Stochastic OT:
Aissen on English NP-Internal Possessors

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Observation:
Often, the constructions that participate in an alternation are not equally frequent or equally unmarked (or, for that matter, equally “well formed” → degrees of acceptability).

(1) Preferences with optionality in the positioning of English possessives:
   a. the result of the accident > the accident’s result
   b. Mary’s sister > the sister of Mary
   c. the boy’s uncle > the uncle of the boy
   d. the door of the building > the building’s door
   e. someone’s shadow > the shadow of someone
   f. the shadow of something > *something’s shadow
   g. her money > ?*the money of her
Observation:
Animacy and definiteness scales are independently motivated (Hale (1972), Silverstein (1976)). These hierarchies can be used as primitives to generate sequences of constraints (with a fixed internal order: subhierarchies), via harmonic alignment of scales (Prince & Smolensky (2004), Aissen (1999)).

(2) Harmonic Alignment (Prince & Smolensky (2004)):
Suppose given a binary dimension $D_1$ with a scale $X > Y$ on its elements \{X,Y\}, and another dimension $D_2$ with a scale $a > b > ... > z$ on its elements \{a,b,...,z\}. The harmonic alignment of $D_1$ and $D_2$ is the pair of Harmony scales $H_X$, $H_Y$:

a. $H_X$: $X/a \succ X/b \succ ... \succ X/z$
b. $H_Y$: $Y/z \succ ... \succ Y/b \succ Y/a$

The constraint alignment is the pair of constraint hierarchies $C_X$, $C_Y$:

a. $C_X$: $*X/z \gg ... \gg *X/b \gg *X/a$
b. $C_Y$: $*Y/a \gg *Y/b \gg ... \gg *Y/z$
(3) Constraint subhierarchies via animacy and definiteness scales:

a. (i) *SpecN/inanimate $\gg$ *SpecN/animate $\gg$ *SpecN/human
    (ii) *CompN/human $\gg$ *CompN/animate $\gg$ CompN/inanimate

b. (i) *SpecN/indef $\gg$ *SpecN/def $\gg$ *SpecN/name $\gg$ *SpecN/pron
    (ii) *CompN/pron $\gg$ *CompN/name $\gg$ *CompN/def $\gg$
        *CompN/indef

Proposal:
Constraints are not necessarily categorically ordered with respect to each other. Rather, their application domains may overlap. An overlap of application domains gives rise to optionality.
Categorical order of application domains of constraints:

\[ B \downarrow C \downarrow \]

Overlapping order of application domains of constraints:

\[ B \downarrow C \downarrow \]
Assumption:
A candidate is evaluated at an evaluation time; it is well formed if it is optimal at that point. For an evaluation, an arbitrary point is chosen in the application domain of a constraint. A constraint B is ranked higher than another constraint C at a given evaluation time if the point chosen for B is above the point chosen for C. If the domains of B and C are categorically ordered, then the point for B is always going to be on top of the point for C, and there will be no optionality. However, if the domains of B and C overlap, optionality arises; the winning candidate is determined by whether the point chosen for B is above the point chosen for C or vice versa. (This is basically the concept of ordered hierarchical tie.)

Preferences:
The choice of evaluation point at a given evaluation time is free as such. However, the smaller the common domain of B and C is, the more likely it is that the point chosen for the higher-ranked constraint (say, B) is above the point chosen for the lower-ranked constraint (say, C). Accordingly, the more likely a higher position of B-points vis-a-vis C points at a given evaluation time is, the more the construction favoured by B is going to be preferred over the construction favoured by C; similarly, the more frequent B will be in corpora.
(6) *Typical result:* $B \gg C$

(7) *Rare result:* $C \gg B$


