

# Parts-of-speech systems

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# Introduction

Flexible and rigid parts-of-speech systems.

A **fast** car runs **fast**.

# Introduction: Tongan

- 1) Na'e *si'i* 'ae akó.  
PST small ABS school.DEF  
'The school was small.'
- 2) 'i 'ene *si'í*  
in POSS.3.SG small.DEF  
'in his childhood'
- 3) Na'e ako 'ae tamasi'i *si'i* iate au.  
PST study ABS child small LOC 1.SG  
'The small child studied in my house.'
- 4) Na'e ako *si'i* 'ae tamasi'í.  
PST study small ABS child.DEF  
'The child studied little.'

# Introduction

- Central question: To what extent are the morphosyntactic properties of a language determined by its parts-of-speech system?
- Hypothesis: The more flexible a parts-of-speech system is, the more rigid are its syntax and morphology.

# Contents

1. The organization of parts-of-speech systems
2. Predictions concerning morphosyntactic properties in relation with parts-of-speech systems, in four groups:
  - 2.1. The identifiability of constituents
  - 2.2. The formal integrity of lexemes
  - 2.3. The semantic and morphological unity of lexeme classes
  - 2.4. The pervasiveness within the system
3. Conclusions

# The organization of parts-of- speech systems

# Earlier approaches: pragmatics

## *Tonga*

- 1) Na'e kata ('a) e tangatá  
PST laugh ABS ART man.DEF  
'The man laughed.'
- 2) 'Oku tangata  
PRES man  
'He is a man.'

# Earlier approaches: semantics

## *Latín*

- 1) Nix                      *cand-et.*  
snow.NOM.SG    white-PRES.3.SG  
`The snow is white.'
- 2) Nivis                  *cand-or.*  
snow.GEN.SG    white-NR  
`the whiteness of the snow'
- 3) Nix                      *cand-ida.*  
snow.NOM.SG    white-ADJR.NOM.SG  
`the white snow'

# Earlier approaches: morphology

## *Dutch*

1) Ik ben *erg* ziek.

I COP.PRES.1.SG very ill

'I am very ill.'

2) Ik schrok *erg*.

I yo asustarse.PST.SG muy

'Something startled me very much.'

3) \*Hij is *erg* sterfelijk.

he COP.PRES.3.SG very mortal

'He is very mortal.'

# The functional approach

- Functional definition: the distribution of lexemes across syntactic slots
- Relevant slots: head (H) and modifier (M) of predicate phrase (PredPhr), head and modifier of referential phrase (RefPhr)

# The functional approach

- Referential Phrases (RefPhr) and Predicate Phrases (PrPhr)
- Heads and Modifiers

	<i>Head</i>	<i>Modifier</i>
<i>Predicate Phrase</i>	V	Adv
<i>Referential Phrase</i>	N	A

# The functional approach

The old man sings well

	<i>Head</i>	<i>Modifier</i>
<i>Predicate Phrase</i>	sings	well
<i>Referential Phrase</i>	man	old

# The functional approach

Definitions for four categories of predicates:

- A *verb* (V) is a lexeme that can be used as the head of a predicate phrase only;
- A noun (N) is a lexeme that can be used as the head of a referential phrase
- An adjective (A) is a lexeme that can be used as a modifier within a referential phrase;
- A manner adverb (MAdv) is a lexeme that can be used as a modifier within a predicate phrase.

# The functional approach

Definitions for four categories of predicates:

- A *verb* (V) is a lexeme that can be used as the head of a predicate phrase **only**;
- A noun (N) is a lexeme that can be used as the head of a referential phrase **∅**;
- An adjective (A) is a lexeme that can be used as a modifier within a referential phrase **∅**;
- A manner adverb (MAdv) is a lexeme that can be used as a modifier within a predicate phrase **∅**.

# The functional approach

## Predicative use

1) John *sings*.

2) John is *chairman*.

3) John is *old*.

4) John is *well*.

## Non-predicative use

—

The *chairman* sings.

The *old* chairman sings.

The old chairman sings *well*.

# The functional approach

## Predicative use

- 1) John *sings*.
- 2) John is *chairman*.
- 3) John is *old*.
- 4) John is *well*.

## Non-predicative use

—

The *chairman* sings.

The *old* chairman sings.

The old chairman sings *well*.

# The functional approach: lexemes versus compositional units

- 1) the *old* carpenter.
- 2) the carpenter *who is singing*
- 3) the carpenter *from London*

# A differentiated system

The little<sub>A</sub> girl<sub>N</sub> sings<sub>V</sub> well<sub>MAdv</sub>

In languages with a differentiated parts-of-speech system the nature of the lexeme helps to identify the syntactic slot it occupies: Head and Modifier of Predicate Phrase, Head and Modifier of Referential Phrase.

# Differentiated systems

	Head	Modifier
Predicate Phrase	Verb	Adverb
Referential Phrase	Noun	Adjective

# Differentiated systems

	Head	Modifier
Predicate Phrase	sing	well
Referential Phrase	girl	little

# Flexible and rigid systems

- In many languages there are less parts of speech than there are syntactic slots. This may be due to two reasons:
  - functions are shared by a single part of speech ('Flexible languages')
  - one or more parts of speech are lacking ('Rigid languages')

# The organization of PoS-systems

- Functional definition: the distribution of lexemes across syntactic slots
- Relevant slots: head (H) and modifier (M) of predicate phrase (PredPhr), head and modifier of referential phrase (RefPhr)

# A differentiated system

The little<sub>A</sub> girl<sub>N</sub> sings<sub>V</sub> well<sub>MAdv</sub>

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Predicate Phrase	Verb	Adverb
Referential Phrase	Noun	Adjective

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# Flexibility: Warao

a yak-era

beauty-AUGM

'much beauty'

b hiaka yak-era

garment beauty-AUGM

'a beautiful dress'

c Oko yak-era nahoro-te.

we goodness-AUGM eat-NPAST

'We eat well.'

# Rigidity: Garo

- a1 **Da'r**-aŋ-gen.      a2      **da'r**-gipa man.de  
big-IT-FUT                      big-REL    man  
'It will get big.'                      'the big man'
- b1 **Ca'**-gen-ma.      b2      **ca'**-gipa    man.de  
eat-FUT-INT                      eat-REL    man  
'Will you eat?'                      'the man who eats'
- c    **Rak**-e                      dok-aha.  
strong-SUB    hit-PAST  
'He hit hard.'

# Flexibility: Warao

	Head	Modifier
Predicate Phrase	Verb	Non-Verb
Referential Phrase		

# Rigidity: Garo

	Head	Modifier
Predicate Phrase	Verb	—
Referential Phrase	Noun	—

# Differentiated, flexible, and rigid systems: Adjectives

V	S/A		Warao
V	S	A	English
V	S	—	Garo

# Flexible systems: Dutch

1)a. een *geweldig* kind  
INDEF marvellous child  
'a marvellous child'

b. Het kind dans-t *geweldig*.  
DEF child dance-PRES.3.SG marvellously  
'The child dances marvellously.'

# Rigid systems: Wambon

- 1) Jakhov-e    *matet-mo*    ka-lembo?  
they-CONN good-VR.SS    go-PST.3.PL  
`Did they travel well?`

# Flexibility: Dutch

	Head	Modifier
Predicate Phrase	Verb	Modifier
Referential Phrase	Noun	

# Rigidity: Wambon

	Head	Modifier
Predicate Phrase	Verb	—
Referential Phrase	Noun	Adjective

# Differentiated, flexible, and rigid systems: Adverbs

V	S	Adj/Adv		Dutch
V	S	A	Adv	English
V	S	A	—	Wambon

# Flexible systems: Tongan

- 1) Na'e *si'i* 'ae akó.  
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'The school was small.'
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'The child studied little.'

# Rigid systems: Tuscarora

1) ra-kwá:tihs

M.SUBJ-be.young

`boy' ("He is young.")

2) ka-téskr-ahs

N.SUBJ-stink-IMPF

`goat' ("It stinks.")

3) Ra-kwá:tihs wa-hr-∅-atkáhto-?

M.SUBJ-young PST-M.SUBJ-OBJ-look.at-PNCT

ka-téskr-ahs.

N.SUBJ-stink-IMPF

`The boy looked at the goat.' ("He is young, he looks at it, it stinks.")

# Rigid systems: Tuscarora

4) tá:ko:θ k-he?

cat N.SUBJ-be.dead

`the dead cat' ("It is a cat, it is dead.")

5) Yo-hstò:re? wa-hr-o-hò:rvh-?.

N.SUBJ.OBJ-quick.PF PST-M.SUBJ-OBJ-grow-PNCT

`It grew quickly.' ("It was quick, it grew.")

# Flexibility: Tongan

	Head	Modifier
Predicate Phrase	Contentive	
Referential Phrase		

# Rigidity: Tuscarora

	Head	Modifier
Predicate Phrase	Verb	—
Referential Phrase	—	—

# Differentiated, flexible, and rigid systems: Nouns

V/S/Adj/Adv				Tongan
V	S	A	Adv	English
V	—	—	—	Tuscarora

# Parts-of-speech systems

1	Flexible	V/S/A/Adv				Tongan
2		V	S/A/Adv			Warao
3		V	S	A/Adv		Dutch
4	Differentiated	V	S	A	Adv	English
5	Rigid	V	S	A	—	Wambon
6		V	S	—	—	Garo
7		V	—	—	—	Tuscarora

# Parts-of-speech systems

1	Flexible	Contentive				Tongan
2		V	Non-verb			Warao
3		V	S	Modifier		Dutch
4	Differentiated	V	S	A	Adv	English
5	Rigid	V	S	A	—	Wambon
6		V	S	—	—	Garo
7		V	—	—	—	Tuscarora

# The Parts-of-Speech Hierarchy

Head of  $\subset$  Head of  $\subset$  Modifier  $\subset$  Modifier  
PredPhr RefPhr of RefPhr of PredPhr

The more to the right a function is on the hierarchy, the less likely it is that there is a separate part of speech for that function

# The Parts-of-Speech Hierarchy

Head of  $\subset$  Head of  $\subset$  Modifier  $\subset$  Modifier  
PredPhr RefPhr of RefPhr of PredPhr

- If a language has a separate lexeme class for a function on this hierarchy, it will also have lexeme classes for the functions at the left of it.
- If a language does not have a separate lexeme class for a function on this hierarchy, it neither will have lexeme classes for the functions at the right of it.

Predictions

# Four groups of predictions

## **Identifiability**

The more specialized a lexical class is, i.e. the more it is tied to one functional slot, the less it is necessary to mark this slot and the phrase it forms part of syntactically or morphologically, i.e. there is a trade-off between lexical structure on the one hand and syntactic and morphological structure on the other. An example of a prediction that follows from this observation is that rigid languages may be expected to display more freedom of word order than flexible languages.

# Four groups of predictions

## **Integrity**

The formal integrity of a lexeme, i.e. its formal independence of morphological material specific to a certain function, increases its applicability in various functions. An example of a prediction that follows from this observation is that flexible lexemes may be expected not to show morphologically conditioned stem alternation.

# Four groups of predictions

## Unity

The phonological, morphological and semantic unity of a lexical class increases its applicability in various syntactic slots. An example of a prediction that follows from this observation is that intrinsic gender and conjugation classes may be expected not to occur in flexible languages.

# Four groups of predictions

## **Pervasiveness**

Flexibility and rigidity of lexical stems may be expected to correlate with functionality and rigidity of other morphological and syntactic units within the grammar and with functions not covered by the PoS-hierarchy. An example of a prediction that follows from this observation is that case-marked noun phrases or adpositional phrases may be expected.

# The identifiability of constituents

# Identifiability

In languages with a differentiated or rigid PoS-system, classes of lexemes are tied to a specific functional slot. This fact facilitates the processing of the phrases that are headed by these lexemes. In flexible languages this is not the case.

# Identifiability

For instance, in pseudo-English:

“laugh man”

Differentiated or rigid language: the predicate has to be *laugh*, as it is a verb:

‘The man laughs.’

Flexible language: any element may be the predicate:

‘The man laughs.’

‘The one who laughs is a man.’

# Identifiability

## *Turkish*

- 1) Yol uzun.  
road long  
'The road is long.'
- 2) uzun yol  
long road  
'the long road'

# Identifiability

Hypothesis: The more specialized a lexical class is, i.e. the more it is tied to one functional slot, the less it is necessary to mark this slot and the phrase it forms part of syntactically or morphologically:

1. Flexible languages may have predicate markers

# Identifiability

1. Flexible languages may have predicate markers.

*Mundari*

Dal-tan-a-ing

hit-PRES-PRED-1.SG

'I am hitting.'

# Identifiability

Hypothesis: The more specialized a lexical class is, i.e. the more it is tied to one functional slot, the less it is necessary to mark this slot and the phrase it forms part of syntactically or morphologically:

2. Flexible languages have the predicate in initial or final position in their basic constituent order.

# Identifiability

2. Flexible languages have the predicate in initial or final position in their basic constituent order.

*Quechua*

Juan chagra-ta trabaja-ju-n

Juan field-ACC work-PROGR-3

'Juan is working in the field.'

# Identifiability

2. Flexible languages have the predicate in initial or final position in their basic constituent order.

*Samoa*

`Ua o tamaiti i Apia

PERF go children LD Apia

'The children have gone to Apia'

# Identifiability

Hypothesis: The more specialized a lexical class is, i.e. the more it is tied to one functional slot, the less it is necessary to mark this slot and the phrase it forms part of syntactically or morphologically:

3. Flexible languages do not permit variation in the order of Subject and Predicate, unless the problem of identifying the constituents of the clause is solved by segmental means.

# Identifiability

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## *Samoan*

1)      `Ua      o      tamaiti      i      Apia  
         PERF   go      child      LD      Apia

'The children have gone to Apia.'

2)      `O      le      maile      sa      fasi      e      le      teine  
         PRES   ART   dog      PST   hit      ERG   ART   girl

'The dog was hit by the girl.'

# Identifiability

3. Flexible languages do not permit variation in the order of Subject and Predicate, unless the problem of identifying the constituents of the clause is solved by segmental means.

## *Quechua*

1) Juan chagra-ta trabaja-ju-n  
Juan field work-PROGR-3

'Juan is working in the field.'

(47) Jatun wasi-ta chari-n Marya-ka/\*Marya  
big house-ACC have-3 María-TOP/Maria

'Maria has a big house.'

# Identifiability

Hypothesis: The more specialized a lexical class is, i.e. the more it is tied to one functional slot, the less it is necessary to mark this slot and the phrase it forms part of syntactically or morphologically:

4. In flexible languages, the order of head and modifier within phrases is fixed.

# Identifiability

4. In flexible languages, the order of head and modifier within phrases is fixed.

The (car fast) (runs fast).

The (car [fast] runs).

# Identifiability

Hypothesis: The more specialized a lexical class is, i.e. the more it is tied to one functional slot, the less it is necessary to mark this slot and the phrase it forms part of syntactically or morphologically:

5. Flexible languages do not allow variation in the order of heads and modifiers within phrases, unless the problem of identifying the constituents of the phrase is solved by segmental means.



# Identifiability: summary

	1	2	3	4	5	6	7
Predicate in initial or final position	Yes		Yes/No				
Fixed order of head and modifier	Yes			Yes/No			

The formal integrity of lexemes

# Integrity

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Hypothesis: The formal integrity of a lexeme, i.e. its formal independence of morphological material specific to a certain function, increases its applicability in various functions.

1. Flexible Languages will not exhibit fusional morphology that affects the lexical stem (i.e. stem alternation).

# Integrity

*Kisi*

1)	a	hûŋ	b	hûŋ	lé
		venir.HORT		venir.HORT	NEG
2)	a	baa	b	bee	
		colgar.HORT		colgar.HORT.NEG	

This type of alternation one would not expect in a flexible language.

# Integrity

The prediction outlined above amounts to saying that flexible stems will exhibit agglutinative or isolating morphology, and never fusional morphology. Since the degrees of flexibility vary from one flexible system to another, the exact predictions vary according to type of PoS-system:

# Integrity

- In languages of type 1 morphologically conditioned stem alternation will not occur with lexemes that may be used as heads of predicate phrases.
- In languages of types 1-2 morphologically conditioned stem alternation will not occur with lexemes that may be used as heads of referential phrases;
- In languages of type 1-3 morphologically conditioned stem alternation will not occur with lexemes that may be used as modifiers within referential phrases.
- (In languages of type 1-3 morphologically conditioned stem alternation will not occur with lexemes that may be used as modifiers within predicate phrases.)

# Integrity - prediction

PoS	head of pred. phrase	head of ref. phrase	modifier of ref. phrase
1			
1/2-2			SA disallowed
2/3-3			
3/4-4			
4/5-5			
5/6			
6			SA irrelevant
6/7			
7			

# Integrity - results

PoS	Head of PredPhr	Head of RefPhr	Modifier of RefPhr
1			
1/2-2			SA disallowed
2/3-3			
3/4-4			
4/5-5		SA allowed	
5/6			SA not attested
6			
6/7		SA not attested	SA irrelevant
7			

# Integrity: summary

These predictions are confirmed in a 30-language sample.

	1	2	3	4	5	6	7
Fusion – Head of Predicate Phrase	Y	Y/N					
Fusion – Head of Referential Phrase	Y	Y/N					
Fusion – Modifier Referential Phrase	Y	Y/N					

Unity

# Unity

The phonological, morphological and semantic unity of a lexical class increases its applicability in various syntactic slots. An example of a prediction that follows from this observation is that intrinsic gender and conjugation classes may be expected not to occur in flexible languages.

# Unity

Hypothesis: flexible languages do not have morphologically or semantically based subclasses.

1. Flexible languages do not have morphological subclasses (declension and conjugation classes).

# Unity

1. Flexible languages do not have morphological subclasses (declension and conjugation classes).

1.a Languages of type 1 do not have conjugation subclasses.

1.b Languages of types 1-2 do not have declension classes.

These predictions are confirmed in a sample of 40 languages.

# Unity

Hypothesis: flexible languages do not have morphologically or semantically based subclasses.

1. Flexible Languages do not have semantic subclasses.

# Conjugation classes - results

	Intrinsic conjugation classes	no intrinsic conjugation classes
PoS-system 1-2	- (0)	+ (6, e.g. Warao)
PoS-system 3-7	+ (18, e.g. Hittite)	+ (20, e.g. Basque)

# Declination classes - results

	Intrinsic declination classes	no intrinsic declination classes
PoS-system 1-3	- (0)	+ (10, e.g. Hurrian)
PoS-system 4-7	+ (13, e.g. Alambalak)	+ (24, e.g. Garo)

# Unity

1a. Flexible Languages of type 1 do not have semantic subclasses: transitivity

## *Mundari*

1) Dub-aka-**n**-a-eʔ.

sit-ASP-INTR-PRED-3.SG.SUBJ

‘He continues sitting.’

2) Hon dub-aka-**d**-i-a-eʔ.

child sit-ASP-TR-3.SG.OBJ-PRED-3.SG.SUBJ

‘He seated the child.’

# Unity

1b. Flexible Languages of types 1-2 do not have semantic subclasses: intrinsic number

## *Turkish*

- |    |                  |    |                     |
|----|------------------|----|---------------------|
| 1) | ada              | 2) | ada-lar             |
|    | island           |    | island-COL          |
|    | 'island/islands  |    | 'islands'           |
| 3) | on iki ada       | 4) | *on iki ada-lar     |
|    | ten two island   |    | ten two islands-COL |
|    | 'twelve islands' |    | 'twelve islands'    |

# Unity: summary

	1	2	3	4	5	6	7
Conjugational classes	N	Y/N					
Intrinsic transitivity	N	Y/N					
Declensional classes	N			Y/N			
Intrinsic number	N			Y/N			

Pervasiveness

# Pervasiveness

Flexibility and rigidity of lexical stems may be expected to correlate with functionality and rigidity of other morphological and syntactic units within the grammar and with functions not covered by the PoS-hierarchy.

# Pervasiveness

Hypothesis: not only lexical units but also syntactic units may be used flexibly in a flexible language.

1. Flexible languages allow the use of possessive phrases as predicates.

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1. Flexible languages allow the use of possessive phrases as predicates.

*Quechua*

Chay wasi ñuka-paj-mi.

DEM house 1-POS-FOC

‘That house is mine.’

# Pervasiveness

1. Flexible languages allow the use of possessive phrases as predicates.

*Yagaria*

M-igopa        gagae' igopa-vie.

DEM-field     tu        field-INT

'¿Is that field your field?'

# Pervasiveness

Hypothesis: not only lexical units but also syntactic units may be used flexibly in a flexible language.

2. Flexible Languages are flexible in their use of subordinate clauses as well.

# Pervasiveness

## *Turkish*

1) Orhan-in bir şey yap-ma-y-acağ-ı  
Orhan-GEN INDEF thing do-NEG-V-NMLZ.IRR-3.SG.POSS  
belli-y-di-∅.

evident-V-PST-3.SG

‘It was evident that Orhan wa’sn’t going to do anything.’

2) Fatma-‘nın yarın gör-eceğ-i film  
Fatma-GEN tomorrow see-NMLZ.IRR-3.SG.POSS movie

‘the film that Fatma is going to see tomorrow’

# Pervasiveness: summary

	1	2	3	4	5	6	7	
Sintagma posesivo como predicado	Y				N			
Oración subordinada flexible	Y			Y/N				

# Overall summary

# Summary

	1	2	3	4	5	6	7
Fusional morph with head PrPhr	N	Y/N					
Conjugational classes	N	Y/N					
Intrinsic transitivity	N	Y/N					
Fusional morph with head RefPhr	N	Y/N					
PrPhr in initial or final position	Y			Y/N			
Declensional classes	N			Y/N			
Intrinsic number	N			Y/N			
Flexible subordinate clause	Y			Y/N			
Fusional morph with mod. RefPhr	N			Y/N			
Fixed order head - modifier	Y				Y/N		
Possessive phrase as predicate	Y				Y/N		

# Conclusions

# Conclusions

- The more flexible a language is in its use of lexemes, the more rigid it is in its syntax and morphology;
- The more flexible a language is in its use of lexemes, the more resistant it is to fusional morphology;
- The more flexible a language is in its use of lexemes, the more it lacks intrinsic lexical features, be they morphological or semantic in nature;
- The more flexible a language is in its use of lexemes, the more it is flexible in its use of phrases and clauses.