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**Harmonic Alignment in Morphosyntax:  
The Realization of Possessors**

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## Constraints on possessors

### related to semantic and pragmatic prominence

- A. Categorical constraints excluding possessors with specific properties

In a number of languages, inanimate NPs cannot be possessors, e.g. Northern Pomo (O'Connor 1999), Chamorro (S. Chung, p.c.)

In such languages, expressions like *the jar's lid*, *the firm's founder* cannot be rendered as genitive constructions.

- B. Categorical or variable constraints which reference properties of both possessor and possessum. E.g.

In languages with obviation systems, 3<sup>rd</sup> persons are ranked:

Proximate > Obviative

Possessor must be Proximate Possessum must be Obviative
--

e.g. the Algonquian languages (Hockett 1966), Kutenai (Dryer 1992), Tzotzil (Aissen 1997)

- C. Constraints on realization of possessor when there are multiple options

E.g. Romance, Germanic, Slavic: many of these languages have both prenominal and postnominal possessors, with associated restrictions.

→ These are the cases of interest here.

## CONSTRAINTS ON REALIZATION OF POSSESSORS - ITALIAN

Italian (Giorgi and Longobardi 1991) has (at least) two positions for possessors

1 Prenominal possessors are limited to personal pronouns

- a. il mio libro 'my book'
- b. la sua attribuzione 'its award (i.e. the award of it)'
- c. \*(i) Gianni (..) libro

2 Any possessor may be postnominal (Longobardi analyzes the pronouns as outside of NP, and the *di*-phrase as complement of N).

- a. il libro mio 'my book'
- b. il libro di Gianni 'Gianni's book'
- c. l'attribuzione del premio... 'the award of the prize...'

## CONSTRAINTS ON REALIZATION OF POSSESSORS - CZECH

Czech has two positions for possessors [Veselovská, 1998]

- 1 Prenominal (possessive suffix and agreement with noun head)  
(Veselovská analyzes these in [Spec, D]).
  - a. jejich matky  
*their mothers*
  - b. Petr-ov-y krásné obrazy Evy  
*Peter-POSS-AGR nice picture Eve<sub>GEN</sub>*  
Peter's nice pictures of Eve
  
- 2 Postnominal (Genitive case) (Veselovská analyzes these in [Comp, N]).
  - a. noha stolu  
*leg table<sub>GEN</sub>*  
the leg of the table
  - b. tajemník fakulty  
*secretary faculty<sub>GEN</sub>*  
secretary of the faculty
  
- 3 For some nominal types, both options are possible:
  - a. babiččin<sub>POSS</sub> dům  
*grandmother's house*
  - b. dům té mojí hodné babičky  
*house the<sub>GEN</sub> my<sub>GEN</sub> nice<sub>GEN</sub> grandmother<sub>GEN</sub>*  
the house of my nice grandmother

4 But choice of pre- or post-nominal position is not entirely free:

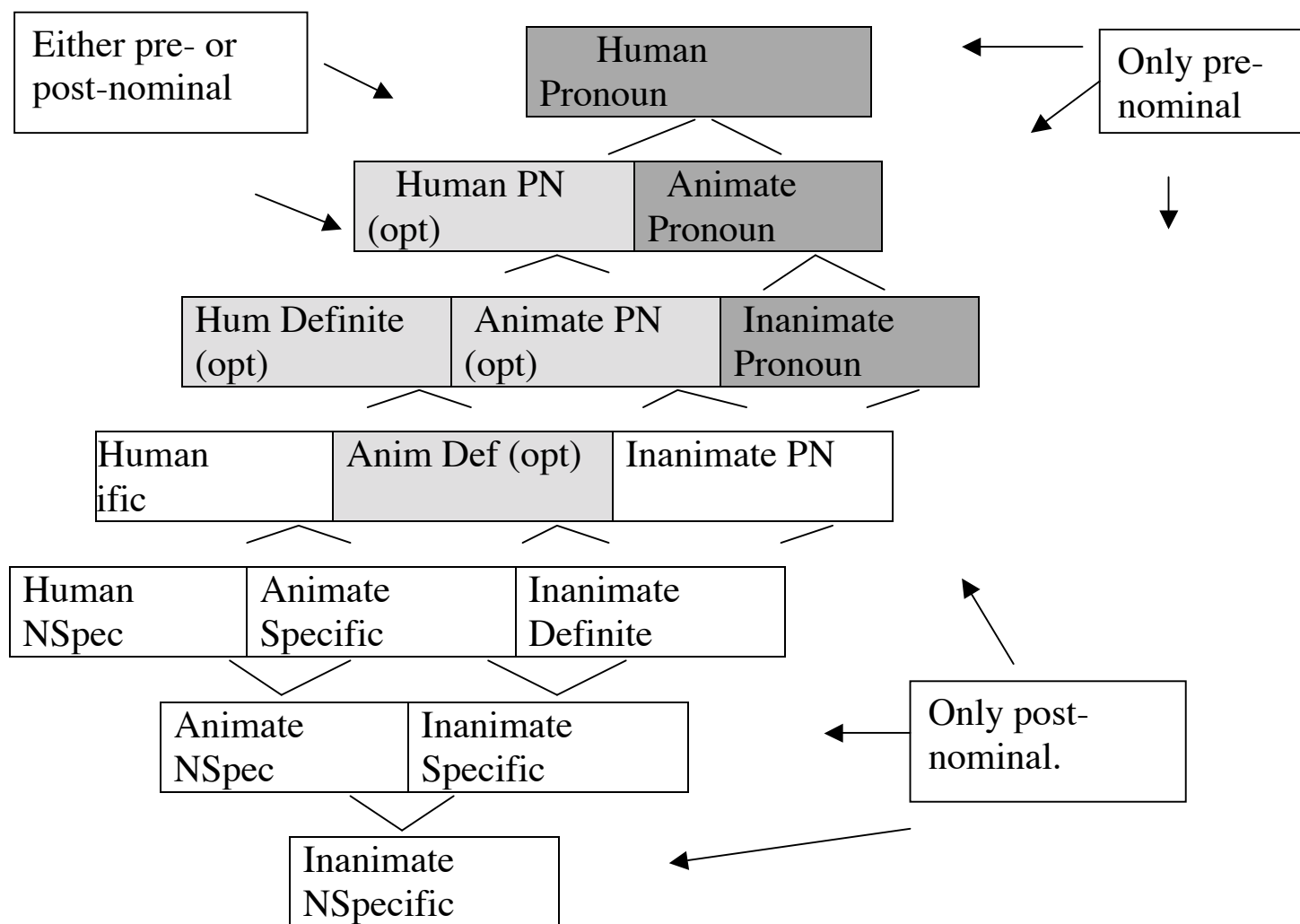
a. \*matky jich  
*mothers their*<sub>GEN</sub>

b. \*stol-ova noha  
*table*<sub>POSS(M)</sub> *leg*

... and the options are sensitive to animacy and definiteness (or expression type)

cf. c. jeho objev  
its/his discovery

**DISTRIBUTION OF CZECH PRE- AND POST-NOMINAL POSSESSORS**  
(as deduced from Veselovská 1998)



“Šmilauer (1971,113) allows POSS to be formed also from animal Nouns giving examples like *tygři skok* ‘tiger’s leap’, *Alíkova miska* ‘Alik’s plate’ (*Alik* = name of a dog), or *srniny oči* ‘does’ eyes’. For many Cz native speakers, POSS forms are acceptable to the extent that the animals are perceived as endowed with human properties. Thus, names (especially of domestic animals) are fully felicitous in POSS. Therefore it is not the POSS form which is more or less flexible but the semantic concept of animacy.”  
[Veselovská 1998, 266]

Notes: There are other restrictions on Czech prenominal possessors which do not follow from this structure.

[i] if non-pronouns, they must be singular;

[ii] they may not branch;

[iii] they must have masculine or feminine grammatical gender (not neuter).

## POSSESSOR SPLITS ALONG HIERARCHIES OF PERSON, ANIMACY, AND TOPICALITY

(Stiebels 2000; Koptjevskaja-Tamm 2001; Koptjevskaja-Tamm 2002;  
Koptjevskaja-Tamm to appear)

Russian Prenominal Poss vs. Postnominal Genitive  
(Koptjevskaja-Tamm 2001)

	POSS N	N GEN
Peter (dim.)'s cap	Petina šapka	šapka Peti
daddy's cap	papina šapka	šapka papy
Peter's cap	?Petrova šapka	šapka Petra
the boy's cap	??mal'ckiova šapka	šapka malcika
the doll's cap	*kuklina šapka	šapka kukly

Compare Russian with Czech:

According to Veselovská, names of humans and domesticated animals are “fully felicitous in POSS.” Her discussion implies (but there are no examples) that singular, definite, human referring NPs are also felicitous as prenominal POSS.

According to Koptjevskaja-Tamm (2002)

the present-day “restrictions on preposed possessive forms in German and Slavic result from the "shrinking" of an older construction.”

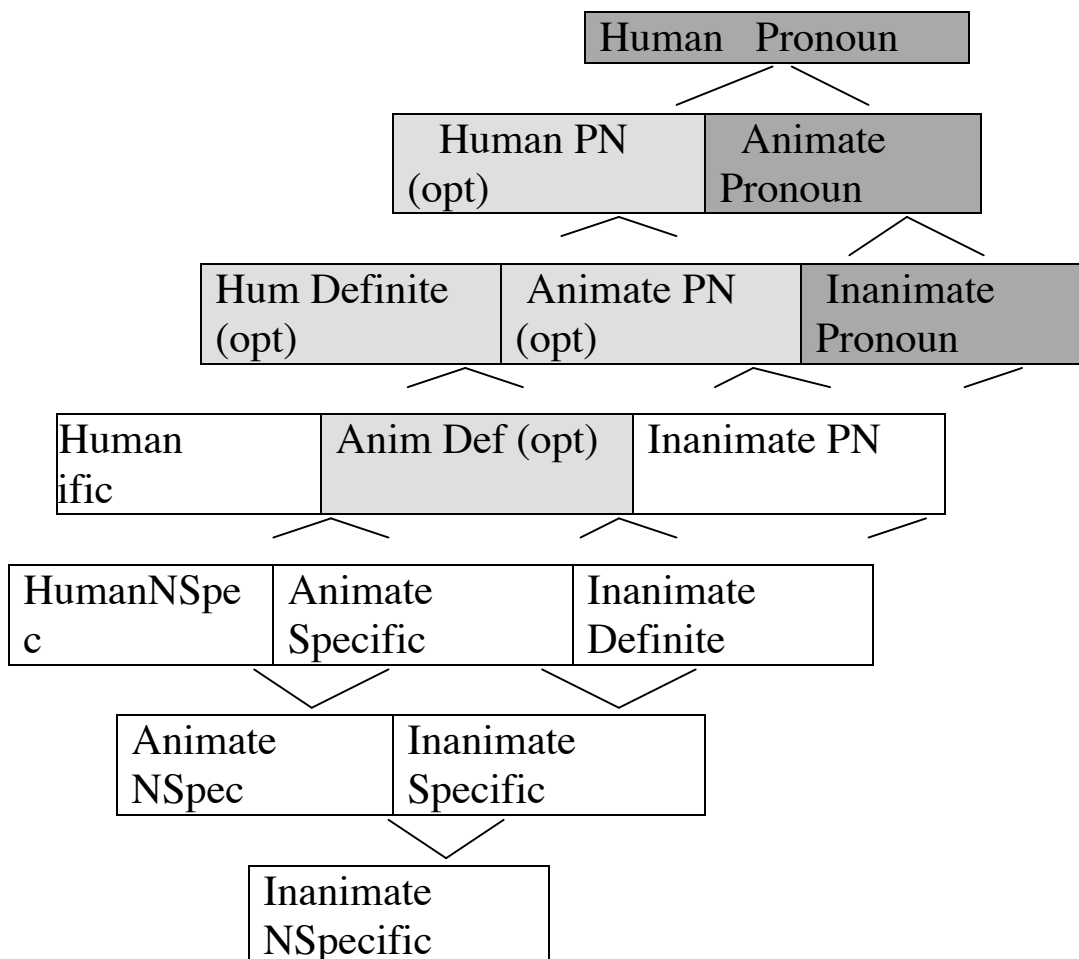
# An $\mathcal{HA}$ approach to prenominal and postnominal possessors

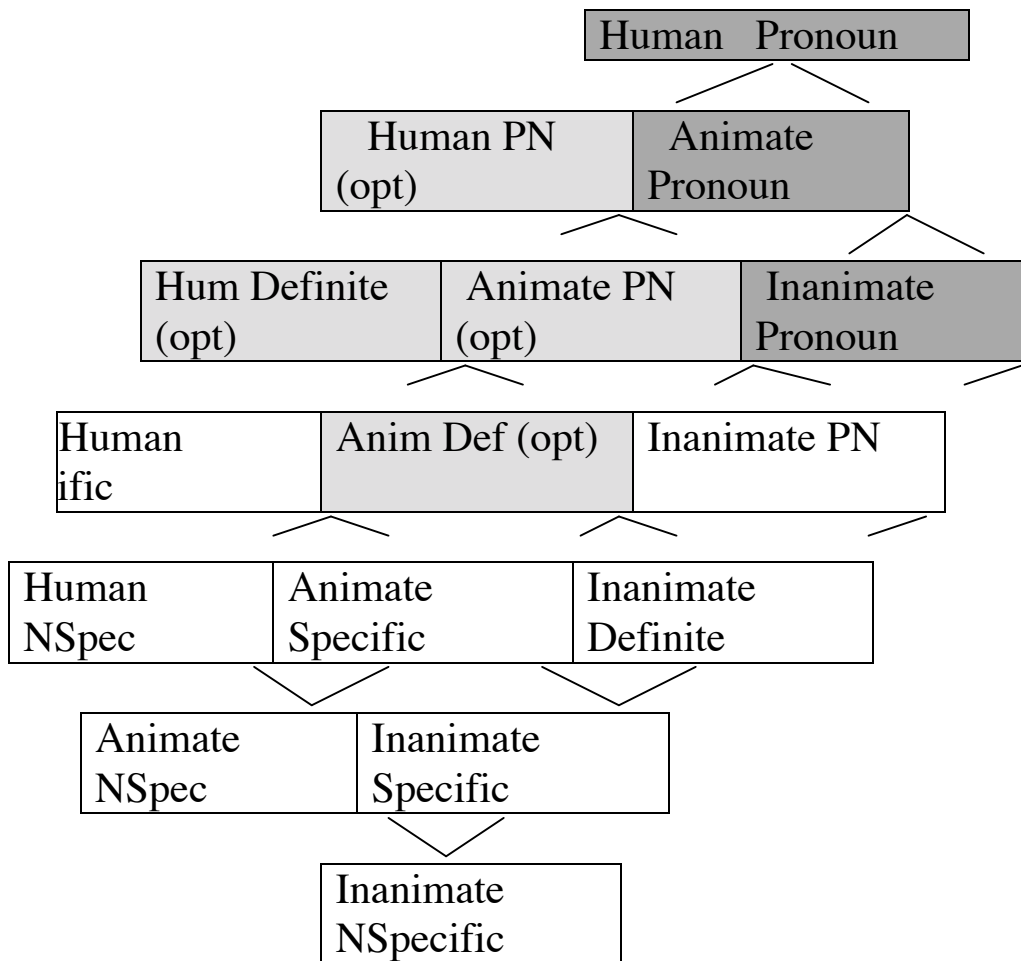
The basic idea:

- 1 Possessors can occupy various structural positions within the nominal phrase. There is one position which is structurally more prominent than the others. Following generative work which assumes X' theory, I call this position *Specifier (of N)* and refer to other potential positions as *Non-Specifiers (of N)*.

Nominal Scale:  $\text{Spec}_N > \text{Non-Spec}_N$

- 2 Each possessor is subject to two constraints: one which penalizes it in Specifier position, and one which penalizes it in Non-Specifier positions. Where the possessor can surface depends on how these two constraints are ranked with respect to one another.





3 But the data surveyed suggest that how a possessor is realized is not random.

If any possessors can be realized as  $\text{Spec}_N$ , it will be those highest in animacy/definiteness.

If any possessors can be realized as  $-\text{Spec}_N$ , it will be those lowest in animacy/definiteness.

Apparently, the unmarked situation is for a possessor high in animacy and/or definiteness to be realized as  $\text{Spec}_N$ .

Conversely, the unmarked situation for a possessor low in animacy and/or definiteness is to be realized as —Spec<sub>N</sub>.

→ This is **Markedness Reversal** in the domain of the nominal phrase.

What might be the underlying functional explanation for this?

From Anette Rosenbach (p.c. 7/29/02):

“Also, seen like this, the Levelt speech production model could probably well account for the animacy & referentiality effect found: Similar to the assignment of grammatical roles one could argue that the 'conceptual accessibility' (with animacy and topicality as main determinants) of a lemma leads to its early activation from the mental lexicon and thereby enhances its chance to end up in a structurally prominent position, i.e. a Specifier in a possessive construction. (This is the standard explanation for the role of animacy in active-passive choice: an animate referent, given its high conceptual accessibility, is more likely to attract the highest grammatical function, i.e. the subject position. Hence the increased likelihood for animate patients to become subjects in passives.)”

Continuing with the analysis:

To model the typological situation that appears to exist, the analysis should predict two things:

1<sup>st</sup> If a possessor of some rank on the animacy/definiteness lattice can be realized as a  $\text{Spec}_N$ , then every more prominent possessor can be realized as a  $\text{Spec}_N$ .

2<sup>nd</sup> If a possessor at some rank on the animacy/definiteness lattice can be realized as a  $-\text{Spec}_N$ , then every less prominent possessor can also be realized as a  $-\text{Spec}_N$ .

This sounds like a job for Harmonic Alignment...

$\mathcal{HA}$  of the Nominal Scale with the Animacy Scale and with the Definiteness Scale:

<p>Nominal Scale: <math>\text{Spec}_N &gt; \text{—Spec}_N</math></p> <p>Animacy Scale: Human &gt; Animate &gt; Inanimate</p> <p>Definiteness Scale: Pronoun &gt; PN &gt; Definite &gt; Indefinite Specific &gt; Non-Specific</p>
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...yields 4 harmonic alignments (expressing relative markedness) and 4 corresponding constraint subhierarchies:

a.  $\text{SPEC}_N$  and Animacy

<p><math>\text{SPEC}_N/\text{Hum} \succ \text{SPEC}_N/\text{Anim} \succ \text{SPEC}_N/\text{Inan}</math></p> <p><math>*\text{SPEC}_N/\text{Inan} \gg * \text{SPEC}_N/\text{Anim} \gg * \text{SPEC}_N/\text{Hum}</math></p>
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b.  $\text{—SPEC}_N$  and Animacy:

<p><math>\text{—SPEC}_N/\text{Inan} \succ \text{—SPEC}_N/\text{Anim} \succ \text{—SPEC}_N/\text{Hum}</math></p> <p><math>*\text{—SPEC}_N/\text{Hum} \gg * \text{—SPEC}_N/\text{Anim} \gg * \text{—SPEC}_N/\text{Inan}</math></p>
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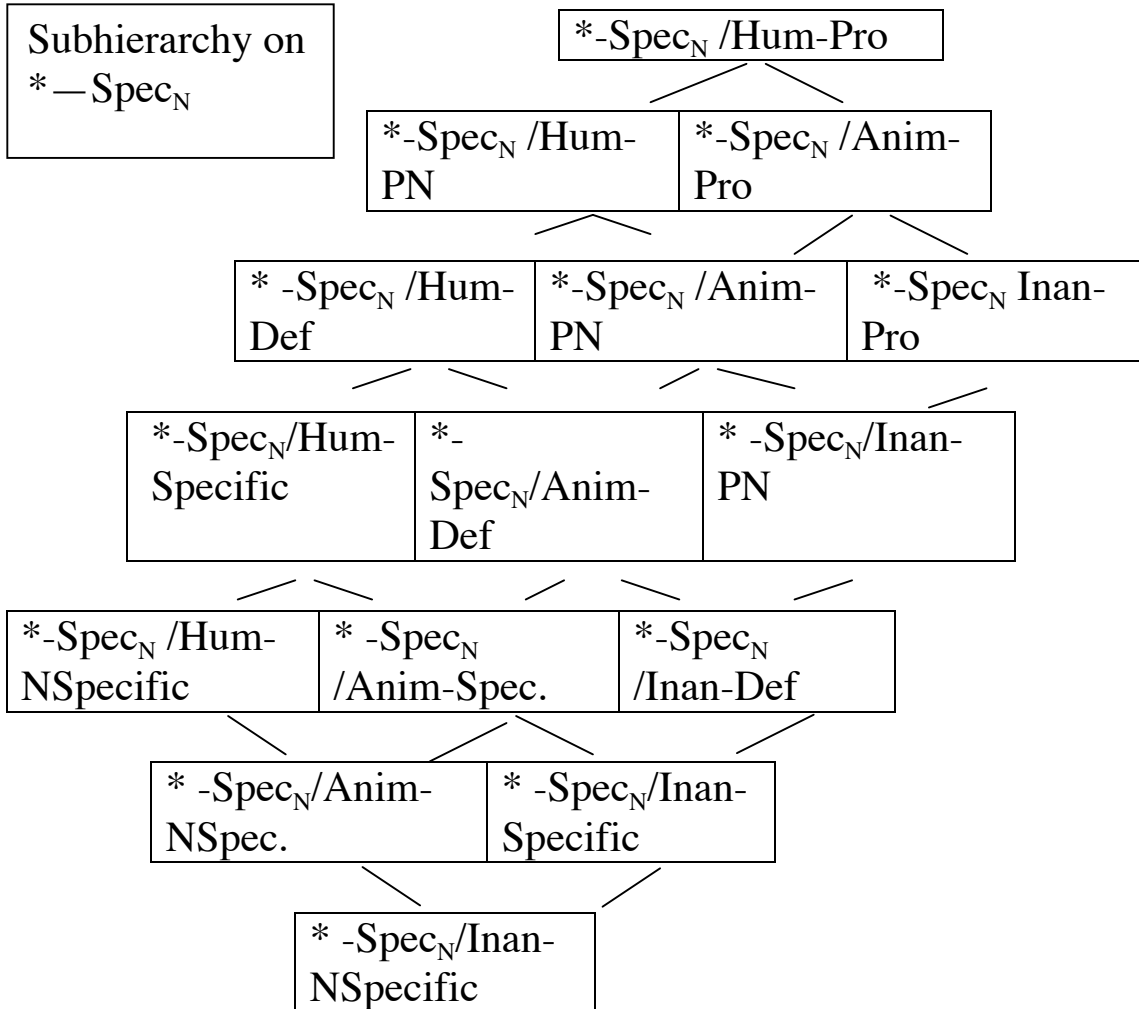
c.  $\text{SPEC}_N$  and Definiteness

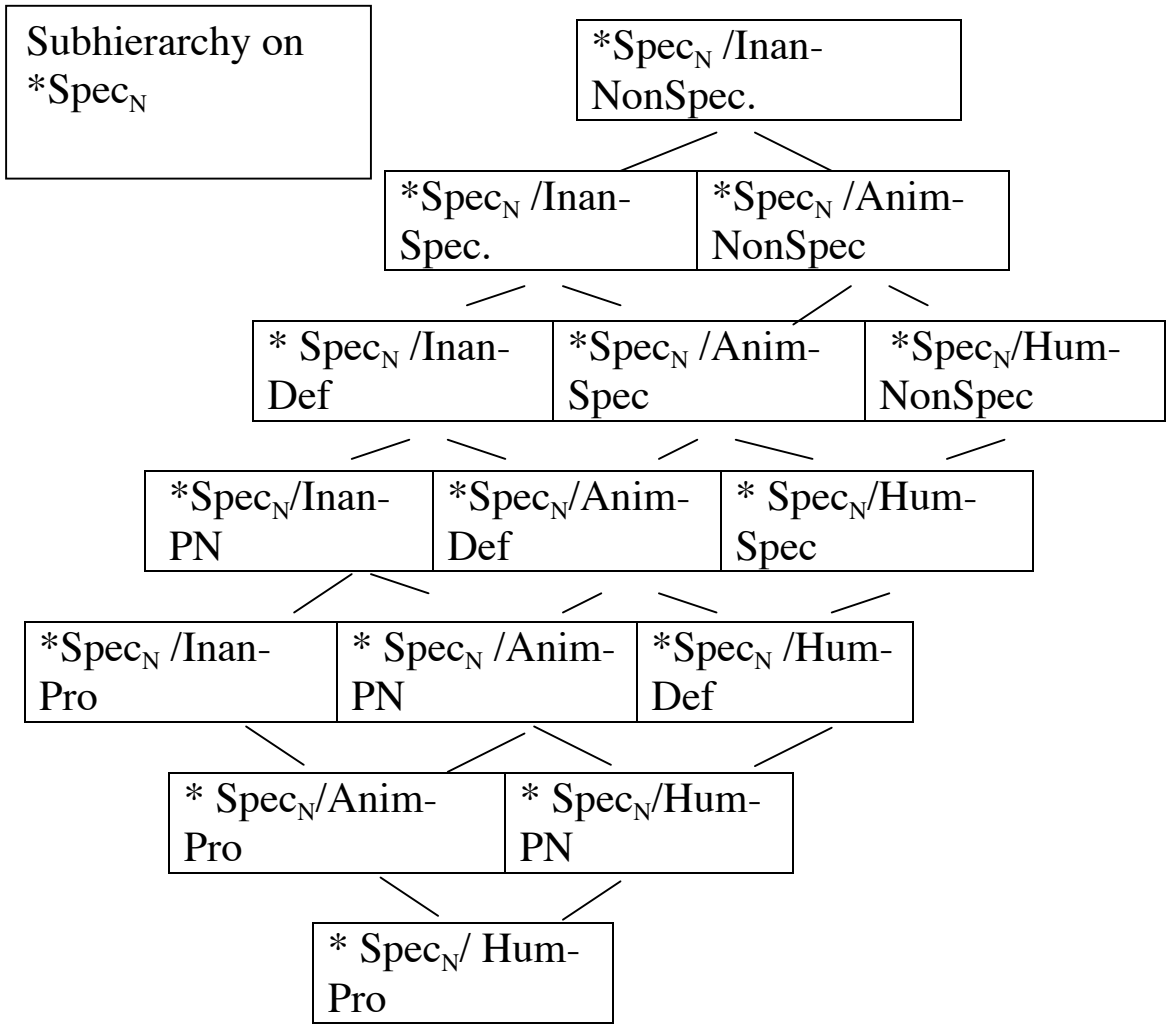
<p><math>\text{SPEC}_N/\text{Pro} \succ \text{SPEC}_N/\text{PN} \succ \dots \succ \text{SPEC}_N/\text{NonSpecific}</math></p> <p><math>*\text{SPEC}_N/\text{NonSpecific} \gg \dots \gg * \text{SPEC}_N/\text{PN} \gg * \text{SPEC}_N/\text{Pro}</math></p>
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d.  $\text{—SPEC}_N$  and Definiteness

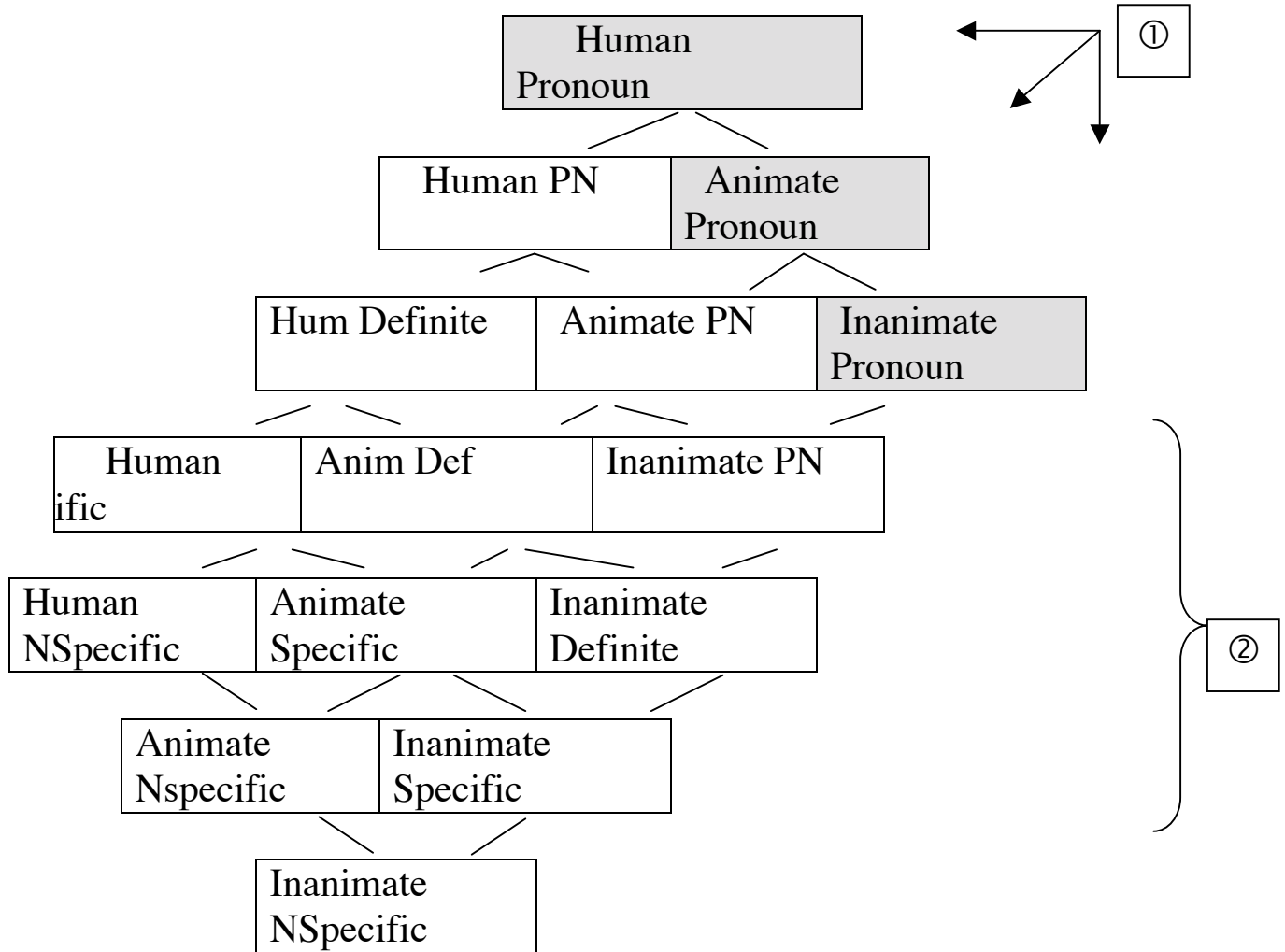
<p><math>\text{—SPEC}_N/\text{NonSpecific} \succ \dots \succ \text{—SPEC}_N/\text{PN} \succ \text{—SPEC}_N/\text{Pro}</math></p> <p><math>*\text{—SPEC}_N/\text{Pro} \gg * \text{—SPEC}_N/\text{PN} \gg \dots \gg * \text{—SPEC}_N/\text{NonSpecific}</math></p>
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We conjoin the two subhierarchies on  $\text{SPEC}_N$  and likewise the two on  $\neg\text{SPEC}_N$ . The result is two partially ordered constraint sets, represented below, each the inverse of the other.





## THE ANALYSIS EXEMPLIFIED - ITALIAN



Pairwise ranking:  $*Spec_N/② \gg * -Spec_N/②$   
 $*Spec_N/① \ll * -Spec_N/①$

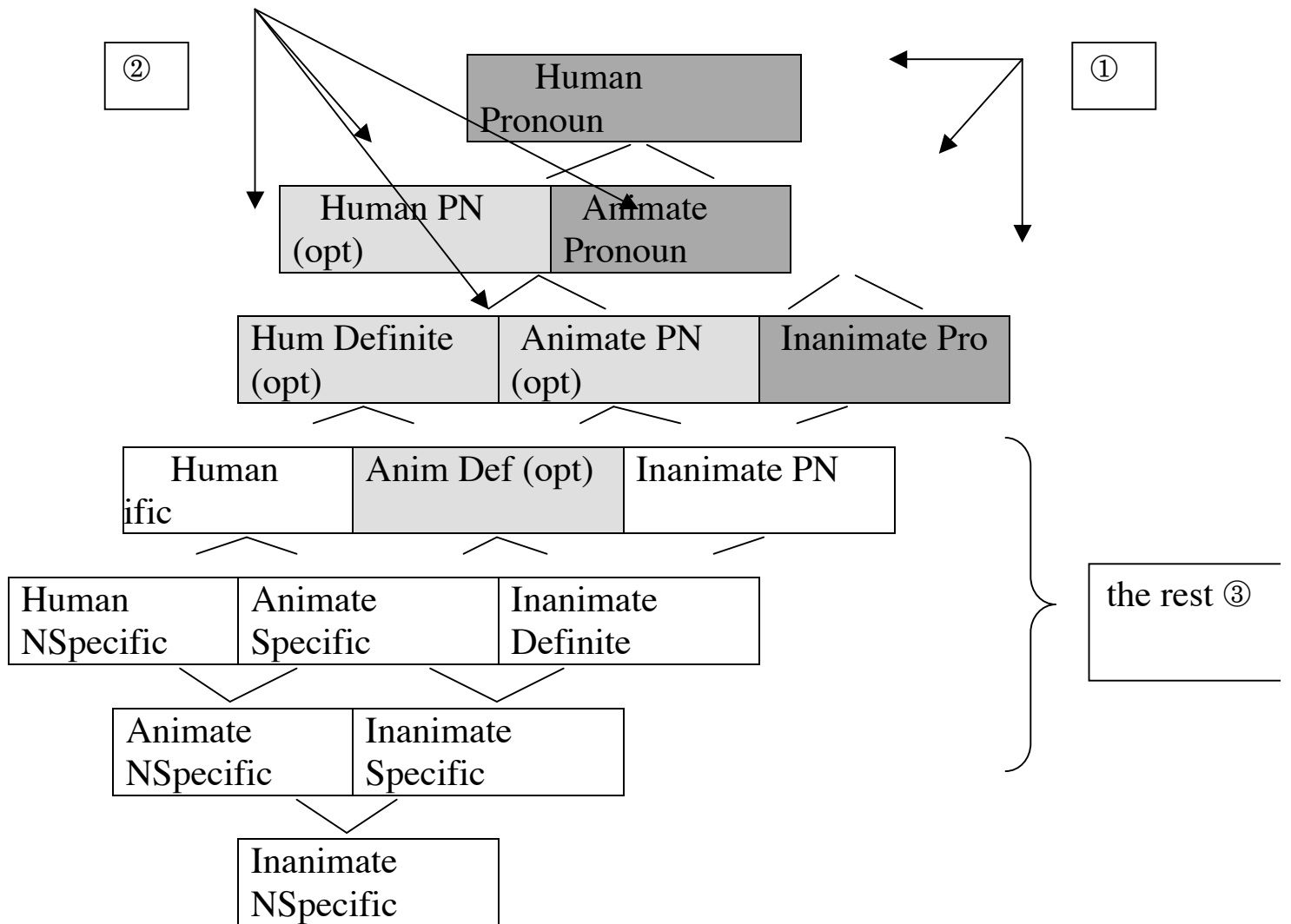
Overall ranking consistent with universally fixed rankings:

$*Spec_N/② \gg *Spec_N/① \ll * -Spec_N/① \gg * -Spec_N/②$

x: Possessum/3 <sup>rd</sup> /Inan/Def y: Possessor/1 <sup>st</sup> /Human/Pro	*Spec <sub>N</sub> /②	* Spec <sub>N</sub> /① * —Spec <sub>N</sub> /①	* —Spec <sub>N</sub> /②
☞ Possessum/Head/3/Inan/Def Possessor/Spec/1 <sup>st</sup> /Hum/Pro		*	
☞ Possessum/Head/3/Inan/Def Possessor/—Spec/1 <sup>st</sup> /Hum/Pro		*	

x: Possessum/3 <sup>rd</sup> /Inan/Def y: Possessor/3 <sup>rd</sup> /Human/Def	*Spec <sub>N</sub> /②	* Spec <sub>N</sub> /① * —Spec <sub>N</sub> /①	* —Spec <sub>N</sub> /②
Possessum/Head/3/Inan/Def Possessor/Spec/3/Hum/Def	*!		
☞ Possessum/Head/3/Inan/Def Possessor/—Spec/3/Hum/Def			*

CZECH



**Pairwise rankings:**  $*Spec_N/③ \gg * -Spec_N/③$

$*Spec_N/② \ll \gg * -Spec_N/②$

$* -Spec_N/① \gg *Spec_N/①$

Mean rank close enough to rerank.

Overall ranking consistent with universally fixed rankings:

$*Spec_N/③, * -Spec_N/① \gg \left\{ \begin{matrix} *Spec_N/② \\ * -Spec_N/② \end{matrix} \right\} \gg *Spec_N/①, * -Spec_N/③$



## DERIVING THE TYPOLOGICAL PREDICTIONS

1 For every  $\mathcal{X}$ , there are two competing constraints:

$$(a) *Spec_N/\mathcal{X} \quad (b) *-\text{Spec}_N/\mathcal{X}$$

2 How  $\mathcal{X}$  is realized depends on the relative ranking of (a) and (b).

3 Consider  $\mathcal{X}=\text{Anim-Def}$ , and assume that

$$*-\text{Spec}_N/\text{Anim-Def} \gg *Spec_N/\text{Anim-Def}$$

Then: Animate, definite possessors can be realized as  $Spec_N$

By transitivity of ranking:

$$*-\text{Spec}/\text{Hum-Def} \gg *-\text{Spec}/\text{Anim-Def} \gg *Spec/\text{Anim-Def} \gg *Spec/\text{Hum-Def}$$

Then: Human, definite possessors can be realized as  $Spec_N$ .

4 Or conversely, assume that

$$*Spec_N/\text{Anim-Def} \gg *-\text{Spec}_N/\text{Anim-Def}$$

Then: Animate, definite possessors can be realized as  $-\text{Spec}_N$

By transitivity of ranking:

$$*Spec/\text{Inan-Def} \gg *Spec/\text{Anim-Def} \gg *-\text{Spec}/\text{Anim-Def} \gg -*Spec/\text{Inan-Def}$$

Then: Inanimate, definite possessors can be realized as  $-\text{Spec}_N$ .

- 4 More generally, if a possessor of some rank on the animacy/definiteness lattice can be realized as  $\text{Spec}_N$ , then any possessor which dominates it on that lattice can be realized as  $\text{Spec}_N$ .

And conversely, if a possessor of some rank on the animacy/definiteness lattice can be realized as  $-\text{Spec}_N$ , then any possessor dominated by it on the lattice can be realized as  $-\text{Spec}_N$ .

# English

## Background

English has two positions for the possessor, a prenominal position and a postnominal position.

- a. Mary's brother
- b. the man's house
- c. the dog's paw
- d. the result of the accident
- e. the condition of the guitar
- f. the door of the building, the roof of the house

Animacy an important factor in choice, with a preference for animates in the prenominal position, and inanimates in the postnominal position (Jespersen 1949; Hawkins 1981; Quirk, Greenbaum et al. 1985; Lyons 1986; Deane 1987; Taylor 1996; Anschutz 1997; Rosenbach 2000; Rosenbach to appear).

$A > B = A \text{ preferred to } B$

- g. the result of the accident > the accident's result
- h. Mary's sister > the sister of Mary (Huddleston and Pullum 2002, 476)
- i. the boy's uncle > the uncle of the boy
- j. the door of the building > the building's door (Anschutz 1997, 66)
- k. someone's shadow vs. \*something's shadow (Quirk, Greenbaum et al. 1985, 325)

A challenge for OT:

"If the need for 'functional differentiation' [GEN-N favored for animates while N-GEN tended to be reserved for inanimates] is part of the explanation for why that order was preserved, one challenges any advocate of FOT to demonstrate that that particular functional force is a motivating factor in the grammars of English speakers today and to identify the particular constraints to which this factor is linked. Among other problems that would need to be addressed is the fact that the functional differentiation is only partial. That is, inanimates can occur in the GEN-N construction (*the table's leg* is not horribly unacceptable) and animates can occur in the N-GEN construction (*the mother of the lawyer*)."  
(Newmeyer 2002, 63)

☞ A demonstration that animacy is a motivating factor in the choice between prenominal and postnominal possessor in the grammars of English speakers today.

Anette Rosenbach, to appear, *Genitive variation in English. Conceptual factors in synchronic and diachronic studies*. Mouton de Gruyter.

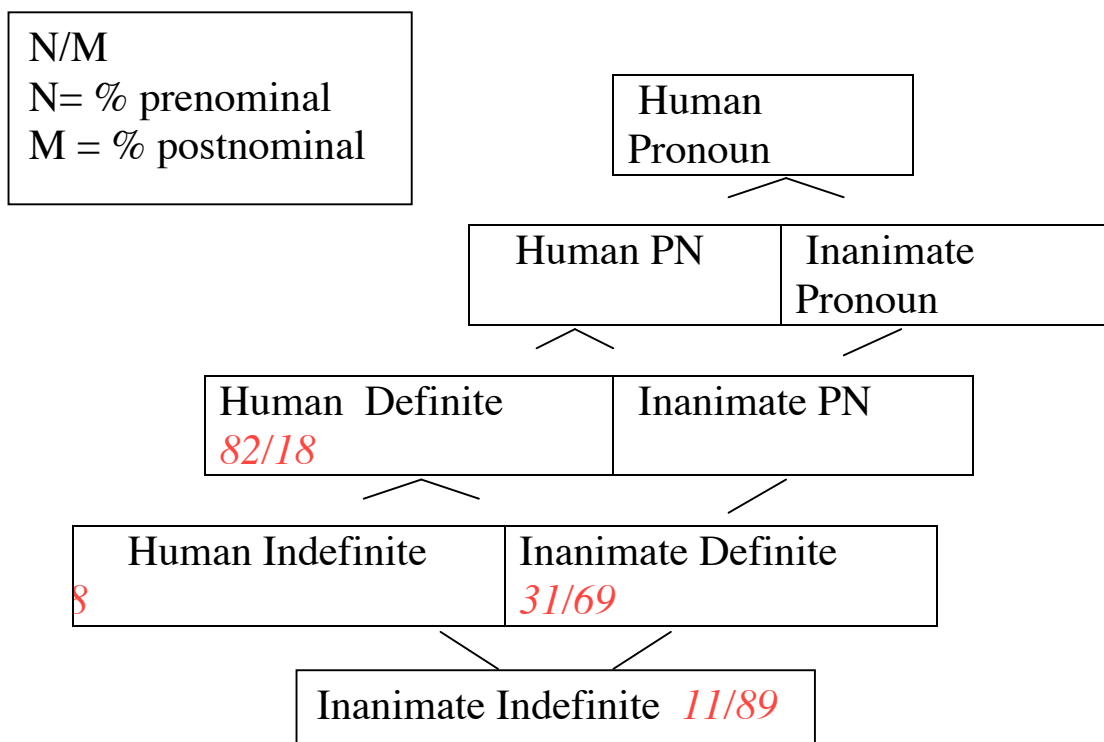
Example from Rosenbach questionnaire:

*A helicopter waited on the nearby grass like a sleeping insect, its pilot standing outside with Marino. Whit, a perfect specimen of male fitness in a black flight suit, opened [**the helicopter's doors/the doors of the helicopter**] to help us board.*

(based on: Patricia Cornwell, *The Body Farm*, 52)

☞”One challenges any advocate of FOT to demonstrate that that particular functional force is a motivating factor in the grammars of English speakers today *and to identify the particular constraints to which this factor is linked.*” (Newmeyer 2002, 63)

Results for British speakers shown below, with semantic relation between possessum and possessor eliminated as a factor.



There is a steady decline in the frequency of the ‘s genitive as we descend the lattice. It should be possible to model this given the constraints already developed, if we assume the Stochastic Generalization of OT. But what about Pronouns and Human PNs?

## Pronouns and Proper Nouns

Not included in Rosenbach's study because these were not regarded as *choice contexts*.

- 1 Animate pronoun possessors are (close to) categorically restricted to prenominal position.

“...compare *her money* and *your nose* with the very unnatural *the money of her* and *the nose of you* .” (Huddleston and Pullum 2002, 476)

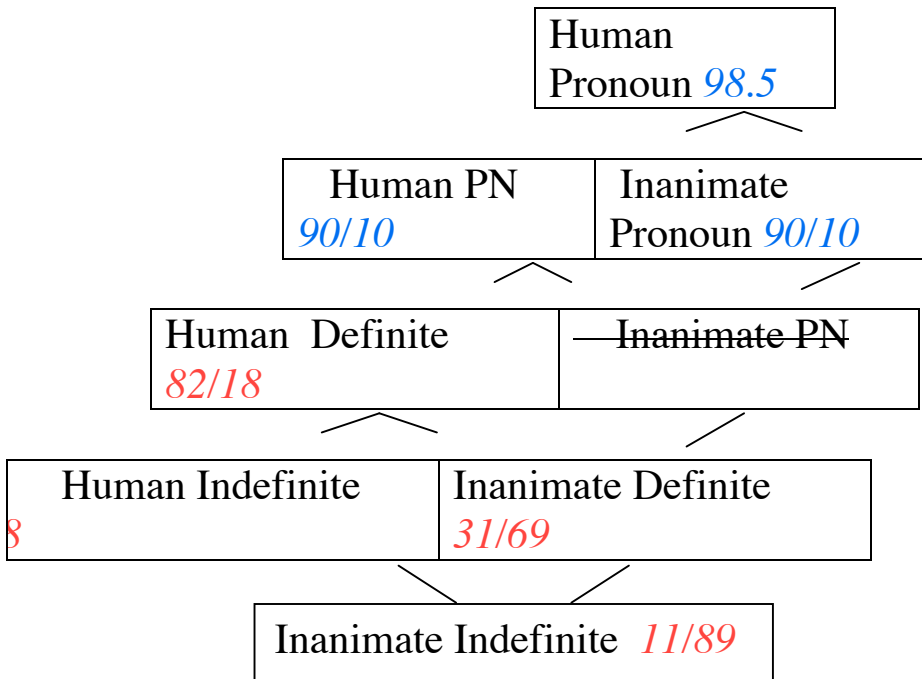
- 2 The inanimate possessive pronoun strongly prefers prenominal position

*its shadow* vs. \**the shadow of it*  
*its condition* vs. ?*the condition of it*  
*its paw* vs. \**the paw of it*

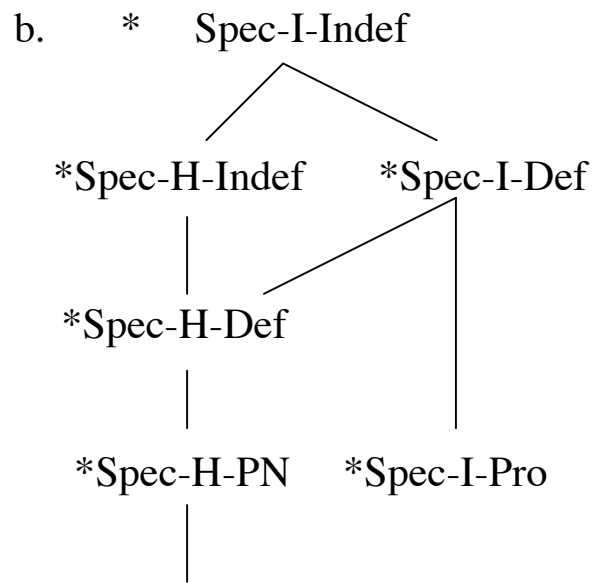
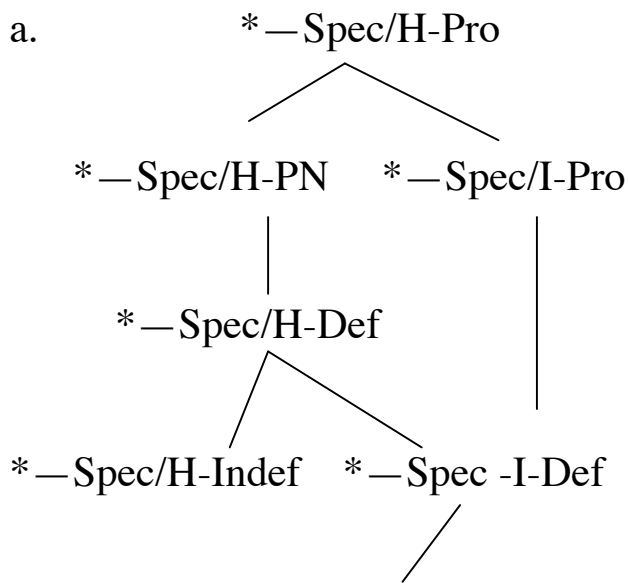
- 3 Proper nouns prefer prenominal position. (Hundt 1998, 45), cites 6 corpus studies from AmEng, BrEng, NZEng, and AusEng, all showing that Proper Nouns account for a greater percentage of prenominal possessors than any other noun class (27%-40%).

# Guesses

# Rosenbach's results



A Stochastic OT grammar derived by the GLA, based on the constraint subhierarchies in (a) and (b) below and the input distributions shown above.



—  
\*— Spec -I-Indef

—  
\*Spec-H-Pro

The grammar,  $\mathcal{G}$ :

$*-Spec-H-Pro$  103.166     **6.33**      $*Spec-H-Pro$  96.834  
 $*-Spec-I-Pro$  101.828     **3.66**      $*Spec-I-Pro$  98.172  
 $*-Spec-H-PN$  101.819     **3.64**      $*Spec-H-PN$  98.181  
 $*Spec-I-Indef$  101.712     **3.42**      $*-Spec-I-Indef$  98.288  
 $*-Spec-H-Def$  101.371     **2.74**      $*Spec-H-Def$  98.629  
 $*Spec-I-Def$  100.664     **1.33**      $*-Spec-I-Def$  99.336  
 $*-Spec-H-Indef$  100.129     **.26**      $*Spec-H-Indef$  99.871

	Input distributions Prenom./Postnom. [*guesses]	Output distributions determined by $\mathcal{G}$ .
Human Pronoun	98.5 / 1.5 *	98.76 / 1.24
Inanimate Pronoun	90/10 *	90.25/ 9.75
Human Name	90 / 10 *	89.94 / 10.05
Human Definite	82 /18	83.41/ 16.58
Human Indefinite	52/48	53.59 / 46.41
Inanimate Definite	31/ 69	31.9/ 68.1
Inanimate Indefinite	11/89	11.43/ 88.56

Conclusion: Both the categorical and the variable constraints on possessor position in English can be modeled by a single Stochastic OT grammar based on the subhierarchies developed above. The same subhierarchies are active in the grammars of Czech.

## REFERENCES

- Aissen, J. (1997). "On the syntax of obviation." Language **73**(4): 705-750.
- Anschutz, A. (1997). "How to choose a possessive noun phrase construction in four easy steps." Studies in Language **21**(1): 1-35.
- Brown, C. (1983). Topic continuity in Written English Discourse. Topic continuity in discourse. T. Givón. Amsterdam, John Benjamins: 313-341.
- Dalrymple, M., R. M. Kaplan, et al., Eds. (1995). Formal issues in Lexical-Functional Grammar. Stanford, CA, CSLI Publications.
- Deane, P. (1987). English possessives, topicality, and the Silverstein hierarchy. Proceedings of the Thirteenth Annual Meeting of the Berkeley Linguistics Society. J. Aske, N. Beery, L. Michaelis and H. Filip. Berkeley, Berkeley Linguistics Society.
- Dryer, M. (1992). A comparison of the obviation systems of Kutenai and Algonquian. Papers of the Twenty-third Algonquian Conference. W. Cowan. Ottawa, Carleton University: 119-163.
- DuBois, J. W. (1987). "The discourse basis of ergativity." Language **63**: 805-855.
- Giorgi, A. and G. Longobardi (1991). Extraction from NP and the proper notion of head government. Cambridge, Cambridge University Press.
- Hawkins, R. (1981). "Towards an account of the possessive constructions: *NP's N* and *the N of NP*." Journal of Linguistics **17**: 247-269.
- Hockett, C. (1966). "What Algonquian is really like." International Journal of American Linguistics **32**: 59-73.

Huddleston, R. and G. K. Pullum (2002). The Cambridge grammar of the English language. Cambridge, Cambridge University Press.

Hundt, M. (1998). New Zealand English Grammar - Fact or Fiction? Amsterdam, John Benjamins.

Jespersen, O. (1949). A Modern English Grammar. Part VII: Syntax. London, George Allen & Unwin.

Koptjevskaja-Tamm, M. (2001). Adnominal possession. Language typology and language universals. M. Haspelmath and e. al.: 960-970.

Koptjevskaja-Tamm, M. (2002). Adnominal possession in the European languages.

Koptjevskaja-Tamm, M. (to appear). Possessive noun phrases in the languages of Europe. F. Plank.

Lyons, C. (1986). "The syntax of English genitive constructions." Journal of Linguistics **22**: 123-143.

Newmeyer, F. (2002). "Optimality and functionality: A critique of functionally-based optimality-theoretic syntax." Natural language and linguistic theory **20**: 43-80.

O'Connor, C. (1999). Harmonic alignment of participant hierarchy features and the structure of possessive DPs in Northern Pomo. Optimal Typology Workshop, UCSC.

Quirk, R., S. Greenbaum, et al. (1985). A comprehensive grammar of the English language. London, Longmans.

Rosenbach, A. (2000). Genitive variation in English. Conceptual factors in synchronic and diachronic studies. Department of General Linguistics. Düsseldorf, University of Düsseldorf.

Rosenbach, A. (to appear). Aspects of iconicity and economy in the choice between the *s*-genitive and the *of*-genitive in English. Determinants of grammatical variation in English. B. Mondorf and G. Rohdenburg. Berlin, Mouton de Gruyter.

Stiebels, B. (2000). Typologie des Argumentlinkings: Ökonomie und Expresivität. Linguistics Department. Düsseldorf, Düsseldorf University.

Taylor, J. (1996). Possessives in English. Oxford, Clarendon Press.

Veselovská, L. (1998). "Possessive movement in the Czech Nominal Phrase." Journal of Slavic Linguistics 6(2):225-300.