What's typology got to do with analyzing your language?

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Language universals and grammatical knowledge

- Typology studies the great diversity of languages
- Functional-typological linguists explain constraints on cross-linguistic diversity in terms of function, cognition, and social interaction; BUT

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No child is exposed to cross-linguistic generalizations…Since typological generalizations are not conceivably learned inductively by the child and are implausibly innate, one must conclude that they are not part of knowledge of language at all (Newmeyer, *Possible and Probable Languages: A Generative Perspective on Linguistic Typology* [2005], pp. 117, 118)

Language universals and grammatical knowledge

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What would be the underlying explanatory factors that would account both for individual language patterns and cross-linguistic patterns (universals), in such a way that speakers of a single language would have access to them? (and linguists analyzing a single language would want to refer to them?)

Single language analysis: distribution and categorization

Single language analysis: the distributional method

(1a) *Jack is **cold**.*
(1b) **Jack **colds**.*
(2a) *Jack is **happy**.*
(2b) **Jack **happies**.*

(3a) **Jack is **dance**.*
(3b) *Jack **dances**.*
(4a) **Jack is **sing**.*
(4b) *Jack **sings**.*

Single language analysis: the distributional method

(1a) *Jack is **cold**.*
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(2a) *Jack is **happy**.*
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(3a) **Jack is **dance**.*
(3b) *Jack **dances**.*
(4a) **Jack is **sing**.*
(4b) *Jack **sings**.*

	[Sbj *be* ___]	[Sbj ____-TNS.PERS]
Adj: *cold, happy,* etc.	✓	*
Verb: *sing, dance,* etc.	*	✓

The distributional method and constructions

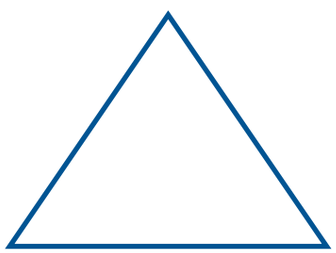
- The distributional method analyzes occurrence of words (or phrases) in ***constructions***, although they are called other things (“tests”, “criteria”, “arguments”, “evidence”, etc.)
- The distributional method presupposes the existence and identifiability of constructions
- So we must actually identify and distinguish constructions first

Analyzing constructions

- Analyzing constructions in a single language is essentially categorization of utterances or parts of utterances in terms of shared properties of meaning and/or of form
- In a construction grammar approach, categorization is usually represented as a network of grammatical constructions, although there are more sophisticated ways to represent similarities of function and form

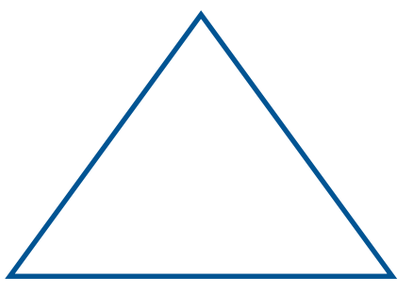
Single language analysis: form

Intransitive Verbal Predication



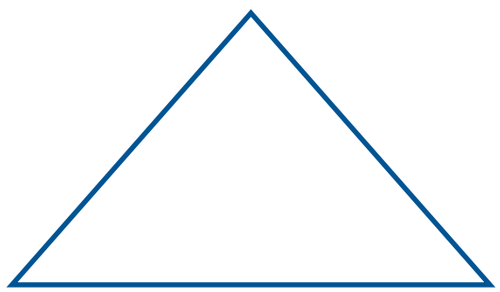
She dances, he sings…

Predicate Adjectival



She is smart, They are tall…

Predicate Nominal



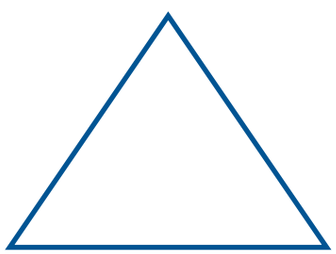
She is a doctor, I am a teacher…

Single language analysis: form

Verbal Predication

tense-subject inflection

Intransitive Verbal Predication



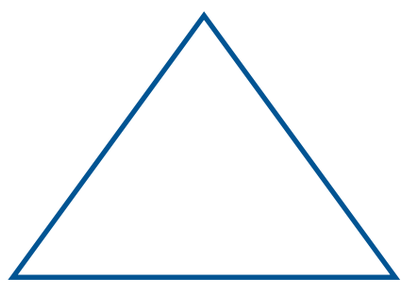
She dances, he sings…

Nonverbal Predication

be, no inflection

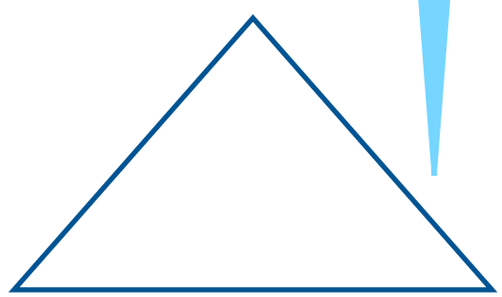
article *a*

Predicate Adjectival



She is smart, They are tall…

Predicate Nominal



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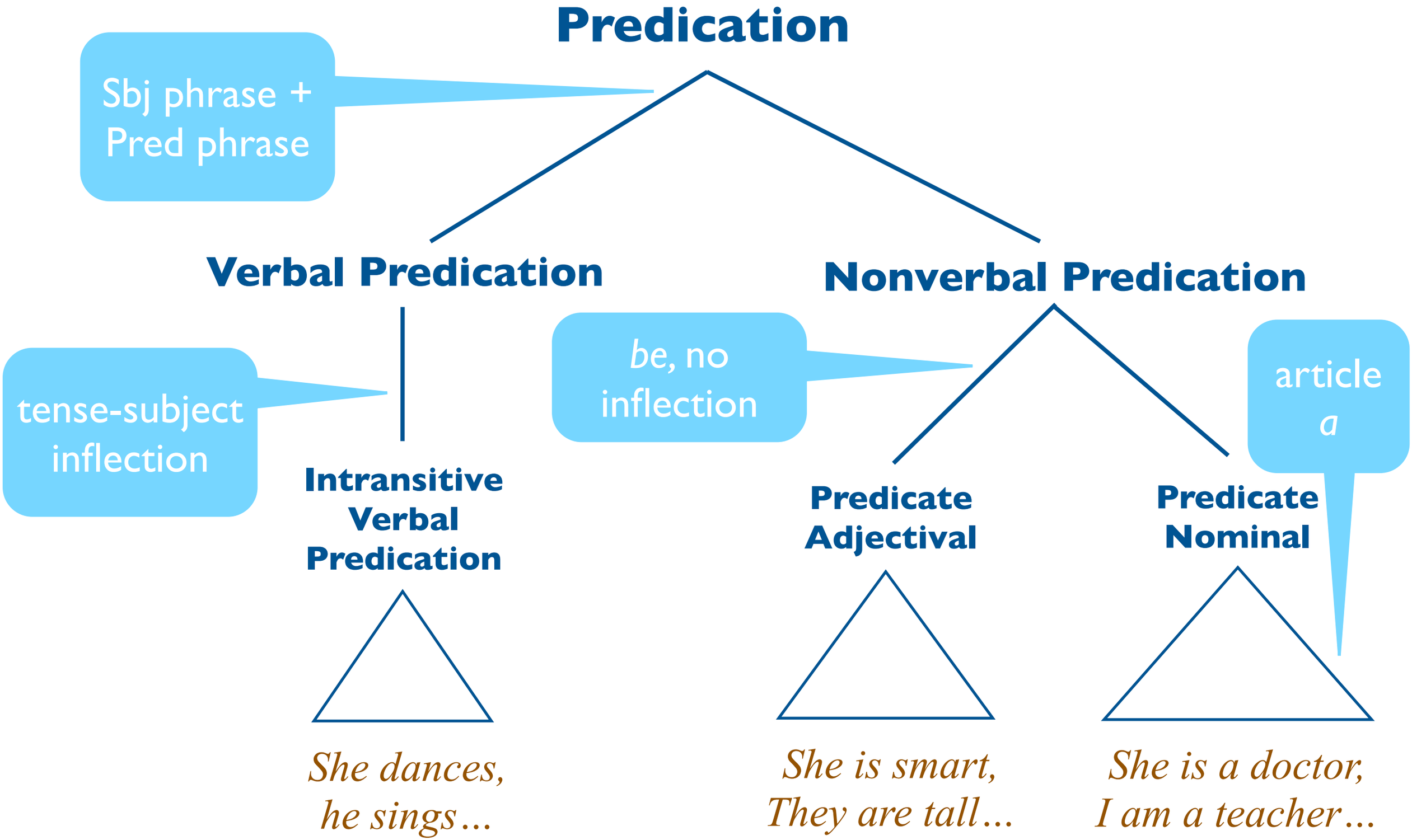
Single language analysis: form



Single language analysis: function

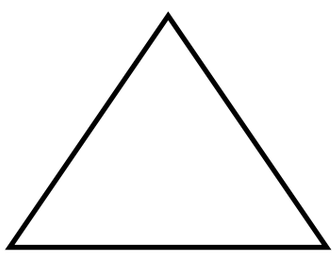
Predication

predication of a referent

Verbal Predication

action predication

Intransitive Verbal Predication



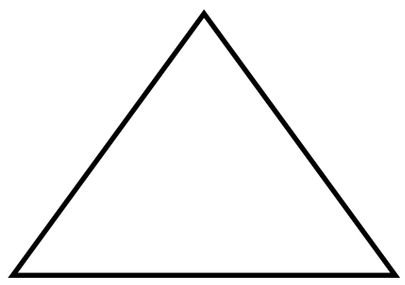
She dances, he sings…

Nonverbal Predication

property predication

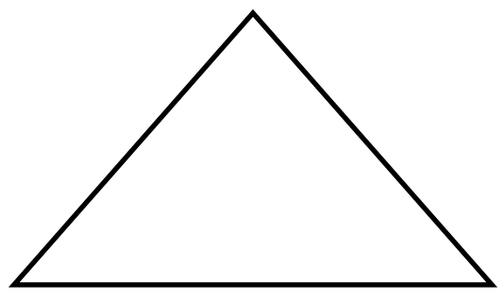
object predication

Predicate Adjectival



She is smart, They are tall…

Predicate Nominal



She is a doctor, I am a teacher…

Basic (comparative) concepts in typology and syntax: function

Why do we need comparative concepts?

- Linguists, including typologists, repeatedly get hung up on definitional issues (*Does language X have adjectives? Does language X have a passive?*)
- We need a ***basis for cross-linguistic comparison*** (Croft 1990/2003), that is, ***comparative concepts*** (Haspelmath 2010)

Why do we need comparative concepts?

- Distributional analysis cannot provide a basis for cross-linguistic comparison, because it is language-particular (e.g. occurrence of Chinese forms in Chinese constructions)
- Or rather, distributional analysis could if languages were not diverse; but they are
- What type of comparative concepts can provide this basis?

Functional comparative concepts

It is here assumed, among other things, that all languages have subject-predicate constructions, differentiated word classes, and genitive constructions, to mention but a few. I fully realize that in identifying such phenomena in languages of differing structure, one is basically employing semantic criteria. (Greenberg 1966:74)

We are attempting to determine the universal properties of relative clauses (RCs) by comparing their syntactic form in a large number of languages. To do this it is necessary to have a largely syntax-free way of identifying RCs in an arbitrary language. Our solution to this problem is to use an essentially semantically based definition of RC. (Keenan & Comrie 1977:63)

Semantics and information packaging

- Parts of speech (POS)—noun, verb, adjective—have posed extremely vexing problems for crosslinguistic analysis
  - ✦ Definitions of POS are language-particular (distribution in morphological inflections, syntactic constructions)
  - ✦ Definitions based solely on semantics (things, properties, actions) don't work: *action*, *height*, etc.
- Solution: POS represent a combination of ***semantic content and information packaging*** (Croft 1991, 2001, 2022)

The functional-typological analysis of POS

INFORMATION PACKAGING

SEMANTIC CATEGORIES	*reference*	*modification*	*predication*
object	*the sharp* ***thorns***	*the* ***thorn's*** *tip*	*It's* ***a thorn****.*
property	***sharpness***	*the* ***sharp*** *thorns*	*Those thorns* ***are sharp.***
action	*(I said)* ***that*** *the thorns* ***scratched*** *me* *the* ***scratching*** *of the thorns*	*the thorns* ***that scratched*** *me* *the thorns* ***scratching*** *me*	*The sharp thorns* ***scratched*** *me.*

Semantics and information packaging

- This "split-level" analysis of function contributes to the analysis of typological variation in form
- In fact, all linguistic meaning, that is, meanings of grammatical constructions, can be described as the information packaging (Clark's [1996] 'formulation') of semantic content, as described in Croft, *Morphosyntax: Constructions of the World's Languages* (CUP, to appear in 2022)
- ***information packaging is construal for communication***

Predicate-argument structure

INFORMATION PACKAGING

SEMANTIC CATEGORIES	*core (more topical)*		*oblique role (less topical)*
	subject role	*object role*	
agent	***The protestors*** *sprayed green paint on the sidewalk.*	*(not found in English, but compare Algonkian inverse, Austronesian voice)*	*Green paint was sprayed on the sidewalk* ***by the protestors.***
theme	***Green paint*** *was sprayed on the sidewalk.*	*The protestors sprayed* ***green paint*** *on the sidewalk.*	*The protestors sprayed the sidewalk with* ***green paint.***
location	***The sidewalk*** *was sprayed with green paint.*	*The protestors sprayed* ***the sidewalk*** *with green paint.*	*The protestors sprayed green paint* ***on the sidewalk****.*

Complex sentences

INFORMATION PACKAGING

SEMANTIC CATEGORIES

	Subordination (figure-ground)	*Coordination (complex figure)*
Anterior	*He washed the car **before** driving to the party.*	*He washed the car **and** drove to the party.*
Posterior	*He drove to the party **after** washing the car.*	*He washed the car **and** drove to the party.*
Overlap	*He washed the car **while** the sun was still shining.*	*The sun was shining **and** he was washing the car.*
Cause	*She went to bed **because** she was exhausted.*	*She was exhausted **and (so)** went to bed.*
Purpose	*I will grab a stick **(in order) to** defend myself.*	*I will grab a stick **and** defend myself.*
Apprehensional	*I grabbed a stick **lest** he attack me.*	*Grab a stick **or** he will attack you.*

Basic (comparative) concepts in typology and syntax: form

"Hybrid" comparative concepts

- Haspelmath (2010) argues that we also need comparative concepts that involve form as well as function
- The formal properties are defined in a cross-linguistically valid fashion (cf. Croft 2009), that is, not in terms of language-specific distributional patterns
- There are two "hybrid" types that are useful

Constructions vs. strategies

English:

Ivan is the best dancer.

Russian:

Ivan lučšij tancor

Constructions vs. strategies

Construction

predication of object concept

English:

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Constructions vs. strategies

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Strategies

inflected copula*

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**overt morpheme coding predication, combined with expression of categories expressed also by action predication construction*

Constructions vs. strategies

Construction

predication of object concept

Strategies

inflected copula*

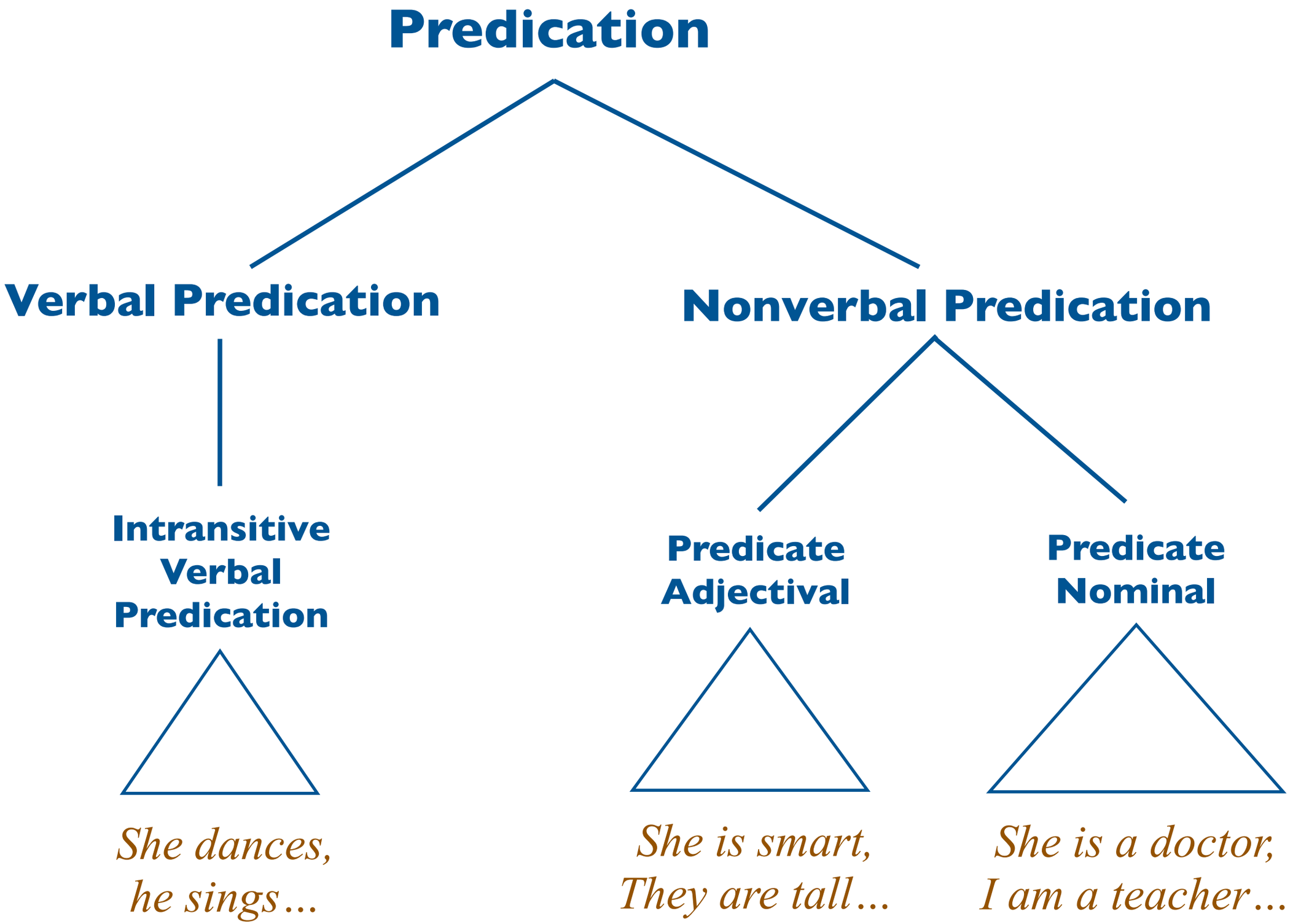
English:
Ivan is the best dancer.

Russian:
Ivan lučšij tancor

zero copula/zero inflection

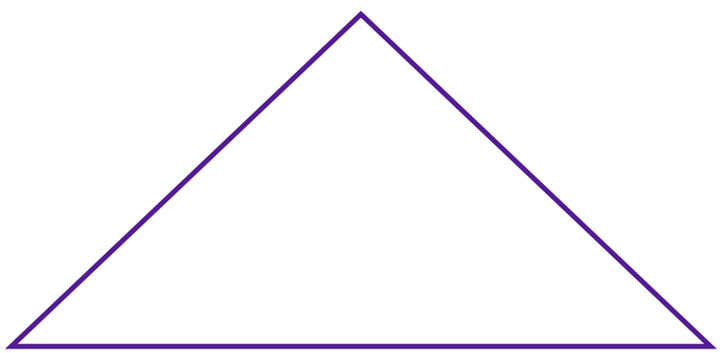
**overt morpheme coding predication, combined with expression of categories expressed also by action predication construction*

Single language analysis



Typological analysis

English
Predicate Nominal
Construction



She is a doctor, I am a teacher, …

Typological analysis

verbal copula strategy

French
Predicate Nominal
Construction

Elle est médécin ‘She is a doctor’, …

English
Predicate Nominal
Construction

She is a doctor, I am a teacher, …

Kiowa
Predicate Nominal
Construction

té: kɔ́ygú bà-dɔ́: ‘You are all Kiowas’, …

Typological analysis

predicate nominal construction

zero copula strategy

thu siʔthà ‘He is a soldier’ (*Burmese*), …

verbal copula strategy

verbal strategy

ni-cihuātl ‘I am a woman’ (*Classical Nahuatl*), …

French Predicate Nominal Construction

Elle est médécin ‘She is a doctor’, …

English Predicate Nominal Construction

She is a doctor, I am a teacher, …

Kiowa Predicate Nominal Construction

té: kɔ́ygú bà-dɔ́: ‘You are all Kiowas’, …

A unified analysis:

Sentence	*She*	*is*	*a doctor*
Construction	English Predicate Nominal Construction		
Roles	PrNomSbj	*be*	PrNomPred
semantic category	object		object
information packaging	reference		predication
construction	predicate nominal/object predication		
strategy	verbal copula		

A unified analysis: single language

Sentence	*She*	*is*	*a doctor*
Construction	English Predicate Nominal Construction		
Roles	PrNomSbj	*be*	PrNomPred
semantic category	object		object
information packaging	reference		predication
construction	predicate nominal/object predication		
strategy	verbal copula		

A unified analysis: cross-linguistic

Sentence	*She*	*is*	*a doctor*
Construction	English Predicate Nominal Construction		
Roles	PrNomSbj	*be*	PrNomPred
semantic category	object		object
information packaging	reference		predication
construction	predicate nominal/object predication		
strategy	verbal copula		

A unified analysis:
function is the "missing link"

Sentence	*She*	*is*	*a doctor*
Construction	English Predicate Nominal Construction		
Roles	PrNomSbj	*be*	PrNomPred
semantic category	**object**		**object**
information packaging	**reference**		**predication**
construction	predicate nominal/object predication		
strategy	verbal copula		

Variation across and within languages

A simple example: animacy and plural inflection

	Guaraní (Tupian)	*Usan (Papuan)*	*Tiwi (Australian)*	*Kharia (Austroasiatic)*	*Cree (Algonquian)*
1st/2nd pronoun	né ‘thou’ peé’ ‘you’	ye ‘I’ yonou ‘we’	ŋia ‘I’ ŋawa ‘we [excl.]’	am ‘thou’ ampe ‘you’	kīla ‘thou’ kīlawāw ‘you’
3rd pronoun	haʔé ‘he/she/it/they’	wuri ‘he/she/it’ wurinou ‘they’	ŋara ‘he’ wuta ‘they’	hokaʈ ‘he/she/it’ hokiyar ‘they’	wīla ‘he/she/it’ wīlawāw ‘they’
Human	tahaší ‘policeman/men’	wau ‘child/children’	wuɹalaka ‘girl’ wawuɹalakawi ‘girls’	lebu ‘person’ lebuki ‘persons’	iskwēsis ‘girl’ iskwēsisak ‘girls’
Animate (nonhuman)	aŋuyá ‘rat(s)’	qâb-turin ‘Pinon imperial pigeon(s)’	waliwalini ‘ants’	biloi ‘cat’ biloiki ‘cats’	sīsīp ‘duck’ sīsīpak ‘ducks’
Inanimate	apiká ‘bench(es)’	ginam ‘place(s)’	mampuŋa ‘canoe(s)’	soreŋ ‘stone(s)’	ospwākan ‘pipe’ ospwākanak ‘pipes’

Language-internal variation in typology

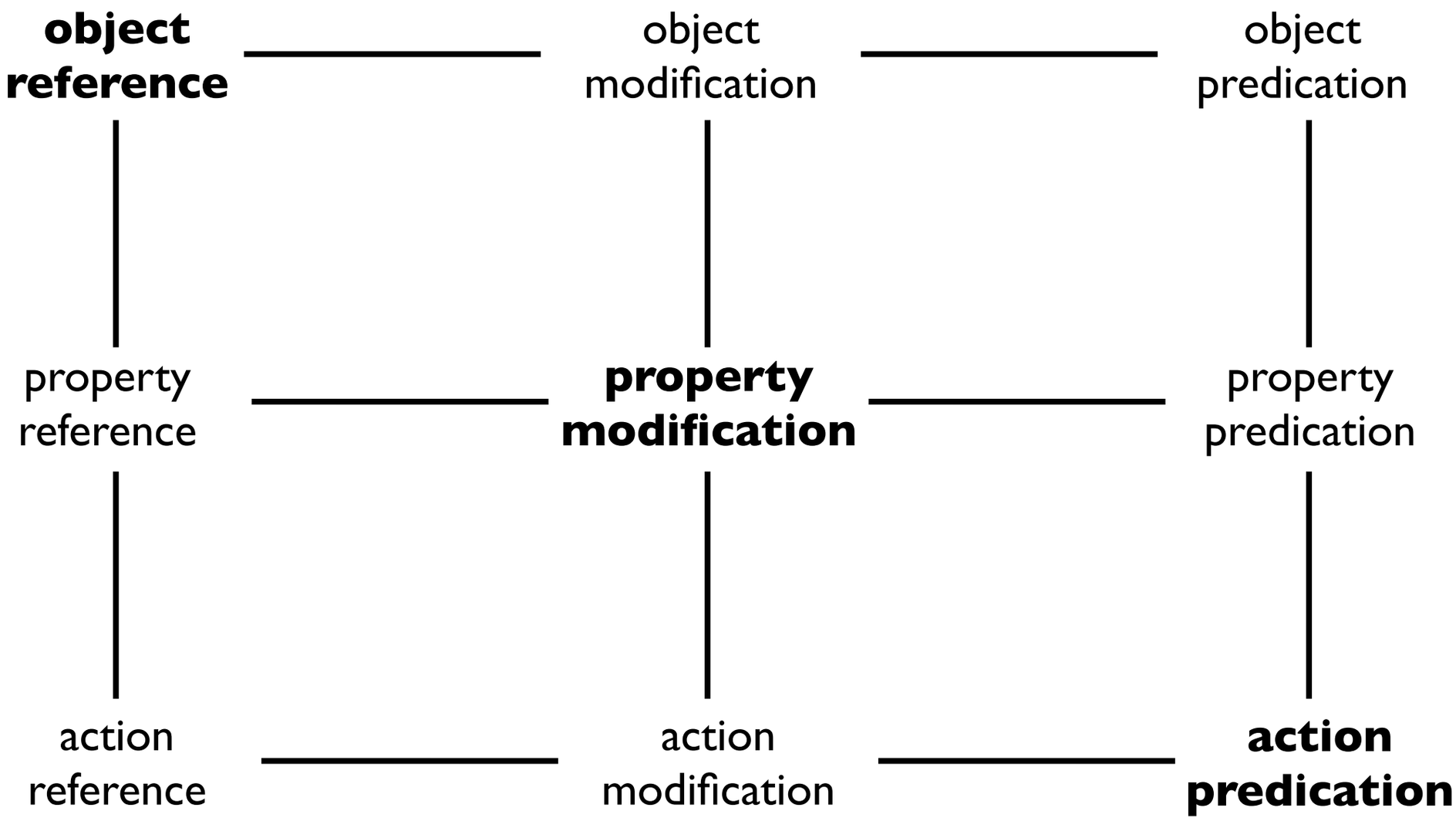
- This is one type of syntactic variation, distributional variation
- The Extended Animacy (*aka* Empathy) Hierarchy is a universal for distributional variation both within and across languages
- Many morphosyntactic universals are universals of combined language-internal and crosslinguistic distributional variation

Distributional variation within and across languages

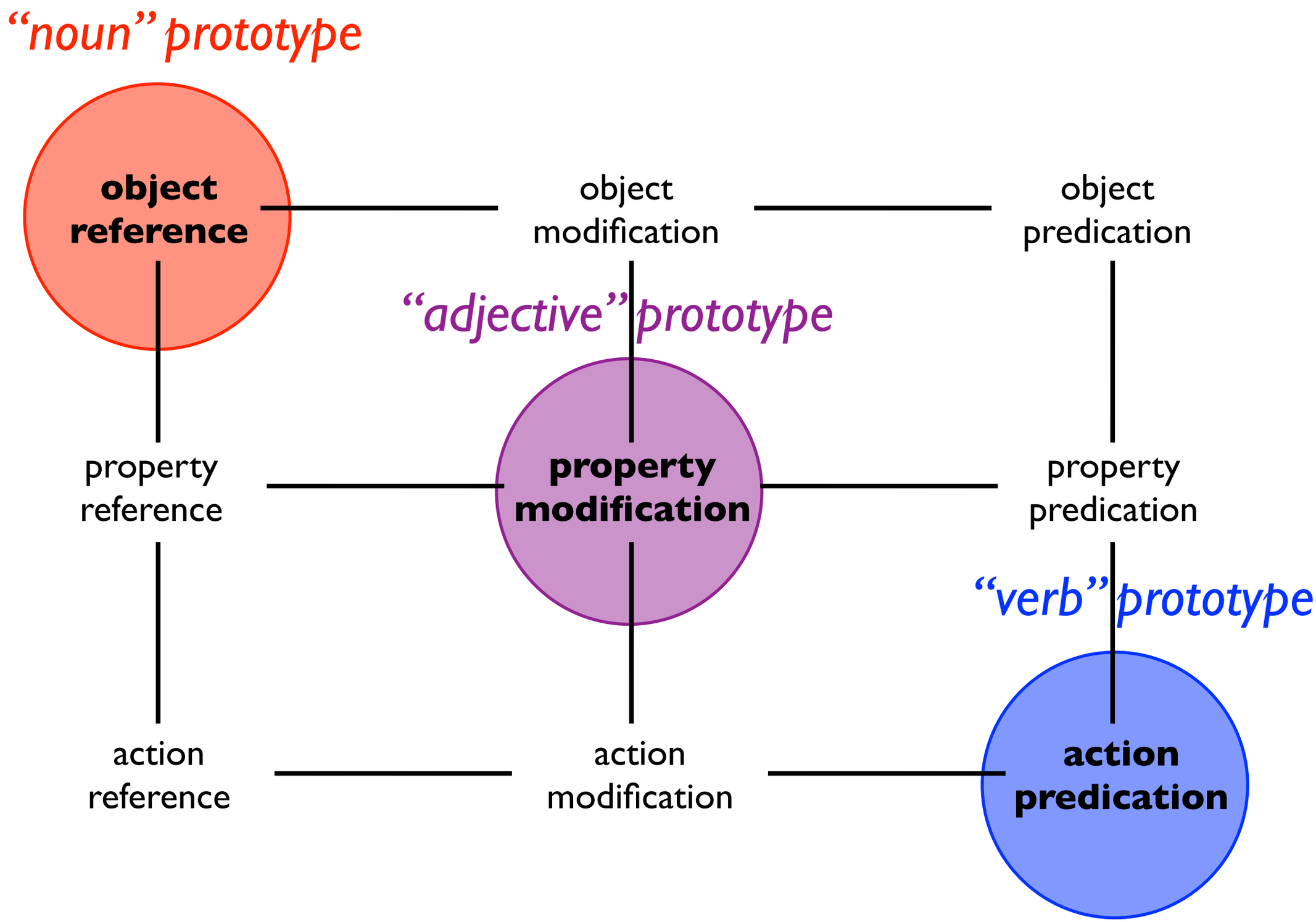
- Croft (1991, 2001 etc.) presents an analysis of parts of speech such that the following combinations of lexical semantic class and propositional act function are typologically unmarked (i.e. least structural coding and most behavioral potential)

  - ✳ "noun": object reference
  - ✳ "adjective": property modification
  - ✳ "verb": action predication

Parts of speech (POS): conceptual space



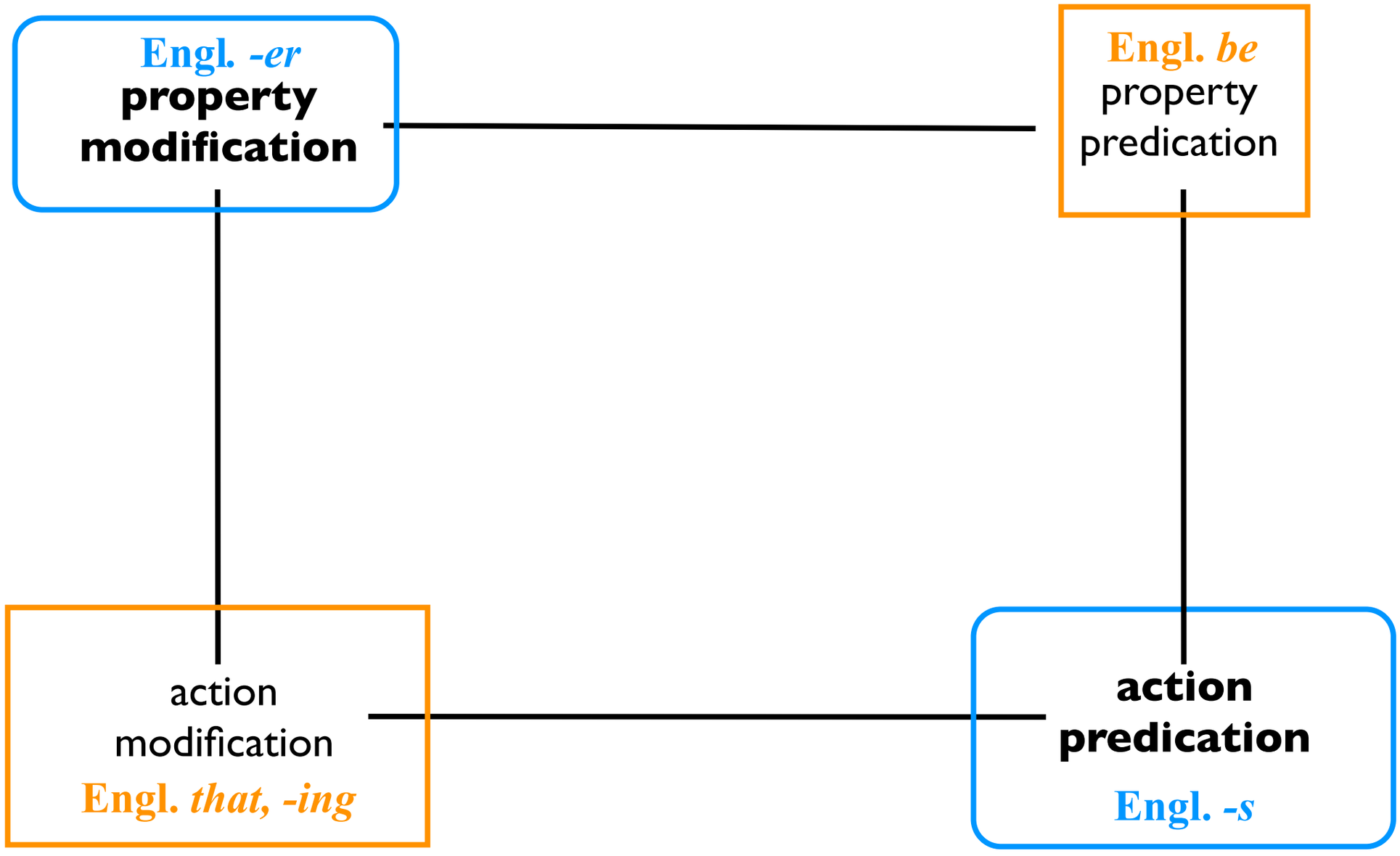
Parts of speech (POS): conceptual space



English parts of speech constructions

	modification	*predication*
property	a bigger mousetrap	It's big.
action	the sleeping girl the girl that I met	It shrinks in hot water.

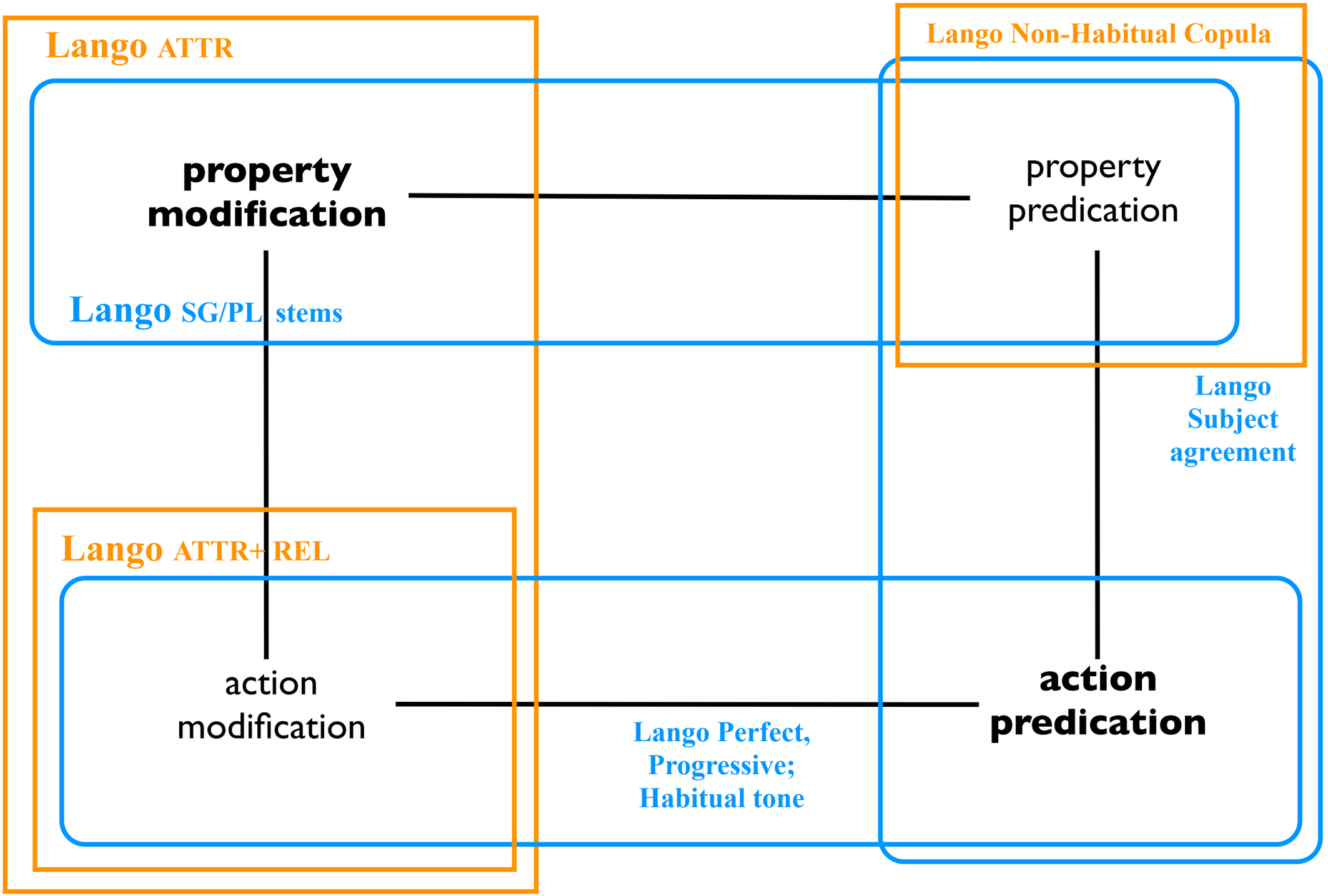
English parts of speech distribution



Lango parts-of-speech constructions

	modification	*predication*
property	gwôkk (à) bɛ̀r ‘good dog’ gwóggî (à) bɛ̀cò ‘good dogs’	án à-râc ‘I am bad.’ án àbédò rác ‘I was bad.’
action	gwókk (à-mɛ̂) òtɔ́ɔ̀ ‘the dog that died’	nɛ́nɛ̂ ‘He sees it.’

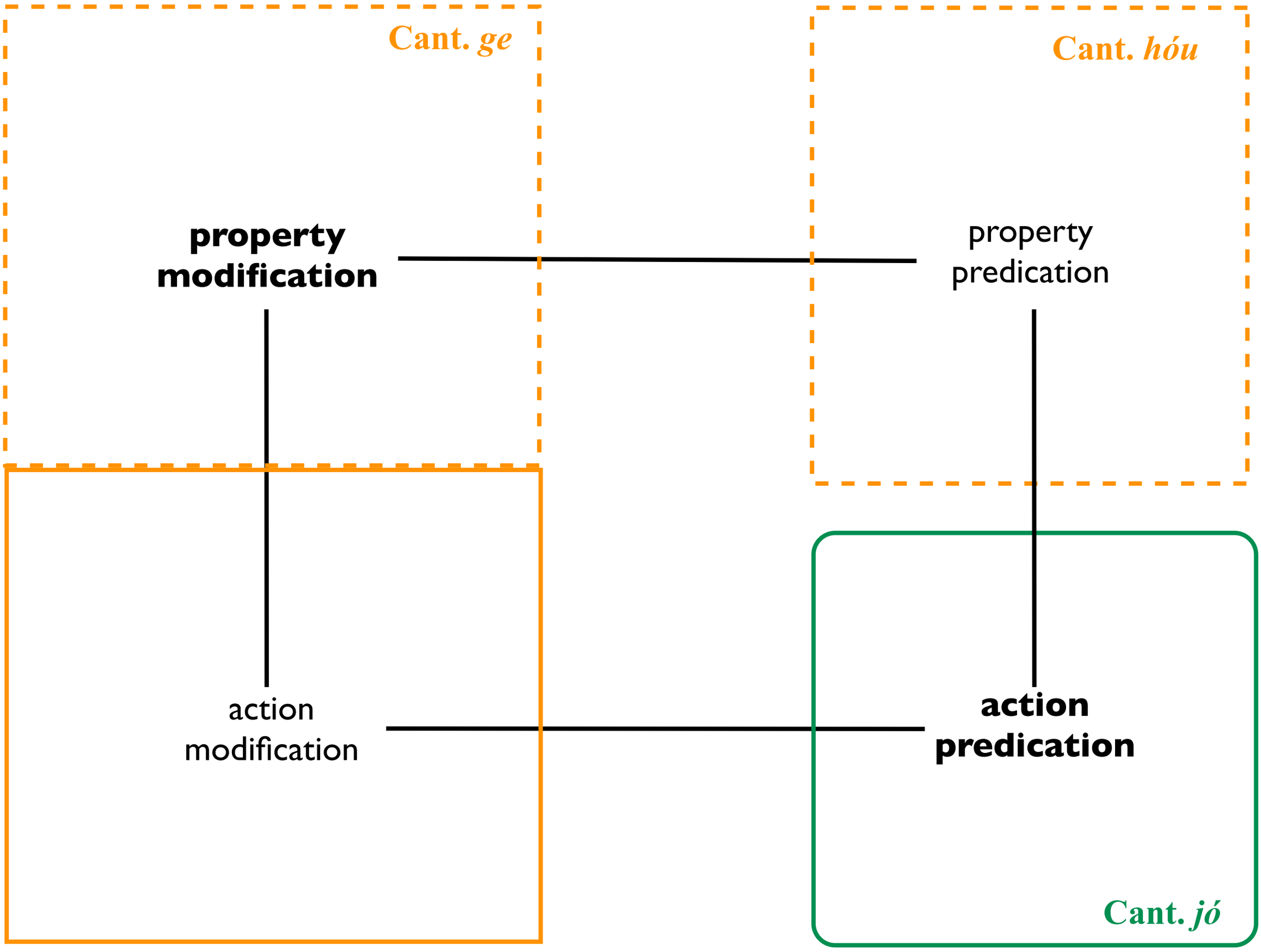
Lango parts-of-speech distribution



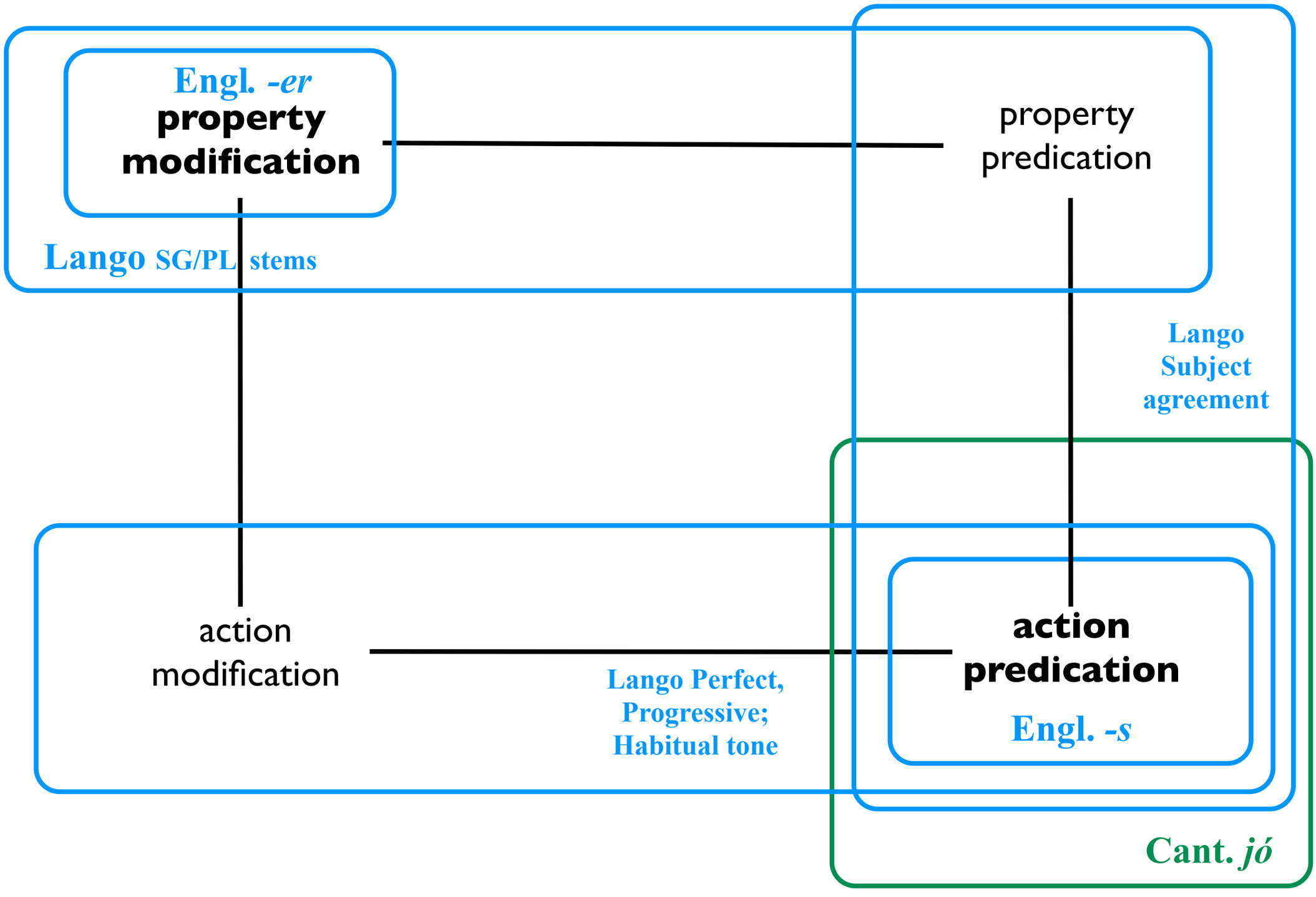
Cantonese parts-of-speech constructions

	modification	*predication*
property	baahk maht ‘white socks’ hóu baahk ge maht ‘very white socks’	Léih go jái hóu gōu ‘Your son is tall.’
action	ngóh chéng sihk-faahn ge pàhngyáuh ‘friends that I invite for dinner’	Ngóh ló-jó chín ‘I got some money.’ yìhgā jauh cháuyéung-jó ‘but she’s become ugly now.’

Cantonese parts-of-speech distribution

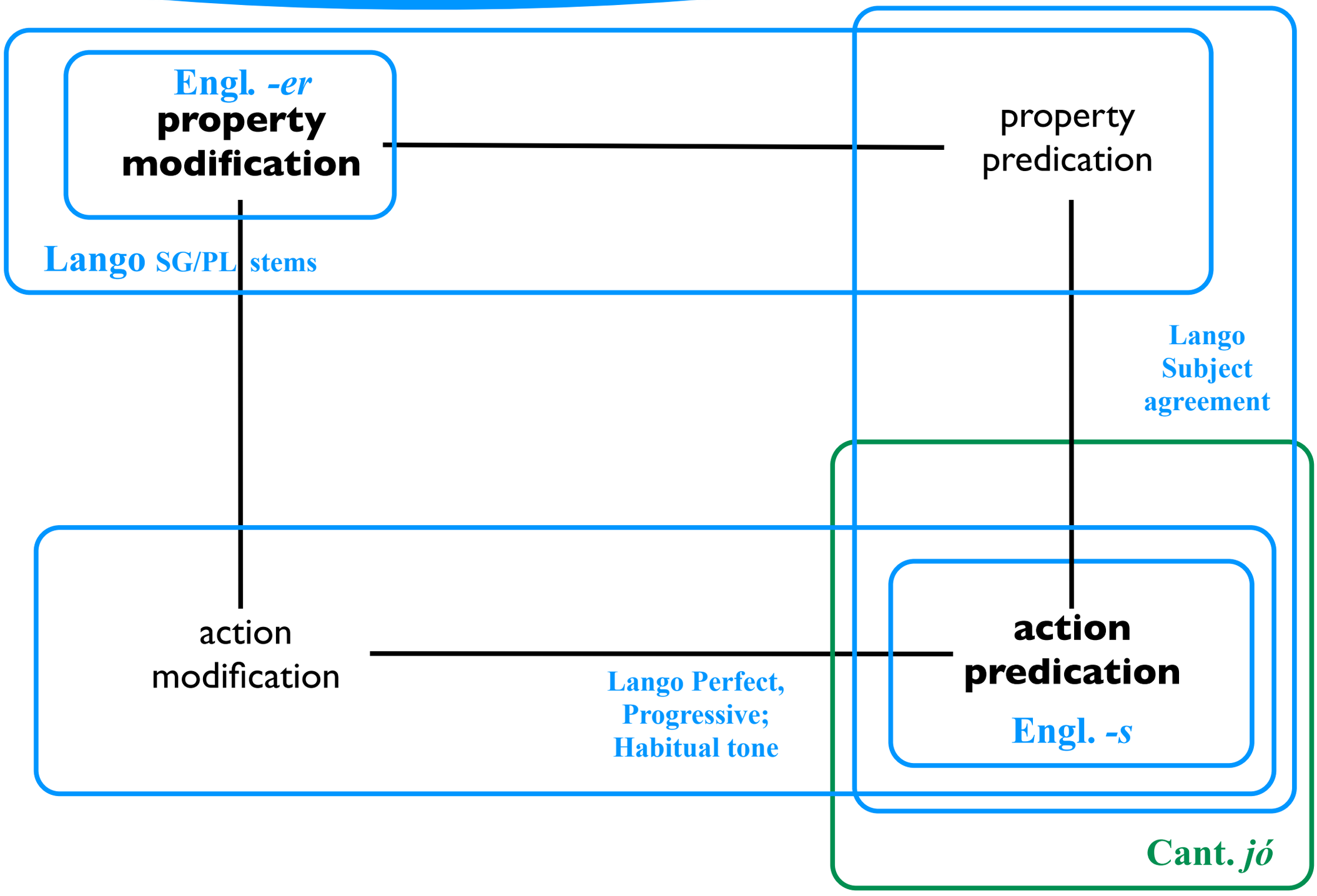


Parts of speech: cross-linguistic behavior

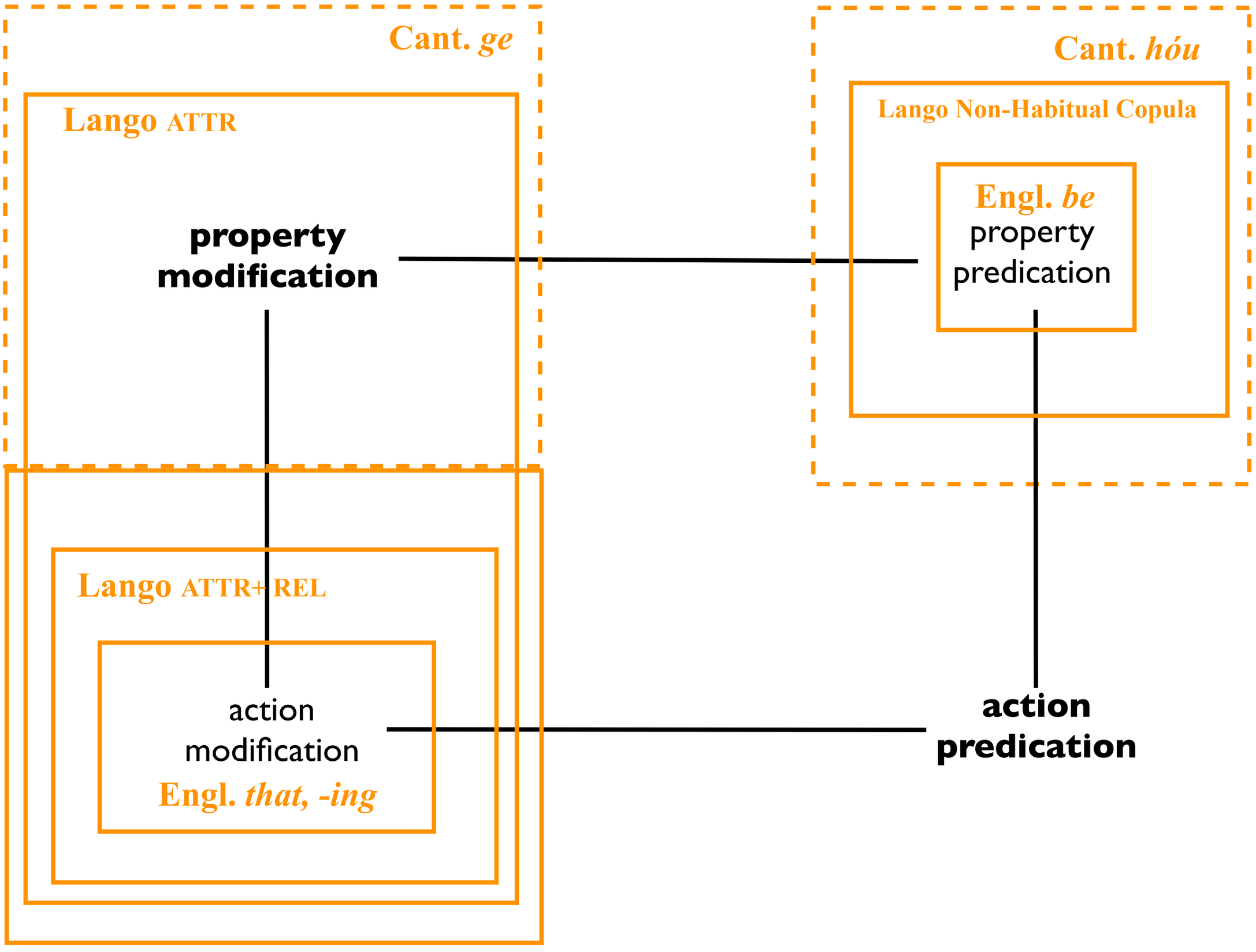


Parts of speech: cross-linguistic behavior

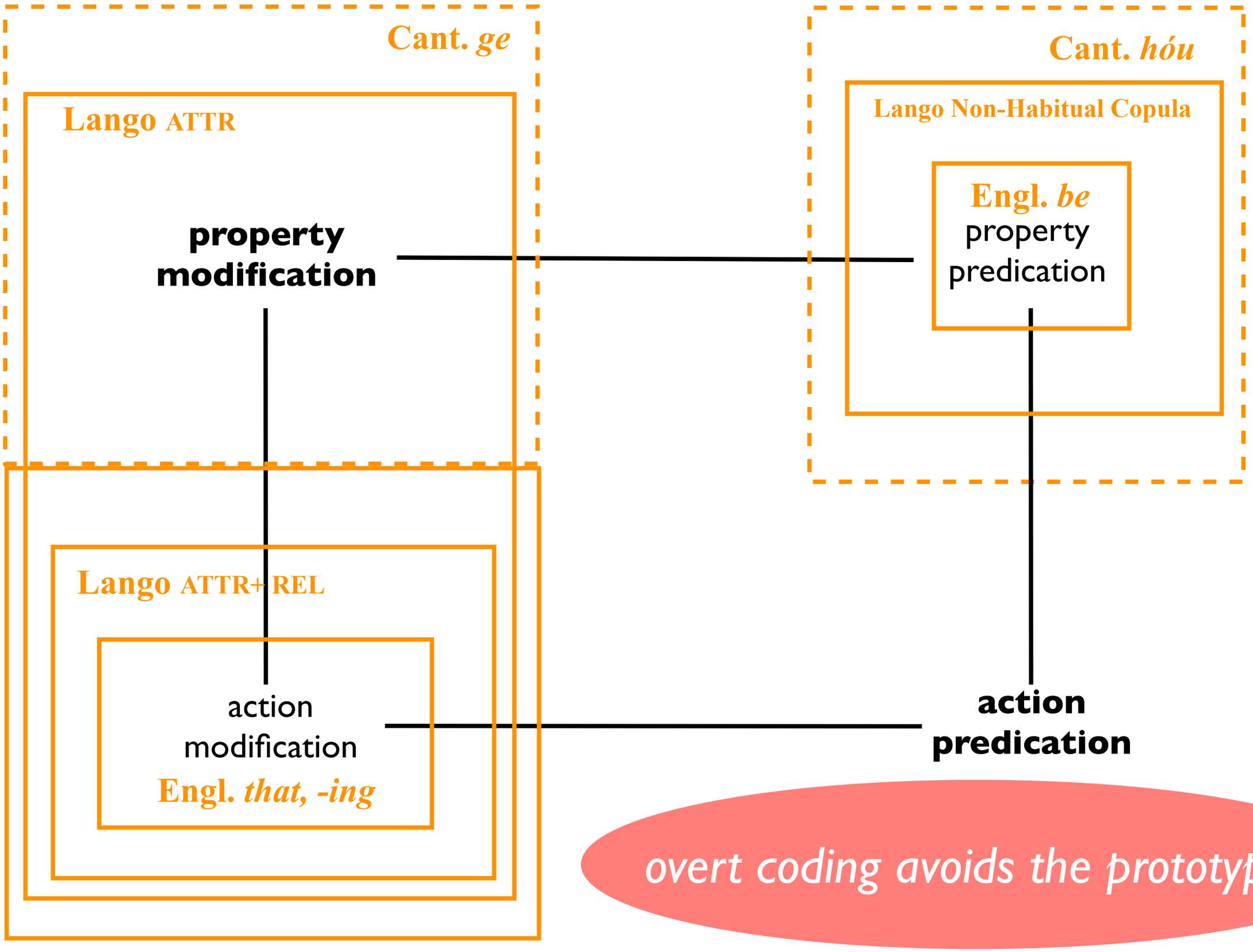
inflection is centered on the prototypes



Parts of speech: cross-linguistic structure



Parts of speech: cross-linguistic structure



Distributional variation within and across languages

Grammatical variation within a language and grammatical variation across languages are governed by the same universal structures and principles (Croft 2001:107)

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Grammatical variation within a language and grammatical variation across languages are governed by the same universal structures and principles (Croft 2001:107)

- This principle applies to distributional variation
- But it also applies to other language-internal variation, as will be seen (after a brief but important digression)

Fundamentals of construal: how semantics, information packaging and morphosyntactic form interact

Three principles of construal

1. **Any concept can be construed/ packaged in just about any way**

Principle #1, illustrated

INFORMATION PACKAGING

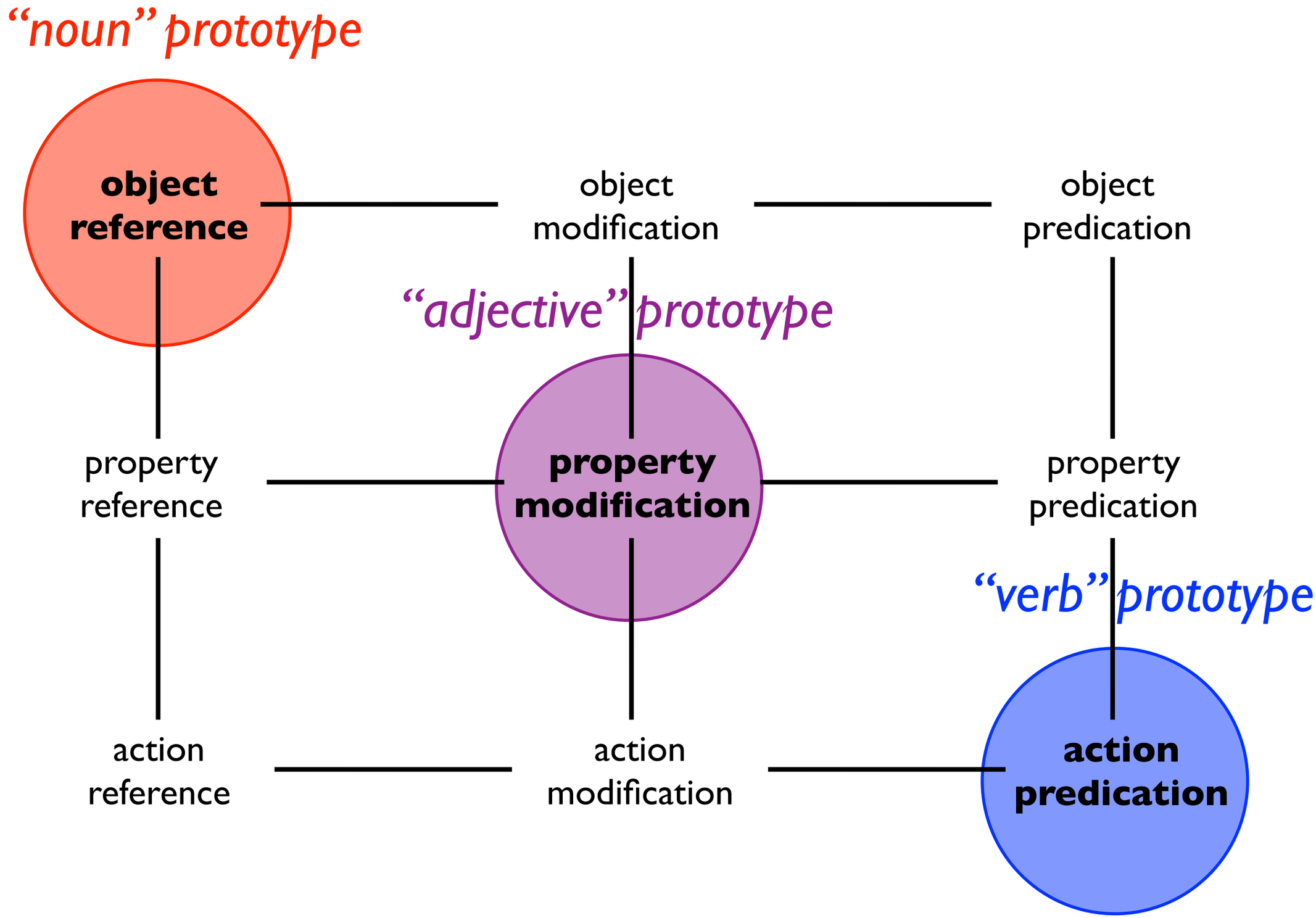
SEMANTIC CATEGORIES	*reference*	*modification*	*predication*
object	*the sharp* ***thorns***	*the* ***thorn's*** *tip*	*It's* ***a thorn****.*
property	***sharpness***	*the* ***sharp*** *thorns*	*Those thorns* ***are sharp.***
action	*(I said)* ***that*** *the thorns* ***scratched*** *me* *the* ***scratching*** *of the thorns*	*the thorns* ***that scratched*** *me* *the thorns* ***scratching*** *me*	*The sharp thorns* ***scratched*** *me.*

Three principles of construal

1. Any concept can be construed/packaged in just about any way

2. **The nature of reality leads some ways of construing concepts to be more common than others**

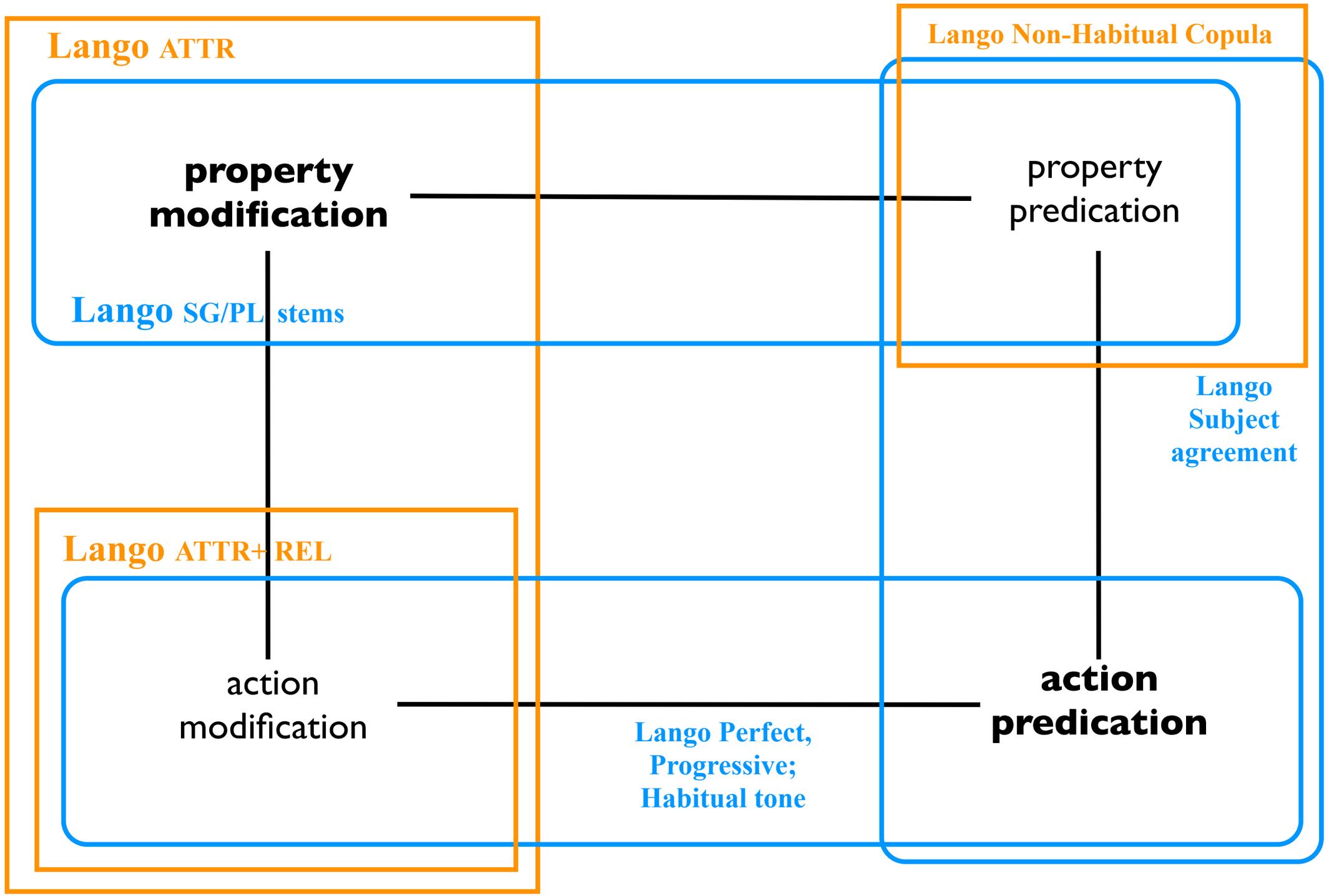
Principle #2, illustrated



Three principles of construal

1. Any concept can be construed/packaged in just about any way
2. The nature of reality leads some ways of construing concepts to be more common than others
3. **Construals are constrained by conventions of the speech community**

Principle #3, illustrated



Why is there often a mismatch between form and function?

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- Speakers tend to be very creative about the functions to which they put utterances (*see Principle #1*)

Why is there often a mismatch between form and function?

- Speakers tend to be very creative about the functions to which they put utterances (*see Principle #1*)
- But speakers tend to be quite conservative about the forms they employ for those functions (*see Principle #3*)

A verbalization perspective on grammar within and across languages

Another type of language-internal variation

- Most linguistic analysis starts from form and looks at meaning (e.g. semantic interpretation, polysemy)
- But one can also start from meaning and look at what grammatical forms (words and constructions) are used to verbalize it
- *Verbalization = information packaging = construal*
- Verbalization can be examined experimentally:
  - ✦ the Pear film (Chafe 1980)
  - ✦ the Frog story (Berman and Slobin 1984)
  - ✦ the Bowerman-Pederson spatial picture set (Levinson et al. 2003)

The Pear film (Chafe 1980)

- The film was designed to investigate interesting questions in the verbalization of experience
- The film was shown to English-speaking UC Berkeley undergraduates, who were asked to describe it afterwards to an experimenter
- The experimental design maximizes similarity of the communicative situation for the speaker

Verbalization of Scene D5

1,75 [.45] he when he turns around his hat flies off.

2,65 [1.05 [.55] and uh] it turns out she [.7] from what I could understand she grabbed his hat.

3,20 [.9 [.7] uh] he loses his hat,

6,33 [.6] and his hat flies off,

7,49 {cross}=and she knocks the hat that he's wearing off on the ground,

8,28 [.7 [.1] a--nd] his hat falls off,

10,93 [.5] and apparently he [.9] I think by the breeze,
10,94 . . his hat sort of gets [.7] blown off his head=

11,66 [.5 . . And [.3]] his hat blows off,
11,67 [.55] when they cross,

Verbalization of Scene D5

12,108 [.8] also,
12,109 . . before he fell over,
12,110 [.2] his hat blew off.
12,111 [.25] While he was still looking at the girl.

13,57 and she brushes off this little hat that he has on,
13,58 [.7] and so his hat . . comes o--ff,

14,70 . . lost his hat,

15,62 [.8] and he checks [.3] and his hat flies off also.

17,99 [.35] The little boy {creaky sound} . . that was on the bike,
17,100 had been wearing a hat.
17,101 [1.3 [.55] A--nd [.3]] in the [.55] i--n passing the little girl,
17,102 it had . . fallen off.

18,34 so that his [.6] his hat flies off.

19,57 his hat comes off,

20,25 [.35+ and [.35]] somehow she took his hat.
20,26 . . Not on purpose but [.8] it came off.

The ubiquity of variation in the form-meaning mapping

- Every verbalization of every scene is unique in the entire corpus
- Even when the verbalizations are broken down into their component parts (lexical categories, argument structure, etc.), variation is pervasive
- But the variation is constrained in ways familiar to typologists

Second mention of referents

- How referents are verbalized after they are introduced in discourse
- Two types of verbalizations: possessive pronoun; definite article

1,16 and he [.3] dumps all his pears into the basket,

6,10 and dumps the pears into a basket.

Frequency of verbalization in second-mention reference

	Definite	*Possessive*	*Other*	*Total*
tree (13 scenes)	44	1	0	*45*
goat (2 scenes)	9	1	1	*11*
ladder (5 scenes)	21	3	0	*24*
pears (6 scenes)	43	13	14	*70*
bicycle (2 scenes)	8	20	0	*28*
hat (2 scenes)	12	23	2	*37*
apron (2 scenes)	0	4	0	*4*

Frequency of verbalization in second-mention reference

Referents more animate, less likely to be possessed

	Definite	*Possessive*	*Other*	*Total*
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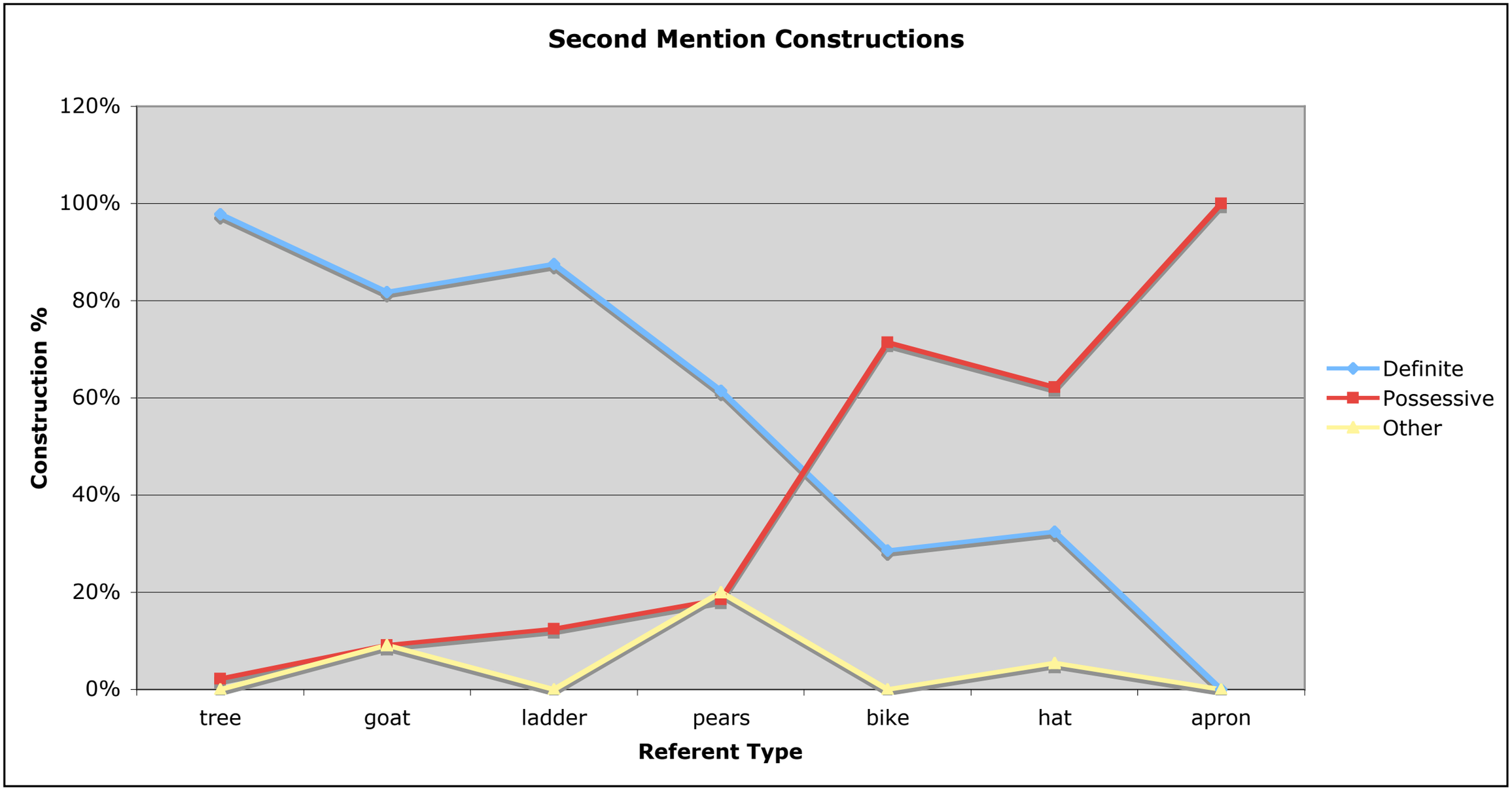
Referents less animate, more likely to be possessed

Other semantic subtleties

- The ladder is less likely to be owned by the pearpicker, hence less likely to take the possessive pronoun
- The bicycle is more likely to be owned by the cyclist, hence more likely to take the possessive pronoun

Frequency distribution of verbalizations (constructions)



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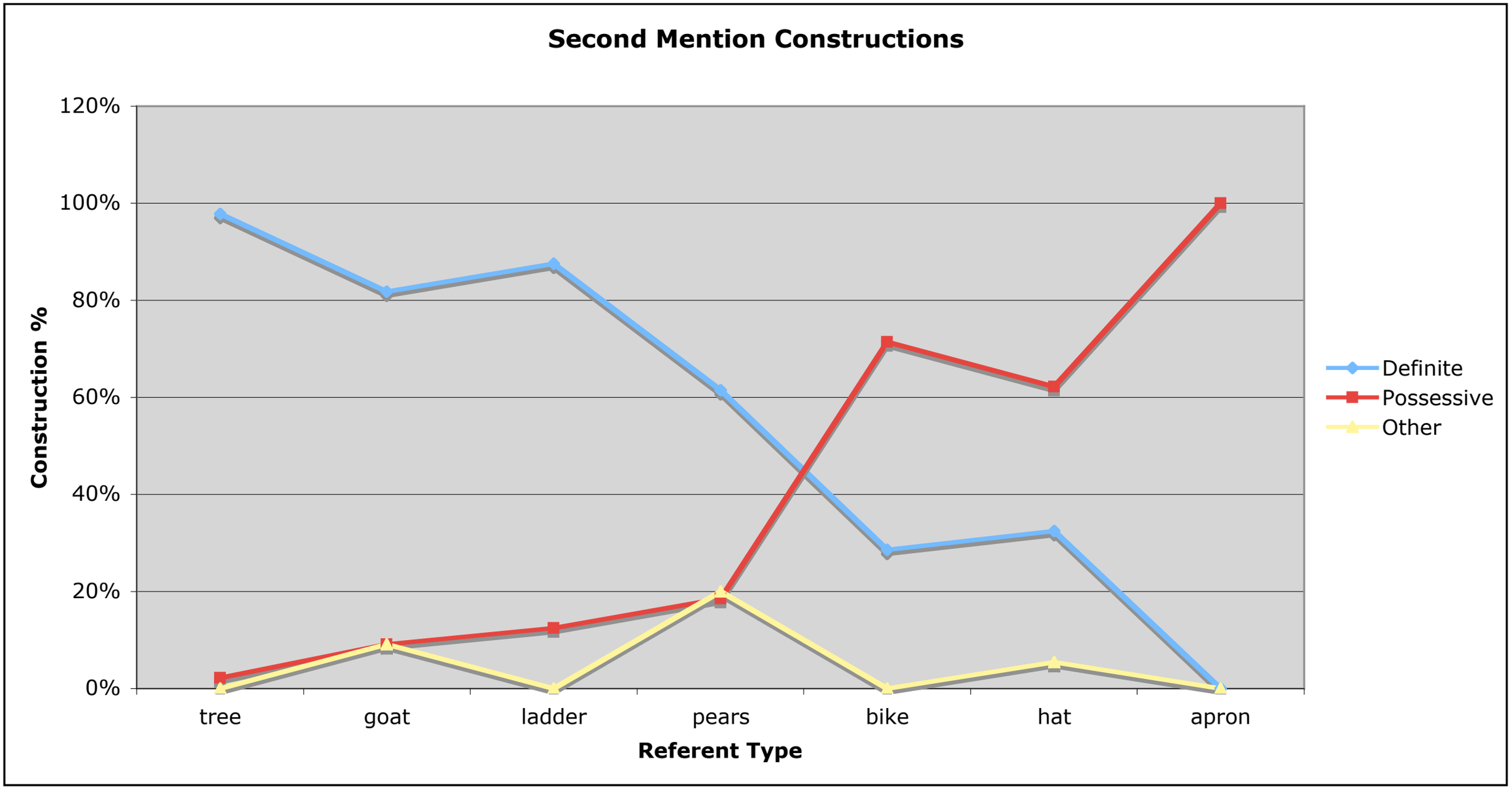

Horizontal axis is a one-dimensional conceptual space

Typology: possessives and associative anaphora

Yucatec Maya

(Fraurud 2001:253, from Lehmann 1998/2002:90)

['Now you have found four pillars; you bring them. When this is ready,']

k-a kaxt-k u báaloh-il

IMPV-2SBJ search POSS.3SG cross_beam-REL

'you search the cross-beams…'

Udmurt, Malmyzh-Urzhum dialect

(Fraurud 2001:256, text from Wichmann 1901)

so peres' kyshno so nyl min'ts'o estyny kosem. nyl-yz...

that old woman that girl sauna to_heat ordered girl-POSS.3SG

'The old woman ordered the girl to heat the sauna. The girl…'

Unintended human actions

- Events with a human participant who does not intentionally bring about the action
- Three variants: Subject = human participant; Subject = other participant; Impersonal (existential)

2,67 and then he . . crashes into a rock.

11,68 [1.2 [.25] and [.65]] his bike hits into a rock,

7,53 [.25] and the pears all [.45] spill on the ground,

3,21 a--nd . . there's a stone in the way,
3,22 so his bicycle falls over,

Frequency of verbalization in unintended human events

	Und-Sbj	*Oth-Sbj*	*Exist*	*Other*	*Total*
D8. Cyclist falls/ bike falls	15	2	0	2	*19*
D7. Cyclist hits rock/ bike hits rock	14	5	3	0	*22*
A4. Picker drops pears/ pears drop	1	2	0	0	*3*
D5. Cyclist loses hat/ hat flies off	2	11	0	0	*13*
G4. He's missing a basket/basket is missing	2	12	5	0	*19*
D9. Cyclist spills pears/ pears spill	2	17	0	1	*20*

Frequency of verbalization in unintended human events

Events more likely to be under control of human participant

	Und-Sbj	*Oth-Sbj*	*Exist*	*Other*	*Total*
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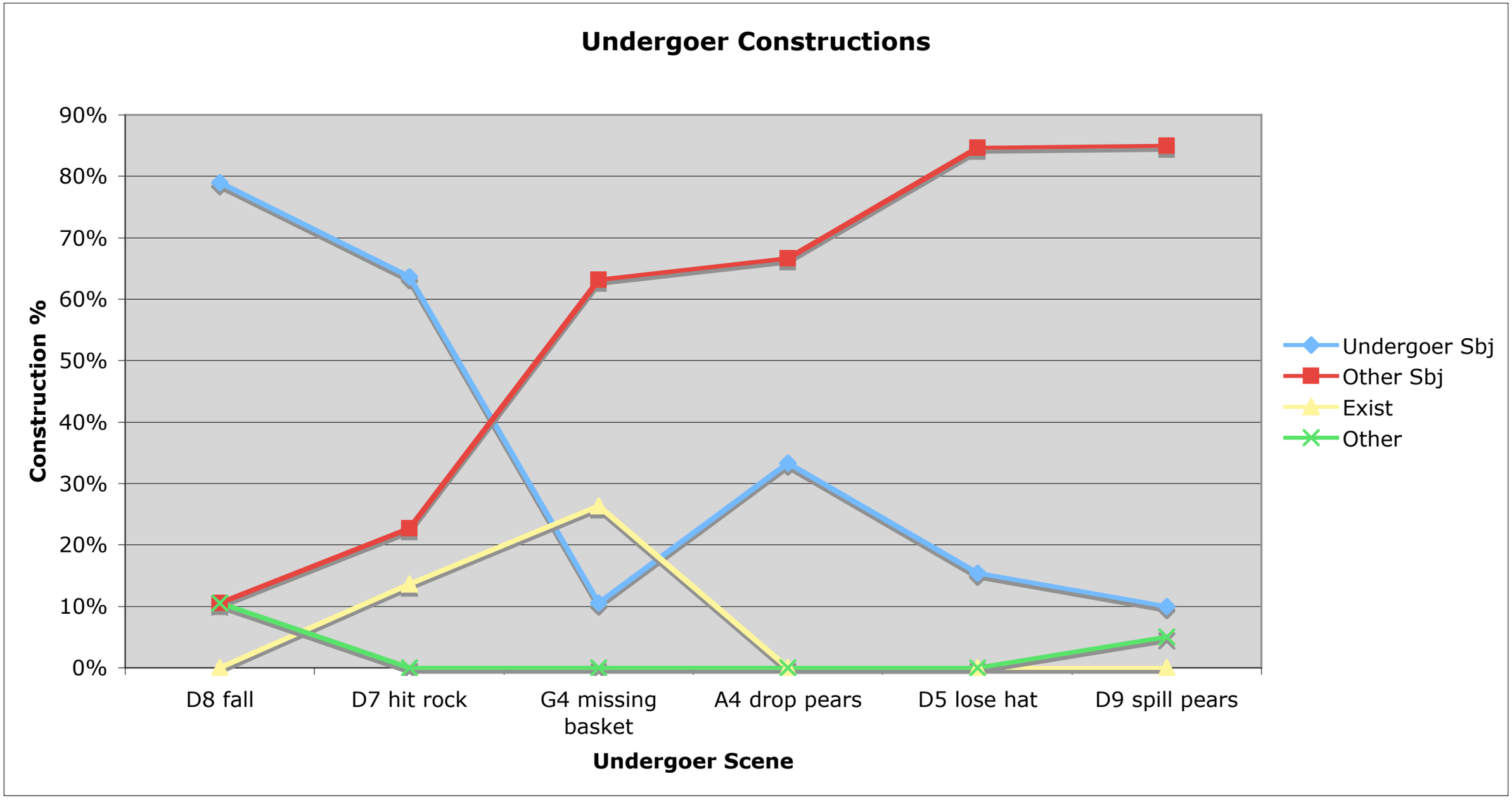

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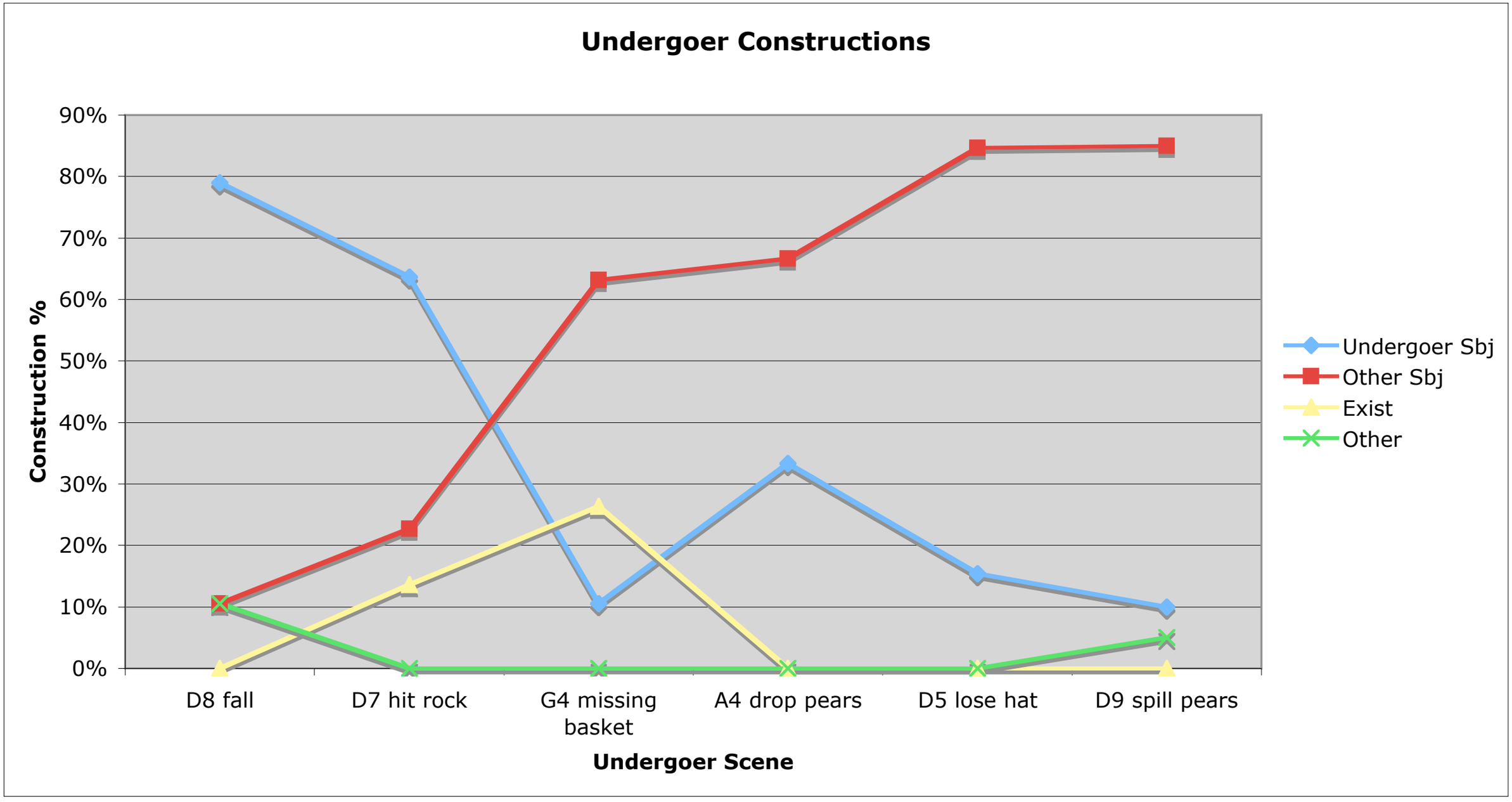


Horizontal axis is a one-dimensional conceptual space

Typology: undergoer/ experiencer coding

Caddo
(Mithun 1991:525-26, from Sadie Bedoka Weller)

ku:wida:kuhnah. ‘He grabbed me.’

kudawʔnah. ‘I ran into (a tree).’

Yoruba
(Rowlands 1969:127)

ẹ̀rù´ bà mí
fear fall_on me
‘I felt afraid.’

German
(Verhoeven 2007:72)

Es fröstelt mich.
it shivers me
‘I shiver.’

A new view of grammar

- The mapping between form and meaning is a probability distribution of forms used to verbalize particular situation types in the conceptual space

- The probability distributions overlap and their mode defines the prototype meaning for the form *(assuming a unimodal distribution, which may not be the case)*

- The probability distributions are inferred from verbalization frequencies in language use, by the speaker as well as the linguist

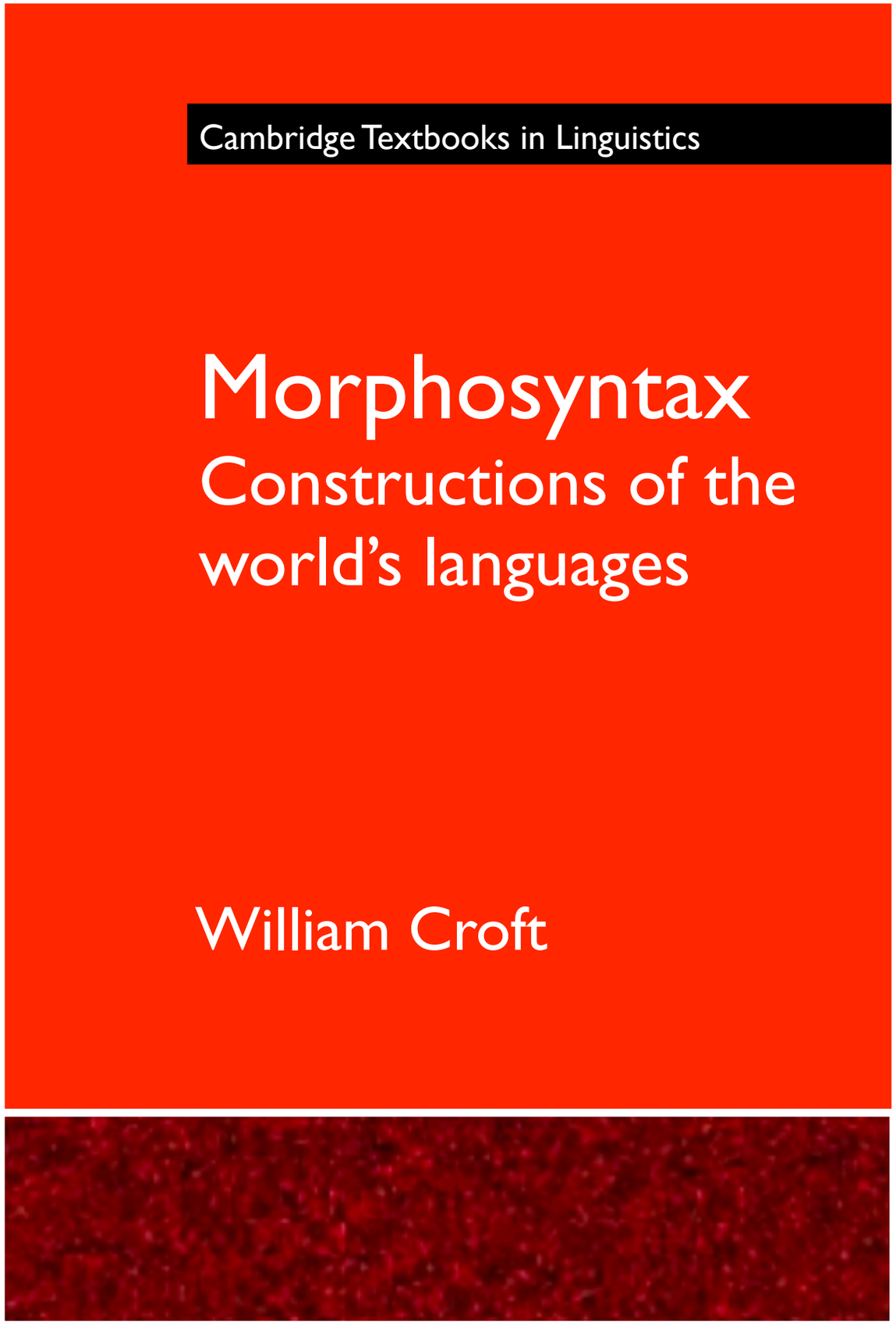
Conclusion: the unity of analyzing single languages and language typology

How typology helps to analyze a single language

- Distributional variation in a single language, and variation in verbalization in a single language, are basically the same as cross-linguistic patterns of variation
- Cross-linguistic variation and variation in a single language are manifestations of ***the same explanatory factors*** (control, alienability, the Animacy Hierarchy, semantics and information packaging, etc.)

How typology helps to analyze a single language

- Typology is the fastest and most effective way to capture universals of language structure and variation, within as well as across languages
- And typology combined with single language analysis can help explain, to the extent that we can, ***why*** the structure of a language—any language—is the way that it is



(To appear in 2022…)