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 consstraints which reference properties of both possessor and possessum. E.g.

  In languages with obviation systems, 3rd 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 possesssors [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_{GEN}
          Peter's nice pictures of Eve

2   Postnominal (Genitive case) (Veselovská analyzes these in [Comp, N].

   a.   noha stolu
         leg   table_{GEN}
         the leg of the table

   b.   tajemník fakulty
         secretary faculty_{GEN}
         secretary of the faculty

3   For some nominal types, both options are possible:

   a.   babiččin_{POSS}   dům
         grandmother's house

   b.   dům té   mojí   hodné   babičky
         house the_{GEN} my_{GEN} nice_{GEN} grandmother_{GEN}
         the house of my nice grandmother

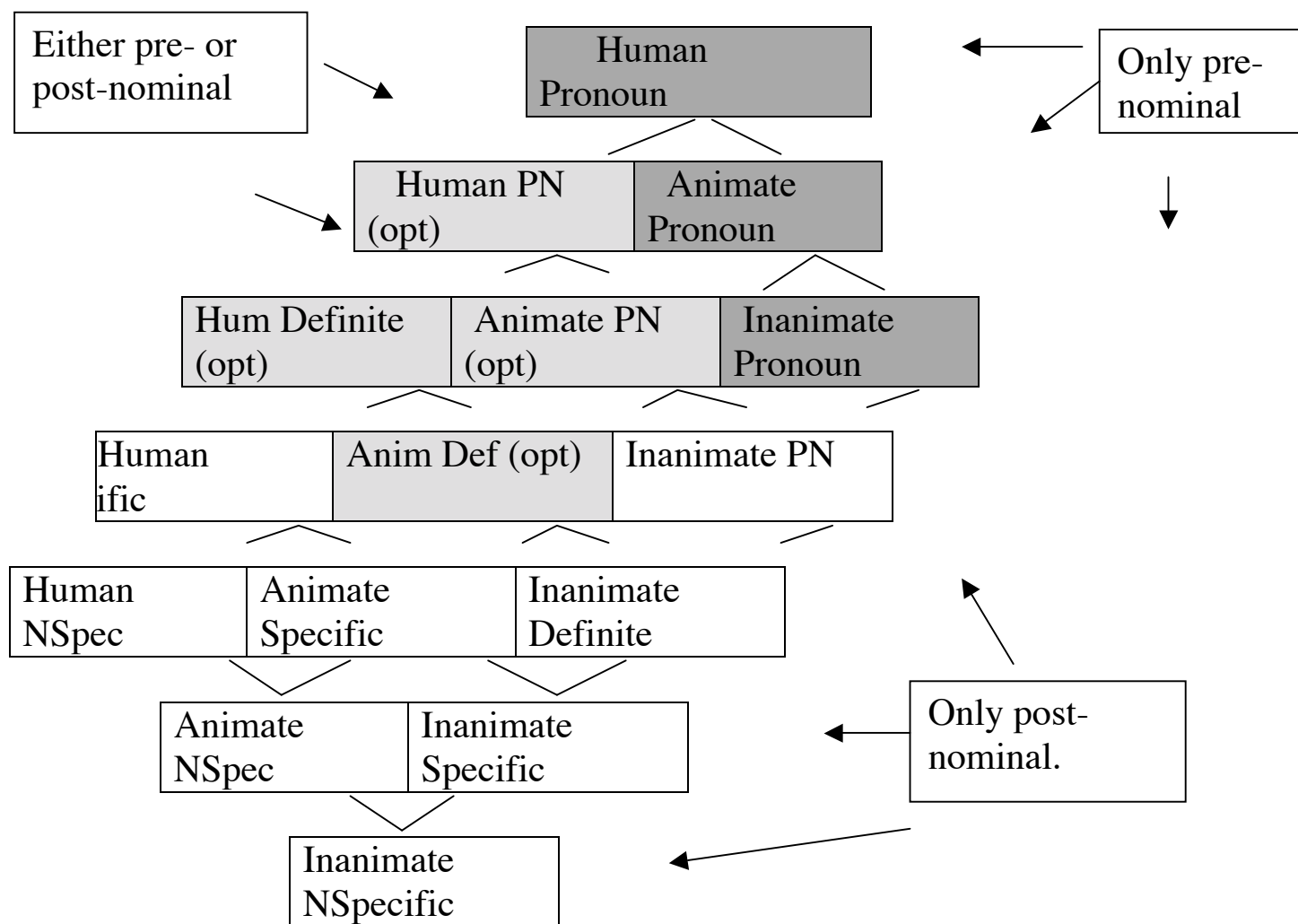4   But choice of pre- or post-nominal position is not entirely free:

      a.   *matky jich
              mothers their$_{GEN}$

      b.   *stol-ova   noha
              table$_{POSS(M)}$ *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)

Either pre- or post-nominal		Human Pronoun		Only pre-nominal

Human PN (opt) | Animate Pronoun

Hum Definite (opt) | Animate PN (opt) | Inanimate Pronoun

Human ific | Anim Def (opt) | Inanimate PN

Human NSpec | Animate Specific | Inanimate Definite

Animate NSpec | Inanimate Specific

Only post-nominal.

Inanimate NSpecific

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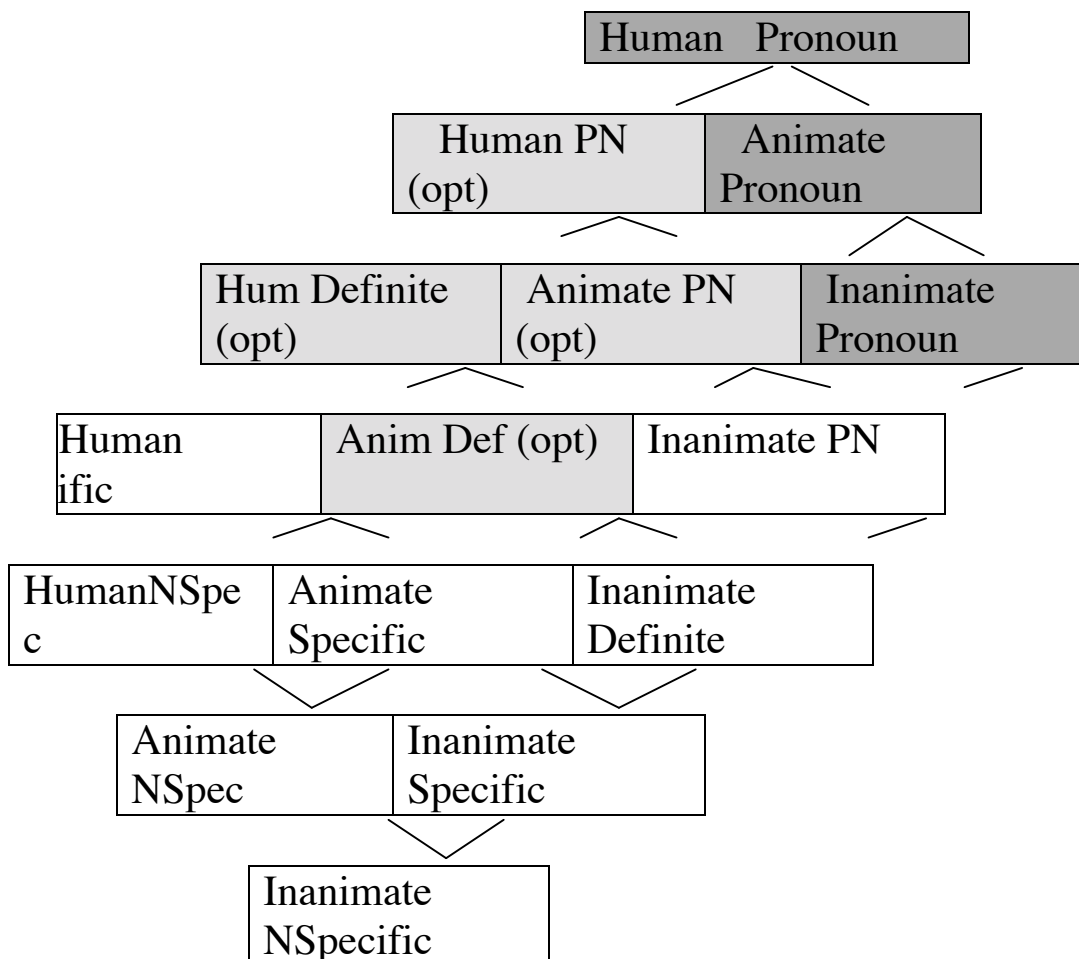
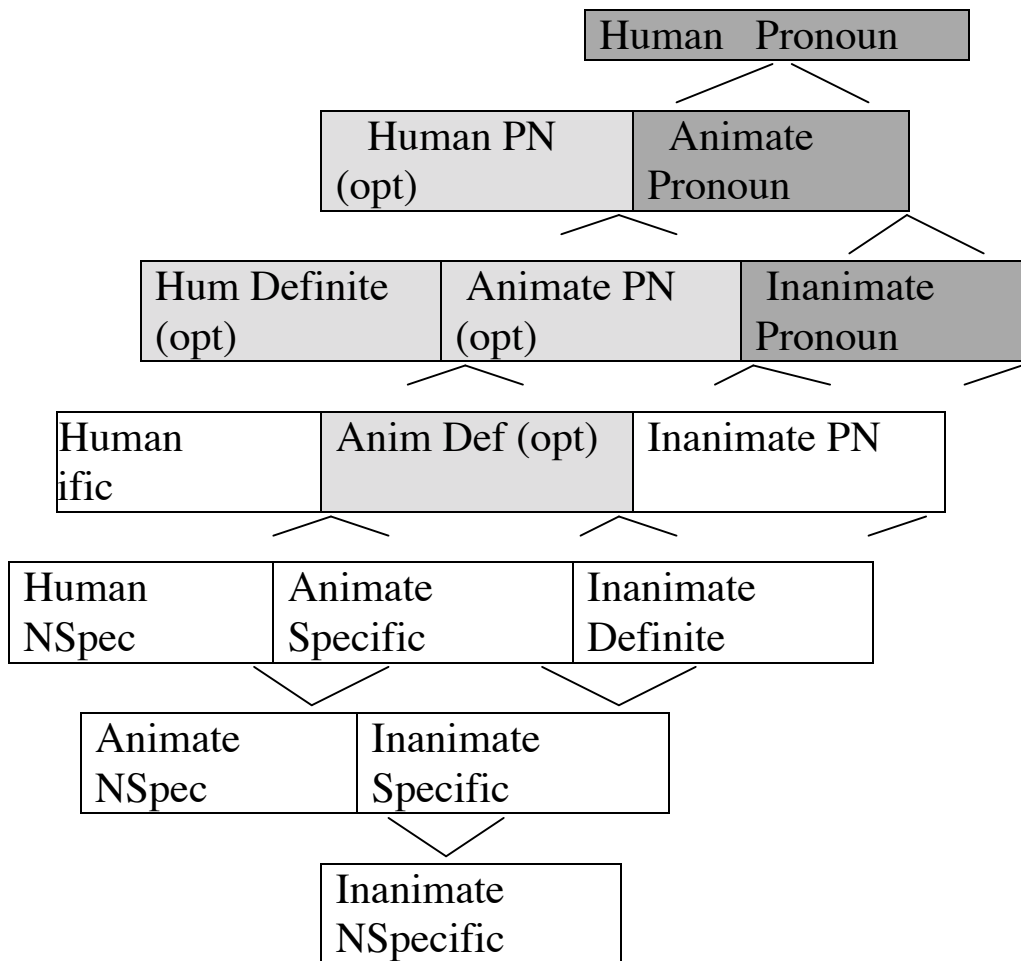# An $\mathcal{HA}$ approach to prenominal and postnominal possessors

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.

```
                    ┌──────────────────────┐
                    │   Human   Pronoun    │
                    └──────────────────────┘
              ┌──────────────┬──────────────┐
              │  Human PN    │   Animate    │
              │  (opt)       │   Pronoun    │
              └──────────────┴──────────────┘
         ┌──────────────┬──────────────┬──────────────┐
         │ Hum Definite │  Animate PN  │  Inanimate   │
         │ (opt)        │  (opt)       │  Pronoun     │
         └──────────────┴──────────────┴──────────────┘
    ┌──────────┬──────────────┬──────────────┐
    │ Human    │ Anim Def     │ Inanimate PN │
    │ ific     │ (opt)        │              │
    └──────────┴──────────────┴──────────────┘
 ┌──────────┬──────────┬──────────────┐
 │ HumanNSpe│ Animate  │ Inanimate    │
 │ c        │ Specific │ Definite     │
 └──────────┴──────────┴──────────────┘
   ┌──────────┬──────────────┐
   │ Animate  │ Inanimate    │
   │ NSpec    │ Specific     │
   └──────────┴──────────────┘
      ┌──────────────┐
      │ Inanimate    │
      │ NSpecific    │
      └──────────────┘
```

Human Pronoun		

Human PN (opt)	Animate Pronoun	

Hum Definite (opt)	Animate PN (opt)	Inanimate Pronoun

Human ific	Anim Def (opt)	Inanimate PN

Human NSpec	Animate Specific	Inanimate Definite

Animate NSpec	Inanimate Specific

Inanimate NSpecific

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

> If any possessors can be realized as $Spec_N$, it will be those highest in animacy/definiteness.
>
> If any possessors can be realized as $-Spec_N$, 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 $Spec_N$.

Conversely, the unmarked situation for a possessor low in animacy and/or definiteness is to be realized as $—\mathrm{Spec_N}$.

→ 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:

1st If a possessor of some rank on the animacy/definiteness lattice can be realized as a Spec_N, then every more prominent possessor can be realized as a Spec_N.

2nd 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:

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

{
Animacy Scale: Human > Animate > Inanimate

Definiteness Scale:
    Pronoun > PN > Definite > Indefinite Specific > Non-Specific
}

…yields 4 harmonic alignments (expressing relative markedness) and 4 corresponding constraint subhierarchies:

a. SPEC_N and Animacy

SPEC_N /Hum $\succ$ SPEC_N/Anim $\succ$ SPEC_N/Inan

*SPEC_N /Inan   » *SPEC_N/Anim »   *SPEC_N/Hum

---

b. $-\text{SPEC}_N$ and Animacy:

$-\text{SPEC}_N$ /Inan $\succ$ $-\text{SPEC}_N$/Anim $\succ$ $-\text{SPEC}_N$/Hum
    *$-\text{SPEC}_N$/Hum » *$-\text{SPEC}_N$/Anim » *$-\text{SPEC}_N$/Inan

---

c. SPEC_N and Definiteness

SPEC_N/ Pro $\succ$ SPEC_N / PN $\succ$ …$\succ$ SPEC_N /NonSpecific
*SPEC_N/NonSpecific » … » *SPEC_N /PN » *SPEC_N /Pro

---

d. $-\text{SPEC}_N$ and Definiteness

$-\text{SPEC}_N$ /NonSpecific $\succ$ … $\succ$ $-\text{SPEC}_N$/PN $\succ$ $-\text{SPEC}_N$/Pro

*$-\text{SPEC}_N$ /Pro » *$-\text{SPEC}_N$/PN » … » *$-\text{SPEC}_N$/NonSpecific

---

We conjoin the two subhierarchies on SPEC$_N$ and likewise the two on
—SPEC$_N$. The result is two partially ordered constraint sets, represented
below, each the inverse of the other.

Subhierarchy on *—Spec$_N$	*-Spec$_N$ /Hum-Pro

*-Spec$_N$ /Hum-PN   *-Spec$_N$ /Anim-Pro

* -Spec$_N$ /Hum-Def   *-Spec$_N$ /Anim-PN   *-Spec$_N$ Inan-Pro

*-Spec$_N$/Hum-Specific   *-Spec$_N$/Anim-Def   * -Spec$_N$/Inan-PN

*-Spec$_N$ /Hum-NSpecific   * -Spec$_N$ /Anim-Spec.   *-Spec$_N$ /Inan-Def

* -Spec$_N$/Anim-NSpec.   * -Spec$_N$/Inan-Specific

* -Spec$_N$/Inan-NSpecific

Subhierarchy on $*Spec_N$

$*Spec_N$ /Inan-NonSpec.

$*Spec_N$ /Inan-Spec.

$*Spec_N$ /Anim-NonSpec

$* Spec_N$ /Inan-Def

$*Spec_N$ /Anim-Spec

$*Spec_N$/Hum-NonSpec

$*Spec_N$/Inan-PN

$*Spec_N$/Anim-Def

$* Spec_N$/Hum-Spec

$*Spec_N$ /Inan-Pro

$* Spec_N$ /Anim-PN

$*Spec_N$ /Hum-Def

$* Spec_N$/Anim-Pro

$* Spec_N$/Hum-PN

$* Spec_N$/ Hum-Pro

THE ANALYSIS EXEMPLIFIED - ITALIAN

Human Pronoun

① (with arrows)

Human PN	Animate Pronoun

Hum Definite	Animate PN	Inanimate Pronoun

Human ific	Anim Def	Inanimate PN

Human NSpecific	Animate Specific	Inanimate Definite

Animate Nspecific	Inanimate Specific

Inanimate NSpecific

②
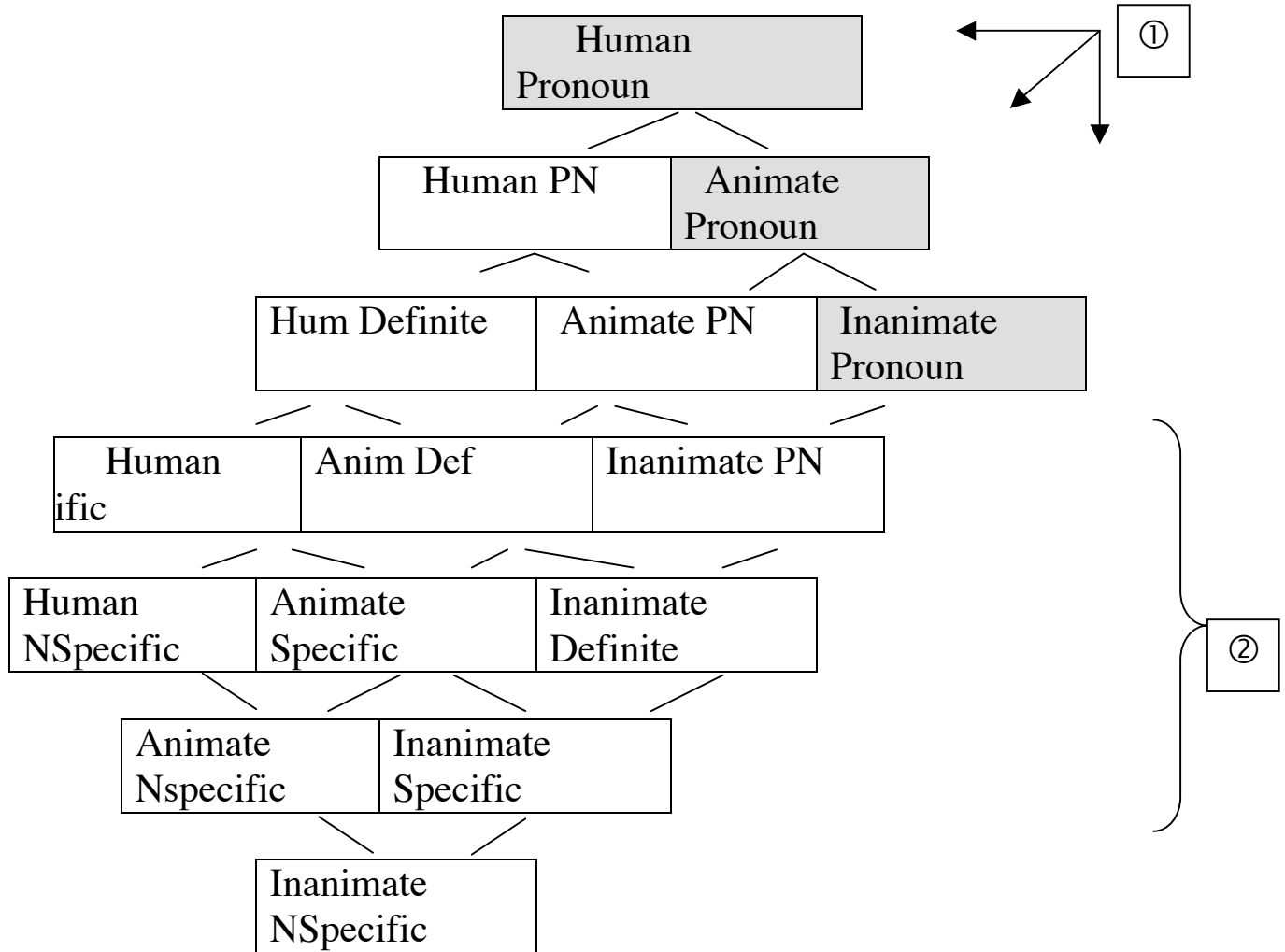
Pairwise ranking: $*Spec_N/② » *{-}Spec_N/②$

$* Spec_N/① « » *{-}Spec_N/①$

Overall ranking consistent with universally fixed rankings:

$*Spec_N/② » * Spec_N/① « » *{-}Spec_N/① » *{-}Spec_N/②$

x: Possessum/3rd /Inan/Def y: Possessor/1st/Human/Pro	*Spec$_N$/②	* Spec$_N$/① *—Spec$_N$/①	*—Spec$_N$/②
☞ Posssessum/Head/3/Inan/Def Possessor/Spec/1st/Hum/Pro		*	
☞ Possessum/Head/3/Inan/Def Possessor/—Spec/1st/Hum/Pro		*	

x: Possessum/3rd /Inan/Def y: Possessor/3rd/Human/Def	*Spec$_N$/②	* Spec$_N$/① *—Spec$_N$/①	*—Spec$_N$/②
Posssessum/Head/3/Inan/Def Possessor/Spec/3/Hum/Def	*!		
☞ Possessum/Head/3/Inan/Def Possessor/—Spec/3/Hum/Def			*

CZECH
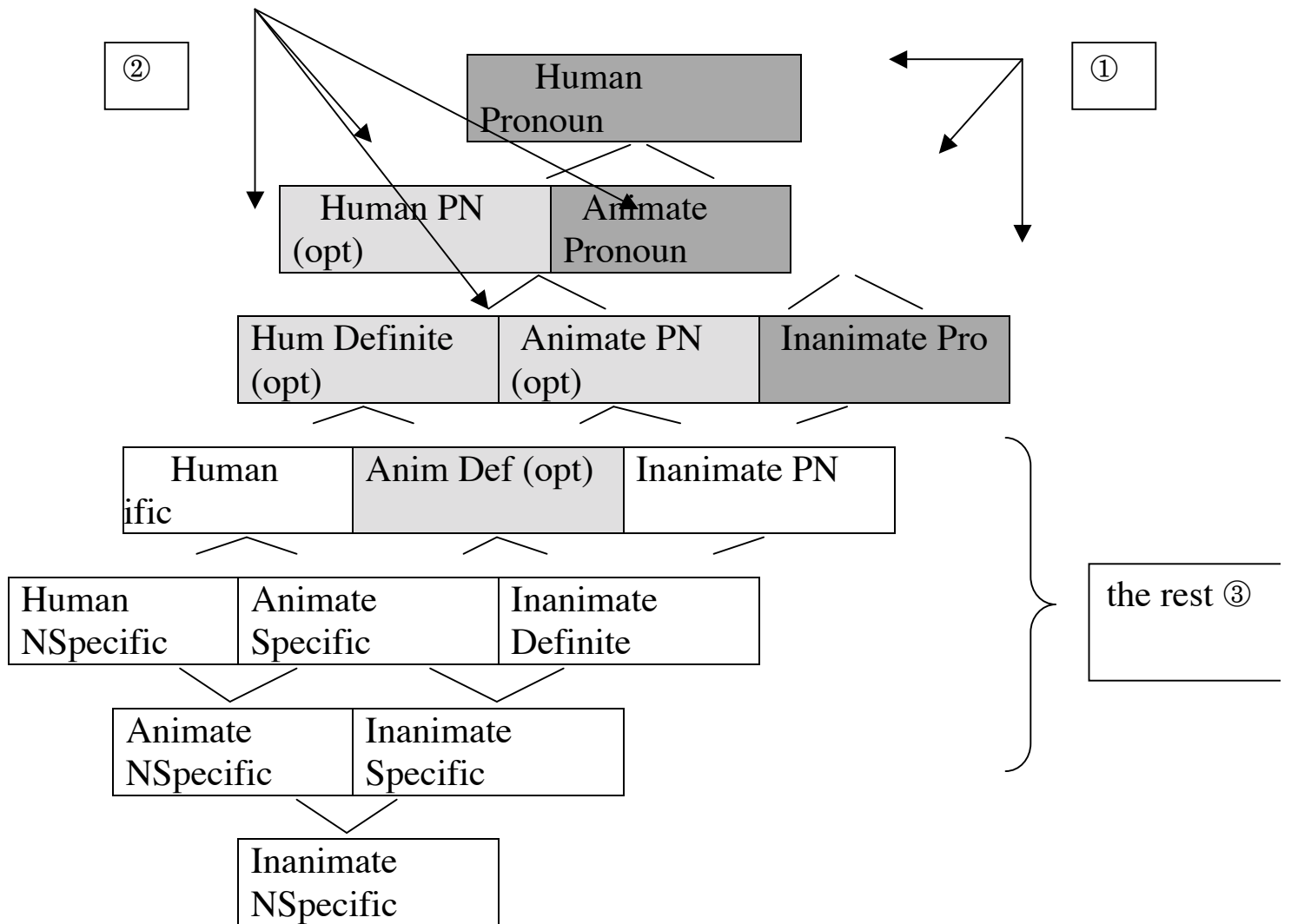
Pairwise rankings: *Spec$_N$/③ » *—Spec$_N$/③

*Spec$_N$/② « » *—Spec$_N$/②

*—Spec$_N$/① » *Spec$_N$/①

Overall ranking consistent with universally fixed rankings:

*Spec$_N$/③ ,   » { *Spec$_N$/② } »   *Spec$_N$/①,
*—Spec$_N$/①   { *—Spec$_N$/② }   *—Spec$_N$/③

Mean rank close enough to rerank.

DERIVING THE TYPOLOGICAL PREDICTIONS

1 For every X, there are two competing constraints:

      (a) *Spec_N/X (b) *—Spec_N/X

2 How X is realized depends on the relative ranking of (a) and (b).

3 Consider X=Anim-Def, and assume that

      *–Spec_N/Anim-Def » *Spec_N/Anim-Def

Then: Animate, definite possessors can be realized as Spec_N

By transitivity of ranking:

*-Spec/Hum-Def » *-Spec/Anim-Def » *Spec/Anim-Def » *Spec/Hum-Def

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

4 Or conversely, assume that

      *Spec_N/Anim-Def » *-Spec_N/Anim-Def

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

By transitivity of ranking:

*Spec/Inan-Def » *Spec/Anim-Def » *-Spec/Anim-Def » -*Spec/Inan-Def

Then: Inanimate, definite possessors can be realized as —Spec_N.

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

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

English

Background

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

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

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).

$$A > B \;\; = \;\; \textit{A preferred to B}$$

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.
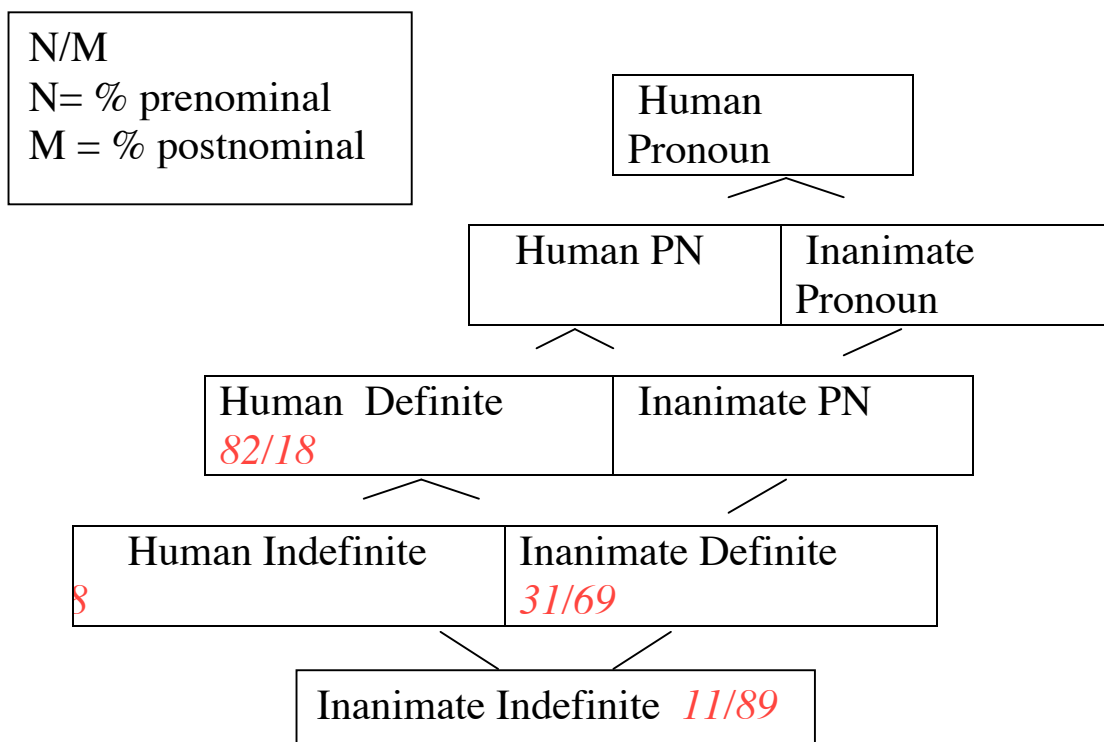
Example from Rosenbach questionnaire:

*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.

N/M
N= % prenominal
M = % postnominal

Human Pronoun

Human PN — Inanimate Pronoun

Human Definite
82/18 — Inanimate PN

Human Indefinite
8 — Inanimate Definite
31/69

Inanimate Indefinite *11/89*

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)
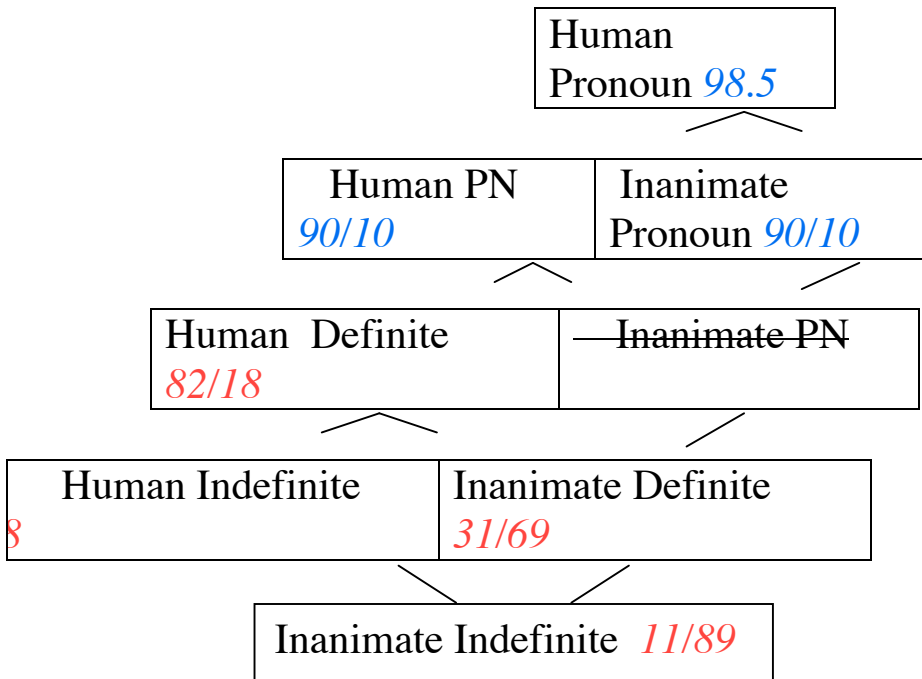
2   The <u>inanimate</u> possessive pronoun strongly prefers prenominal position

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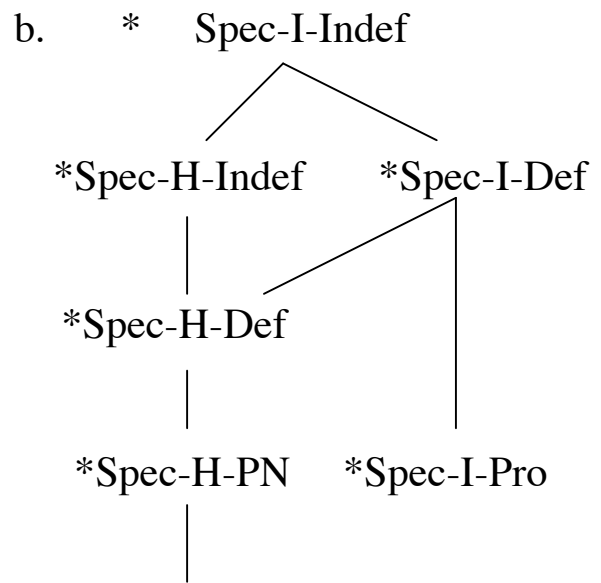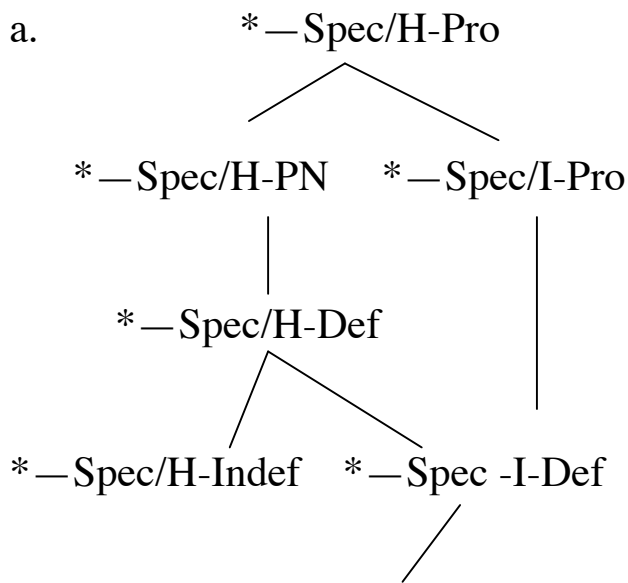> *its condition vs. ?the condition of it*
> *its paw vs. *the paw of it*

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 posssessors than any other noun class (27%-40%).

	Human Pronoun *98.5*	

Human PN *90/10*	Inanimate Pronoun *90/10*

Human Definite *82/18*	~~Inanimate PN~~

Human Indefinite *8*	Inanimate Definite *31/69*

Inanimate Indefinite *11/89*

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

a. *—Spec/H-Pro

*—Spec/H-PN   *—Spec/I-Pro

*—Spec/H-Def

*—Spec/H-Indef   *—Spec -I-Def

b.   *   Spec-I-Indef

*Spec-H-Indef   *Spec-I-Def

*Spec-H-Def

*Spec-H-PN   *Spec-I-Pro

*—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.

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