without ‘dual’, ‘trial’, or ‘paucal’) would look like:



**Some properties of these feature structures, and how to evaluate them**

- Feature structures like (14) (and its counterparts in the domain of PERSON, surveyed earlier) embody several claims:



- (i) each  $\varphi$ -category (PERSON, NUMBER, etc.) consists of privative features
  - rather than bivalent or multivalent ones
- (ii) in the domain of NUMBER in particular, 'pl.' (or more accurately, [Group]) is the marked member of two-number oppositions
  - and is thus analogous to [Participant] in the domain of PERSON

**Some properties of these feature structures, and how to evaluate them**

- (i) each  $\varphi$ -category (PERSON, NUMBER, etc.) consists of privative features
  - rather than bivalent or multivalent ones
- (ii) in the domain of NUMBER in particular, 'pl.' (or more accurately, [Group]) is the marked member of two-number oppositions
  - and is thus analogous to [Participant] in the domain of PERSON

- **These claims would be considered controversial by scholars working on  $\varphi$ -features these days**
  - esp. those working in the emerging 'morphosemantics' tradition

### Some properties of these feature structures, and how to evaluate them

- So, for example:
    - Nevins (2007, 2011) argues that, while NUMBER is indeed composed of privative features, PERSON is composed of bivalent ones
    - Harbour (2011) argues that even NUMBER must be bivalent, as well
    - Sauerland 2003 and related work argues that 'sg.', not 'pl.', is the marked member of two-number oppositions
  - **But:**
    - Nevins' arguments are based in morphology;
    - Harbour's arguments (for the most part) and Sauerland's arguments (entirely) are based in semantics;
- *Notice something missing... ?*

LOT 2018, Groningen

Person, Number, and the Architecture of Grammar

PART TWO: *The geometry of  $\phi$ -features* – 31 / 36

Omer Preminger, University of Maryland

### Some properties of these feature structures, and how to evaluate them

- In the remainder of the course, I plan to defend the following position:
- the feature structures just given for PERSON and NUMBER **are the correct ones for syntax**;
  - the assumption that morphology and semantics use the same representations as syntax—for any given domain (e.g.  $\phi$ -features)—is fine as a *methodological heuristic*;
    - but as a *substantive hypothesis*, it is somewhere between suspect and preposterous.

LOT 2018, Groningen

Person, Number, and the Architecture of Grammar

PART TWO: *The geometry of  $\phi$ -features* – 32 / 36

Omer Preminger, University of Maryland

### Some properties of these feature structures, and how to evaluate them

- that said, since the system in its entirety (*morphology + syntax + semantics + <whatever else>*) has to be acquirable —
  - the contours of the syntactic representation will often “shine through” to the morphology and the semantics
    - see also Zeijlstra (2014)
- hence, e.g., Harley & Ritter's (2002) morphologically-based investigation —
  - because it was typological in nature— ended up reflecting the properties of the (underlying & invariant) *syntactic* representations.

LOT 2018, Groningen

Person, Number, and the Architecture of Grammar

PART TWO: *The geometry of  $\phi$ -features* – 33 / 36

Omer Preminger, University of Maryland

### Some properties of these feature structures, and how to evaluate them

- Finally, it could still be the case —
  - (even if we are correct, and the features structures surveyed here are the right ones for syntax)
  - that these feature structures are in turn derivable from some deeper, more fundamental set of primitives (cf. Harbour 2016).
- In that sense, what is being presented here can be viewed as an ‘effective theory’ of the syntax of  $\varphi$ -features:
  - as the term is used in, e.g., physics

## References

- Archangeli, Diana. 1988. Underspecification in phonology. *Phonology* 5:183–207, DOI: <10.1017/S0952675700002268>.
- Avery, Peter & Keren Rice. 1989. Segment structure and coronal underspecification. *Phonology* 6:179–200, URL: <http://www.jstor.org/stable/4419997>.
- Boas, Franz. 1911. *Handbook of American Indian languages*. Vol. 1, 423–557. Washington, DC: Smithsonian Institution, Bureau of American Ethnology, Bulletin 40, Reprinted as Boas 1969.
- Boas, Franz. 1969. *Handbook of American Indian languages*. Oosterhout, NB: Humanities Press / Anthropological Publications, Reprint of Boas 1911.
- Clements, George N. 1985. The geometry of phonological features. *Phonology Yearbook* 2:225–52.
- Harbour, Daniel. 2003. *Elements of number theory*. Doctoral dissertation, Cambridge, MA: MIT.
- Harbour, Daniel. 2007. *Morphosemantic number: from Kiowa noun classes to UG number features*. Dordrecht: Springer.
- Harbour, Daniel. 2011. Valence and atomic number. *Linguistic Inquiry* 42:561–594, DOI: <10.1162/LING\_a\_00061>.
- Harbour, Daniel. 2016. *Impossible persons*. Linguistic Inquiry Monographs 74, Cambridge, MA: MIT Press.
- Harley, Heidi & Elizabeth Ritter. 2002. Person and number in pronouns: a feature-geometric analysis. *Language* 78:482–526, DOI: <10.1353/lan.2002.0158>.
- McGinnis, Martha. 2005. On markedness asymmetries in person and number. *Language* 81:699–718, DOI: <10.1353/lan.2005.0141>.
- Nevins, Andrew Ira. 2007. The representation of third person and its consequences for Person-Case effects. *Natural Language & Linguistic Theory* 25:273–313, DOI: <10.1007/s11049-006-9017-2>.
- Nevins, Andrew Ira. 2011. Multiple Agree with clitics: person complementarity vs. omnivorous number. *Natural Language & Linguistic Theory* 29:939–971, DOI: <10.1007/s11049-011-9150-4>.
- Sagey, Elizabeth. 1986. *The representation of features and relations in non-linear phonology*. Doctoral dissertation, Cambridge, MA: MIT.
- Sauerland, Uli. 2003. A new semantics for *number*. In *Proceedings of the 13th Semantics and Linguistics Theory conference (SALT 13)*, eds. Robert B. Young & Yuping Zhou, Ithaca, NY: CLC Publications, 258–275, DOI: <10.3765/salt.v13i0.2898>.
- Zeijlstra, Hedde. 2014. On the uninterpretability of interpretable features. In *Minimalism and beyond: radicalizing the interfaces*, eds. Peter Kosta, Steven L. Franks, Teodora Radeva-Bork & Lilia Schürcks, 109–129. Amsterdam: John Benjamins.

svn revision code: 9672