7. Extra-Propositional Functor-Argument Structure

7.1 Overview

7.1.1 Verb proplets of subordinate clauses

subject or object sentence	*adverbial sentence*	*adnominal sentence*
n/v: verb of the sub-clause	**a/v**: verb of the sub-clause	**a/v**: verb of the sub-clause
arg: noun(s) of the sub-clause	arg: noun(s) of the sub-clause	arg: noun(s) of the sub-clause
fnc: verb of the higher clause	**mdd: verb** of the higher clause	**mdd: noun** of the higher clause
prn: number of the sub-clause	prn: number of the sub-clause	prn: number of the sub-clause

7.1.2 Examples of extra-propositional functor-arg. structure

1. Representing That Fido barked amused Mary (subject sentence)

n/v: that bark	noun: Fido	verb: amuse	noun: Mary
arg: Fido	fnc: bark	arg: 27 bark Mary	fnc: amuse
fnc: 28 amuse	mdr:	mdr:	mdr:
prn: 27	prn: 27	prn: 28	prn: 28

2. Representing John heard that Fido barked (object sentence)

$$\begin{bmatrix}\text{noun: John}\\ \text{fnc: hear}\\ \text{mdr:}\\ \text{prn: 30}\end{bmatrix} \begin{bmatrix}\text{verb: hear}\\ \text{arg: John 31 bark}\\ \text{mdr:}\\ \text{prn: 30}\end{bmatrix} \begin{bmatrix}\text{n/v: that bark}\\ \text{arg: Fido}\\ \text{fnc: 30 hear}\\ \text{prn: 31}\end{bmatrix} \begin{bmatrix}\text{noun: Fido}\\ \text{fnc: bark}\\ \text{mdr:}\\ \text{prn: 31}\end{bmatrix}$$

3. Representing The dog which saw Mary barked (adnominal sent., subject gap)

$$\begin{bmatrix}\text{noun: dog}\\ \text{fnc: bark}\\ \text{mdr: 33 see}\\ \text{prn: 32}\end{bmatrix} \begin{bmatrix}\text{a/v: see}\\ \text{arg: \# Mary}\\ \text{mdd:32 dog}\\ \text{prn: 33}\end{bmatrix} \begin{bmatrix}\text{noun: Mary}\\ \text{fnc: see}\\ \text{mdr:}\\ \text{prn: 33}\end{bmatrix} \begin{bmatrix}\text{verb: bark}\\ \text{arg: dog}\\ \text{mdr:}\\ \text{prn: 32}\end{bmatrix}$$

4. Representing The dog which Mary saw barked (adnominal sent., object gap)

$$\begin{bmatrix}\text{noun: dog}\\ \text{fnc: bark}\\ \text{mdr: 35 see}\\ \text{prn: 34}\end{bmatrix} \begin{bmatrix}\text{a/v: see}\\ \text{arg: Mary \#}\\ \text{mdd:34 dog}\\ \text{prn: 35}\end{bmatrix} \begin{bmatrix}\text{noun: Mary}\\ \text{fnc: see}\\ \text{mdr:}\\ \text{prn: 35}\end{bmatrix} \begin{bmatrix}\text{verb: bark}\\ \text{arg: dog}\\ \text{mdr:}\\ \text{prn: 34}\end{bmatrix}$$

5. Representing When Fido barked Mary smiled (adverbial sentence)

$$\begin{bmatrix}\text{a/v: when bark}\\ \text{arg: Fido}\\ \text{mdd:37 smile}\\ \text{prn: 36}\end{bmatrix} \begin{bmatrix}\text{noun: Fido}\\ \text{fnc: bark}\\ \text{mdr:}\\ \text{prn: 36}\end{bmatrix} \begin{bmatrix}\text{noun: Mary}\\ \text{fnc: smile}\\ \text{mdr:}\\ \text{prn: 37}\end{bmatrix} \begin{bmatrix}\text{verb: smile}\\ \text{arg: Mary}\\ \text{mdr: 36 bark}\\ \text{prn: 37}\end{bmatrix}$$

7.1.3 EXTRA-PROPOSITIONAL FUNCTOR-ARGUMENT STRUCTURES

(i) sentential argument

(1) *subject:*

\# amused Mary

Fido barked

(2) *object:*

John heard #

Fido barked

(ii) sentential modifier, adnominal (relative clause)

(3) *subject*

the dog barked

\# saw Mary

(4) *object:*

the dog barked

Mary saw #

(iii) sentential modifier, adverbial

(5) Mary smiled

when Fido barked

7.2 Sentential Argument as Subject

7.2.1 INTERPRETATION OF That Fido barked amused Mary.

	that	Fido	barked	amused	Mary
lexical lookup	n/v: that v_1 arg: fnc: prn:	noun: Fido fnc: mdr: prn:	verb: bark arg: mdr: prn:	verb: amuse arg: mdr: prn:	noun: Mary fnc: mdr: prn:

syntactic−semantic parsing

1	n/v: that v_1 arg: fnc: prn: 27	noun: Fido fnc: mdr: prn:			
2	n/v: that v_1 arg: Fido fnc: prn: 27	noun: Fido fnc: v_1 mdr: prn: 27	verb: bark arg: mdr: prn:		
3	n/v: that bark arg: Fido fnc: prn: 27	noun: Fido fnc: bark mdr: prn: 27		verb: amuse arg: mdr: prn:	
4	n/v: that bark arg: Fido fnc: 28 amuse prn: 27	noun: Fido fnc: bark mdr: prn: 27		verb: amuse arg: 27 bark mdr: prn: 28	noun: Mary fnc: mdr: prn:

result of syntactic−semantic parsing:

n/v: that bark arg: Fido fnc: 28 amuse prn: 27	noun: Fido fnc: bark mdr: prn: 27	verb: amuse arg: 27 bark Mary mdr: prn: 28	noun: Mary fnc: amuse mdr: prn: 28

7.2.2 PRODUCTION OF That Fido barked amused Mary.

	activated sequence				*realization*
1					
	V				
1.1	sc				sc
	V	N			
1.2	sc	n			sc n
	V	N			
1.3	sc fv	n			sc n fv
	V	N			
2.1	sc fv	n	fv		sc n fv fv
	V	N	V		
2.2	sc fv	n	fv	n	sc n fv fv n
	V	N	V	N	
2.3	sc fv	n	fv p	n	sc n fv fv n p
	V	N	V	N	

7.3 Sentential Argument as Object

7.3.1 INTERPRETATION OF John heard that Fido barked.

lexical lookup

John	heard	that	Fido	barked
noun: John fnc: mdr: prn:	verb: hear arg: mdr: prn:	n/v: that v_1 arg: fnc: prn:	noun: Fido fnc: mdr: prn:	verb: bark arg: mdr: prn:

syntactic−semantic derivation

1	noun: John fnc: mdr: prn: 30	verb: hear arg: mdr: prn:			
2	noun: John fnc: hear mdr: prn: 30	verb: hear arg: John mdr: prn: 30	n/v: that v_1 arg: fnc: prn:		
3	noun: John fnc: hear mdr: prn: 30	verb: hear arg: John 31 v_1 mdr: prn: 30	n/v: that v_1 arg: fnc: 30 hear prn: 31	noun: Fido fnc: mdr: prn:	
4	noun: John fnc: hear mdr: prn: 30	verb: hear arg: John 31 v_1 mdr: prn: 30	n/v: that v_1 arg: Fido fnc: 30 hear prn: 31	noun: Fido fnc: v_1 mdr: prn: 31	verb: bark arg: mdr: prn:

result of syntactic−semantic parsing:

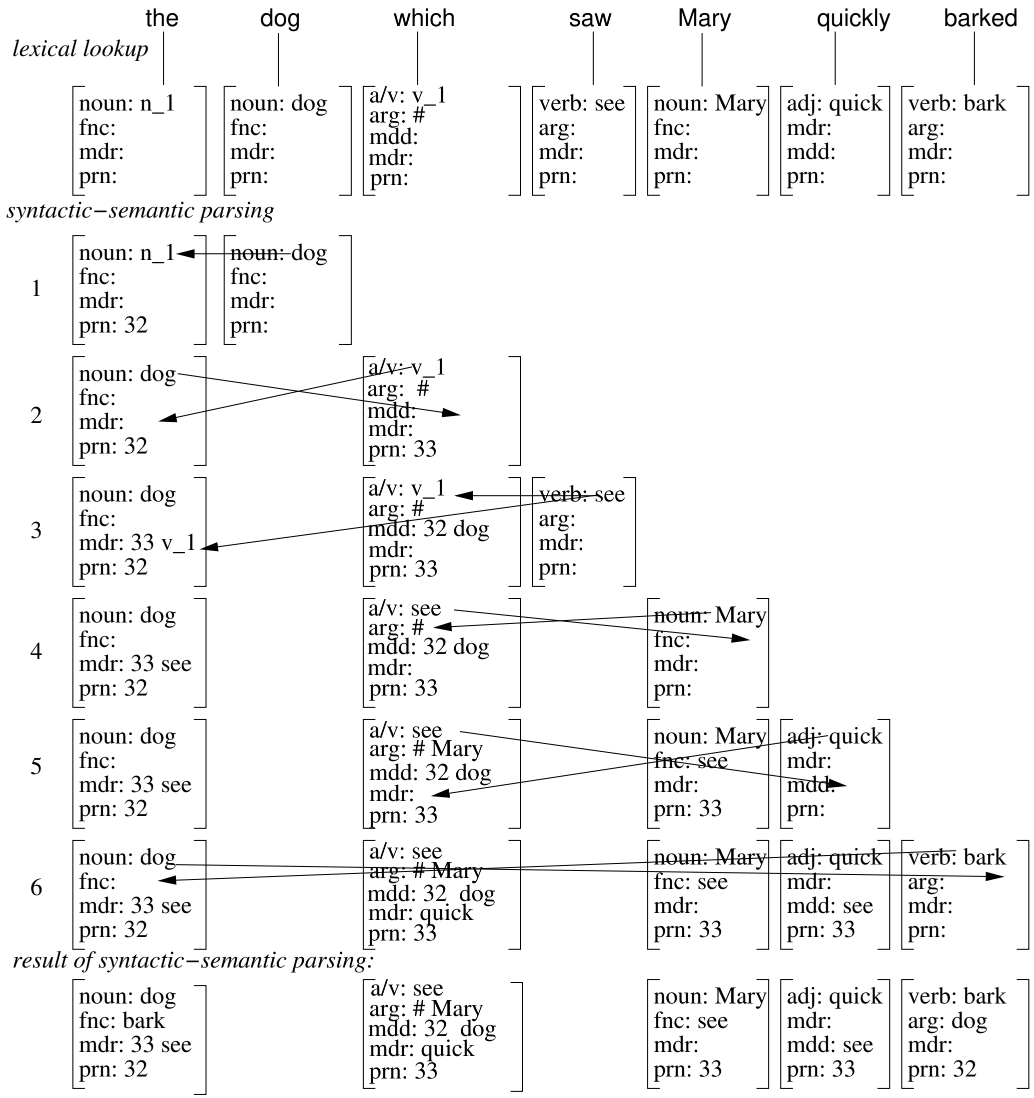
noun: John fnc: hear mdr: prn: 30	verb: hear arg: John 31 bark mdr: prn: 30	n/v: that bark arg: Fido fnc: 30 hear prn: 31	noun: Fido fnc: bark mdr: prn: 31

7.3.2 SCHEMATIC PRODUCTION OF John heard that Fido barked.

	activated sequence				*realization*
1					
	V				
1.1		n			n
	V	N			
1.2	fv	n			n fv
	V	N			
2.1	fv	n	sc		n fv sc
	V	N	V		
2.2	fv	n	sc	n	n fv sc n
	V	N	V	N	
2.3	fv	n	sc fv	n	n fv sc n fv
	V	N	V	N	
2.4	fv p	n	sc fv	n	n fv sc n fv p
	V	N	V	N	

7.4 Adnominal Sentential Modifier with Subject Gap

7.4.1 INTERPRETATION OF The dog which saw Mary quickly barked



7.4.2 SECOND READING OF 7.4.1, WITH quickly MODIFYING bark

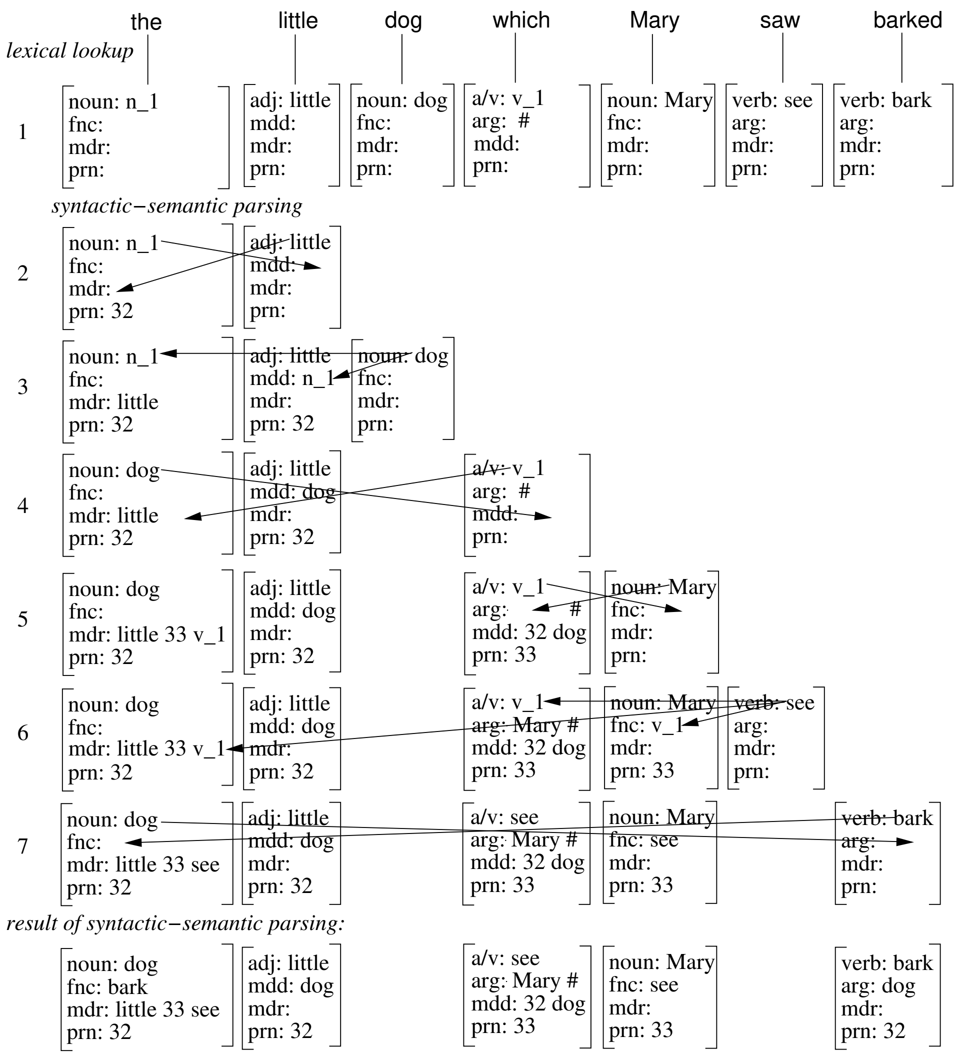
noun: dog fnc: bark mdr: 33 see prn: 32	a/v: see arg: # Mary mdd: 32 dog mdr: prn: 33	noun: Mary fnc: see mdr: prn: 33	adj: quick mdd: bark mdr: prn: 32	verb: bark arg: dog mdr: quick prn: 32

7.4.3 PRODUCTION OF The dog which saw Mary quickly barked

	activated sequence					*realization*
1						
	V					
1.1		d				d
	V	N				
1.2		d nn				d nn
	V	N	V			
2.1		d nn	wh			d nn wh
	V	N	V			
2.2		d nn	wh fv			d nn wh fv
	V	N	V			
2.3		d nn	wh fv	n		d nn wh fv n
	V	N	V	N		
1.3		d nn	wh fv	n	av	d nn wh fv n av
	V	N	V	N	A	
1.4	fv	d nn	wh fv	n	av	d nn wh fv n av fv
	V	N	V	N	A	
1.5	fv p	d nn	wh fv	n	av	d nn wh fv n av fv p
	V	N	V	N	A	

7.5 Adnominal Sentential Modifier with Object Gap

7.5.1 Interpretation of The little dog which Mary saw barked.



7.5.2 Production of The little dog which Mary saw barked.

activated sequence						*realization*
1						
	V					
1.1		d				d
	V	N				
1.2		d	an			d an
	V	N	A			
1.3		d nn	an			d an nn
	V	N	A			
2.1		d nn	an	wh		d an nn wh
	V	N	A	V		
2.2		d nn	an	wh	n	d an nn wh n
	V	N	A	V	N	
2.3		d nn	an	wh fv	n	d an nn wh n fv
	V	N	A	V	N	
1.4	fv	d nn	an	wh fv	n	d an nn wh n fv fv
	V	N	A	V	N	
1.5	fv p	d nn	an	wh fv	n	d an nn wh n fv fv p
	V	N	A	V	N	

7.6 Adverbial Sentential Modifier

7.6.1 INTERPRETATION OF When Fido barked Mary smiled.

	when	Fido	barked	Mary	smiled
lexical lookup	a/v: when v_1 arg: mdd: prn:	noun: Fido fnc: mdr: prn:	verb: bark arg: mdr: prn:	noun: Mary fnc: mdr: prn:	verb: smile arg: mdr: prn:
syntactic−semantic parsing					
1	a/v: when v_1 arg: mdd prn: 27	noun: Fido fnc: mdr: prn:			
2	a/v: when v_1 arg: Fido mdd: prn: 27	noun: Fido fnc: v_1 mdr: prn: 27	verb: bark arg: mdr: prn:		
3	a/v: when bark arg: Fido mdd: prn: 27	noun: Fido fnc: bark mdr: prn: 27		noun: Mary fnc: mdr: prn:	
4	a/v: when bark arg: Fido mdd: prn: 27	noun: Fido fnc: bark mdr: prn: 27		noun: Mary fnc: mdr: prn:	verb: smile arg: mdr: prn: 28
result of syntactic−semantic parsing:	a/v: when bark arg: Fido mdd: 28 smile prn: 27	noun: Fido fnc: bark mdr: prn: 27		noun: Mary fnc: smile mdr: prn: 28	verb: smile arg: Mary mdr: 27 bark prn: 28

7.6.2 PRODUCTION OF When Fido barked Mary smiled.

	activated sequence				*realization*
1					
	V				
1.1	sc				sc
	V	N			
1.2	sc	n			sc n
	V	N			
1.3	sc fv	n			sc n fv
	V	N			
2.1	sc fv	n		n	sc n fv n
	V	N	V	N	
2.2	sc fv	n	fv	n	sc n fv n fv
	V	N	V	N	
2.3	sc fv	n	fv p	n	sc n fv n fv p
	V	N	V	N	