How Pro-drop Killed V2

Dynamics of Language

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Assume there is no *pro-drop*. Consider the following V2 and SVO grammars, with the irrelevant categories omitted.

(1) a. V2: {SV, XVS}, where $P\{\text{SV}\} = a$.
b. SVO: {SV, SXV, XSV}, where $P\{\text{SV}\} = b$

Recall from the readings that $a \approx 0.7$ and $b \approx 0.9$.

Consider these grammars interacting with *pro-drop*. Specifically, assume that the frequency of pronoun subjects is p, of which d is dropped, whereas that of lexical NP subjects is $(1-p)$. Let the composite grammars be V2' and SVO'. Note that for the SV pattern in V2', no subject can be dropped due to the V2 requirement. The expressions they generate are as follows, where the subscript indicates the type of subject:

(2) a. V2': {SV, XVS_{NP}, XVS_{P}, XV}.
b. SVO': {SV_{NP}, SV_{P}, V, SXV_{NP}, XSV_{P}, XV, XSV_{NP}, XSV_{P}, XV}

The advantage of V2' over SVO' is:

(3)

$$P\{XVS_{NP}, XVS_P\} = (1-a)[(1-p) + p(1-d)] = (1-a)(1-pd)$$

The advantage of SVO' over V2' is:

(4)

$$P\{V, SXV_{NP}, XSV_P, XSV_{NP}, XSV_P\} = bpd + (1-b)(1-pd)$$

In order for SVO' to eliminate V2', we must have:

$$bpd + (1-b)(1-pd) > (1-a)(1-pd)$$

Using the values of $a = 0.7$ and $b = 0.9$, we have

$$0.9pd + 0.1(1-pd) > 0.3(1-pd)$$

$$0.9pd > 0.2(1 - pd)$$

$$pd > 2/11$$

Clearly, if $d = 0$, that is, the language is **not** pro-drop, then V2' could never lose, as we predicted before.

If $pd > 2/11$, that is, if more than 18% of subjects are null, then V2' would be eliminated by SVO'. Example (15) in Yang (2000; *Language Variation and Change*), which is based on Roberts (1993:155), shows that by early Middle French, the frequencies of *pro* in three texts are as follows:

(5)

Text	SV	VS	NullS	
Froissart, *Chroniques* (c. 1390)	40%	18%	42%	
15 Joyes (14esme Joye) (c. 1400)	52.5%	5%	42.5%	
Chartier *Quadrilogue* (1422)	51%	7%	42%	(R: p155)

Clearly, the condition is satisfied, and V2' must lose out to SVO'.