

Transfer Example

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1 The Input

In a hole in the ground there lived a Hobbit.

This reaches transfer as

```
^In<pr>/En<pr>$ ^a<det><ind><sg>/uno<det><ind><GD><sg>$ ^hole<n><sg>/agujero<n><m><sg>$  
^in<pr>/en<pr>$ ^the<det><def><sp>/el<det><def><GD><ND>$ ^ground<n><sg>/tierra<n><f><sg>$  
^there<adv>/alli<adv>$ ^live<vblex><past>/vivir<vblex><past>$  
^a<det><ind><sg>/uno<det><ind><GD><sg>$ ^Hobbit<n><sg>/Hobbit<n><m><sg>$  
. <sent>/ .<sent>$^. <sent>/ .<sent>$
```

2 The Rules

```
gender = m f;
number = (ND sg) sg pl ND;
definite = def ind;
tense = past pres ifi;
person = (PD p3) p1 p2 p3 PD;

tense > tense : past ifi;

n: _.gender.number;
det: _.definite.gender.number;
pr: _;
vblex: _.tense.person.number;
adv: _;

NP: _.gender.number;
DP: _.gender.number;
PP: _;
VP: _.tense.person.number;

NP -> %n { 1 } |
    10: %n PP { 1 _1 2 } ;

PP -> pr DP { 1 _1 2 } ;

DP -> det %NP { 1[gender=2.gender, number=2.number] _1 2 } ;

VP -> %vblex DP { 1[tense=$tense, person=$person, number=$number] _1 2 } |
    adv %VP (if (1.lem/sl = there)
        { %2 }
    else
        { 1 _1 %2 } ) |
PP %VP { 1 _1 %2 } ;
```

3 The Parsing

3.1 Read Some Input

In	a	hole
pr	det.ind.sg	n.sg
En	uno	agujero
pr	det.ind.GD.sg	n.m.sg

3.2 Fork the Stack

In	a	hole
pr	det.ind.sg	n.sg
En	uno	agujero
pr	det.ind.GD.sg	n.m.sg

In	a	hole
pr	det.ind.sg	n.sg
En	uno	agujero
pr	det.ind.GD.sg	n.m.sg

3.3 NP → n

	NP	
	unknown	
	m.sg	
In	a	hole
pr	det.ind.sg	n.sg
En	uno	agujero
pr	det.ind.GD.sg	n.m.sg

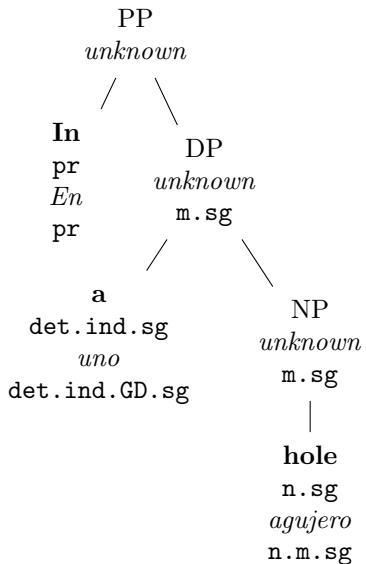
In	a	hole
pr	det.ind.sg	n.sg
En	uno	agujero
pr	det.ind.GD.sg	n.m.sg

3.4 DP → det NP

	DP	
	unknown	
	m.sg	
	/ \	
	a	NP
	det.ind.sg	unknown
	uno	m.sg
	det.ind.GD.sg	
In		hole
pr		n.sg
En		agujero
pr		n.m.sg

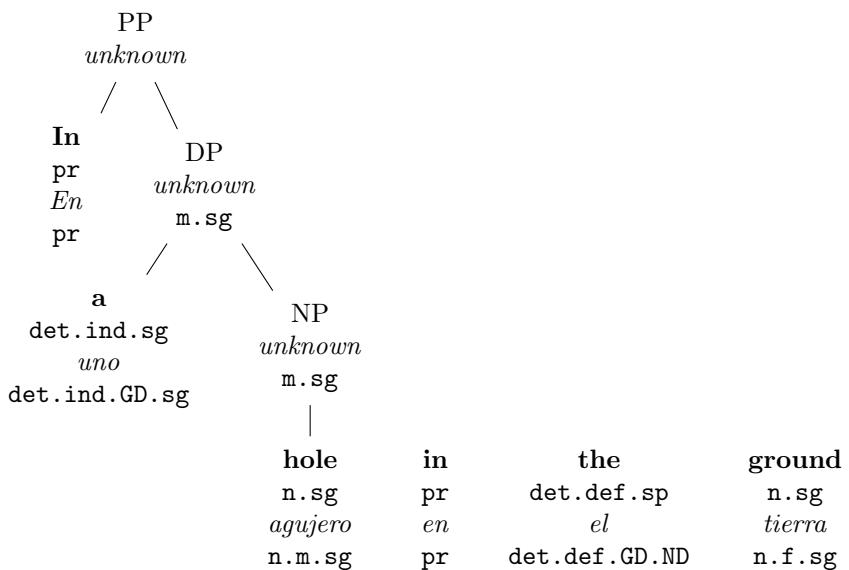
In	a	hole
pr	det.ind.sg	n.sg
En	uno	agujero
pr	det.ind.GD.sg	n.m.sg

3.5 PP → pr DP



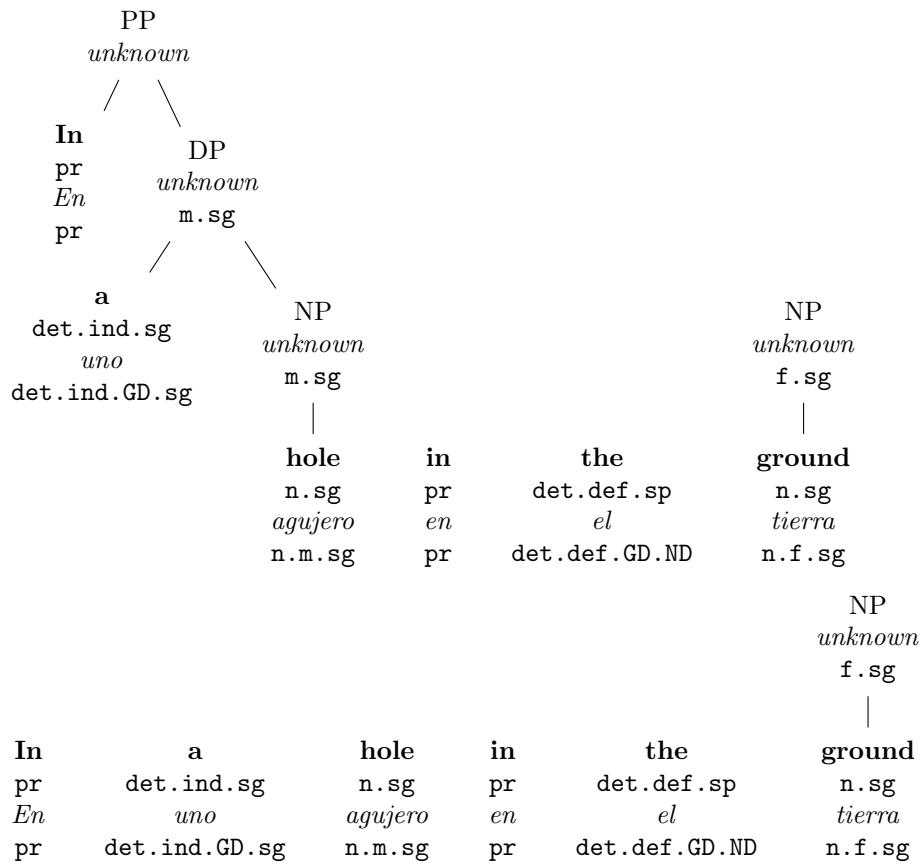
In	a	hole
pr	det.ind.sg	n.sg
En	uno	agujero
pr	det.ind.GD.sg	n.m.sg

3.6 Read Some Input

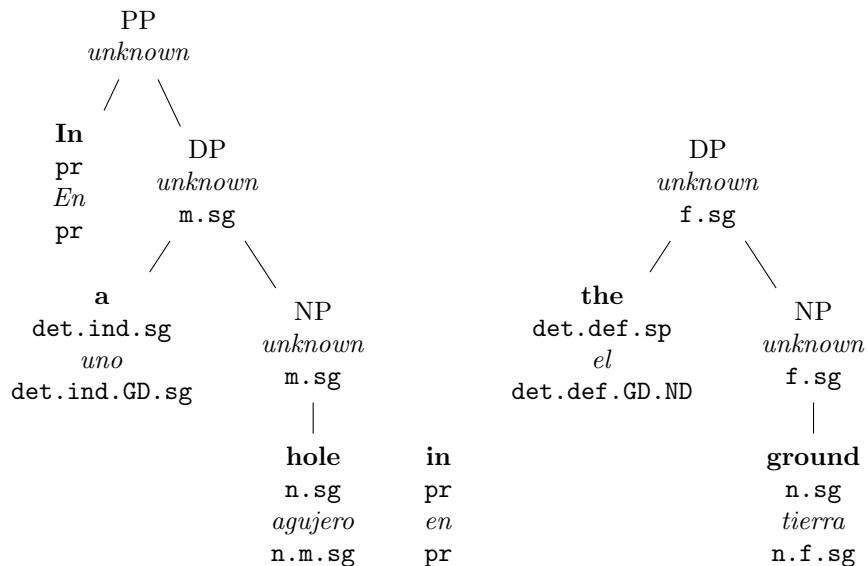


In	a	hole	in	the	ground
pr	det.ind.sg	n.sg	pr	det.def.sp	n.sg
En	uno	agujero	en	el	tierra
pr	det.ind.GD.sg	n.m.sg	pr	det.def.GD.ND	n.f.sg

3.7 NP → n



3.8 DP → det NP

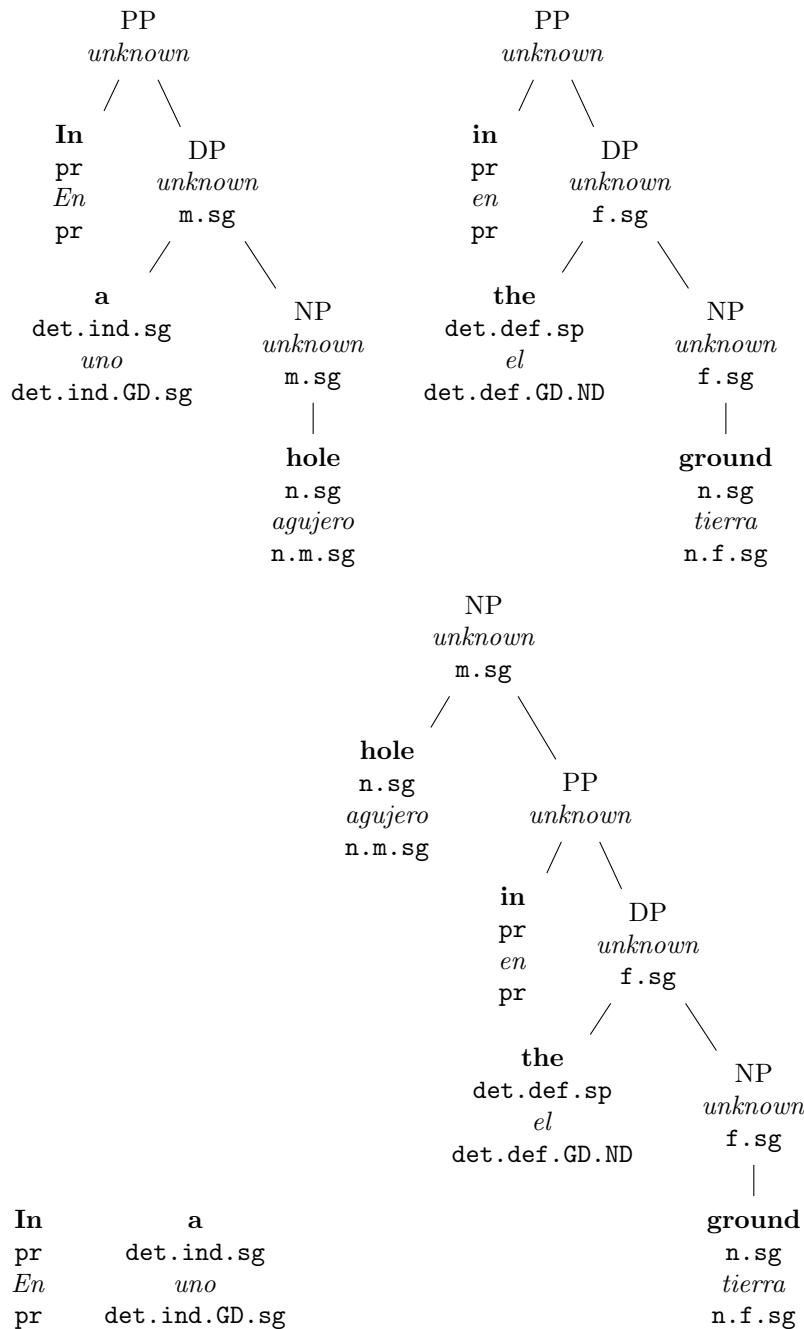


				DP
				<i>unknown</i>
				f.sg
			/	
				the
				det.def.sp
				el
				det.def.GD.ND
			\	
				NP
				<i>unknown</i>
				f.sg
In	a	hole	in	ground
pr	det.ind.sg	n.sg	pr	n.sg
En	uno	agujero	en	tierra
pr	det.ind.GD.sg	n.m.sg	pr	n.f.sg

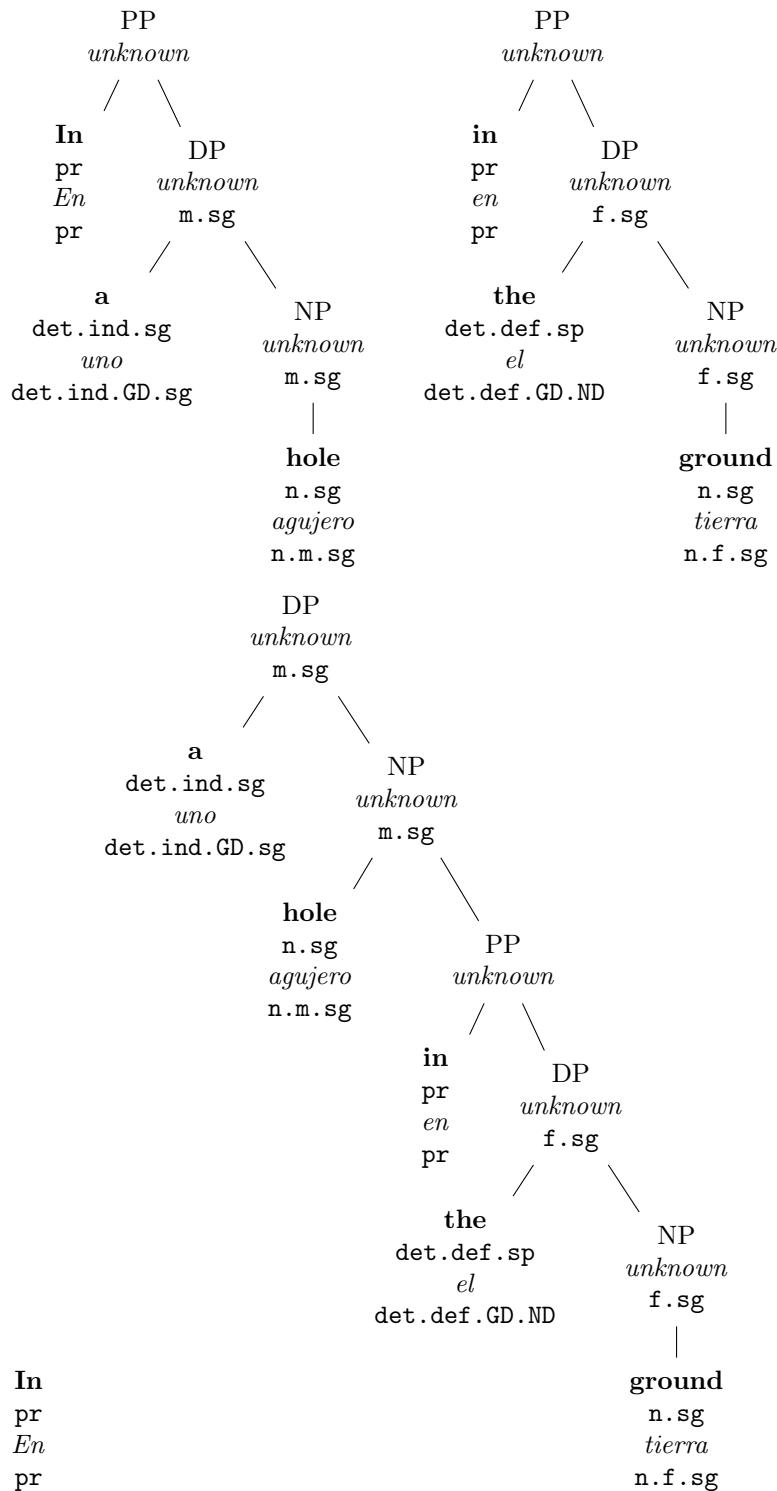
3.9 PP → pr DP

		PP		PP
		<i>unknown</i>		<i>unknown</i>
		/ \		/ \
		In		in
		pr		pr
		En		en
		pr		pr
		/ \		/ \
		DP		DP
		<i>unknown</i>		<i>unknown</i>
		m.sg		f.sg
		a		the
		det.ind.sg		det.def.sp
		uno		el
		det.ind.GD.sg		det.def.GD.ND
		NP		NP
		<i>unknown</i>		<i>unknown</i>
		m.sg		f.sg
		hole		ground
		n.sg		n.sg
		agujero		tierra
		n.m.sg		n.f.sg
In	a	hole	in	ground
pr	det.ind.sg	n.sg	pr	n.sg
En	uno	agujero	en	tierra
pr	det.ind.GD.sg	n.m.sg		n.f.sg

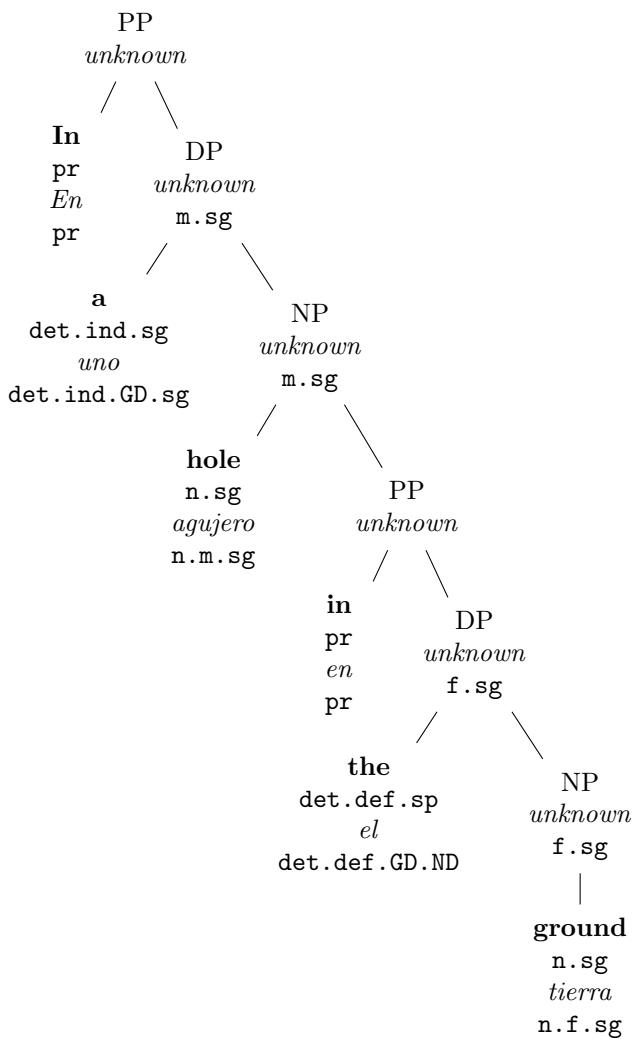
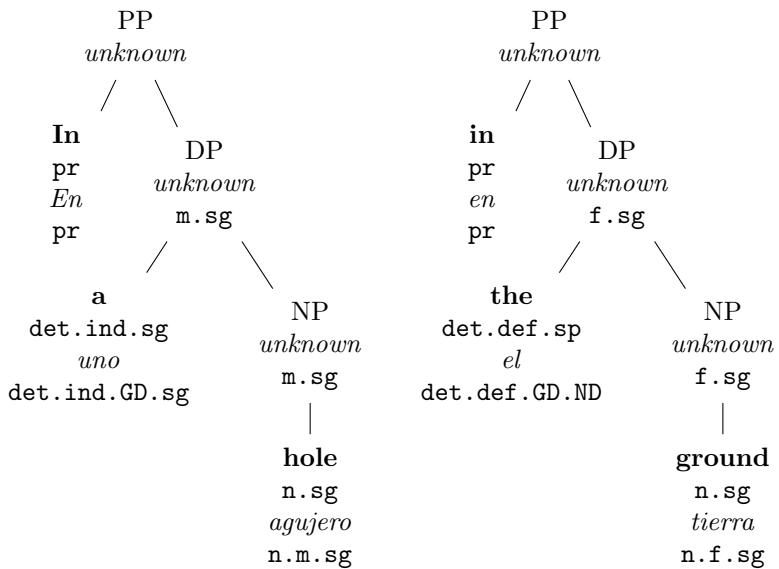
3.10 NP → n PP



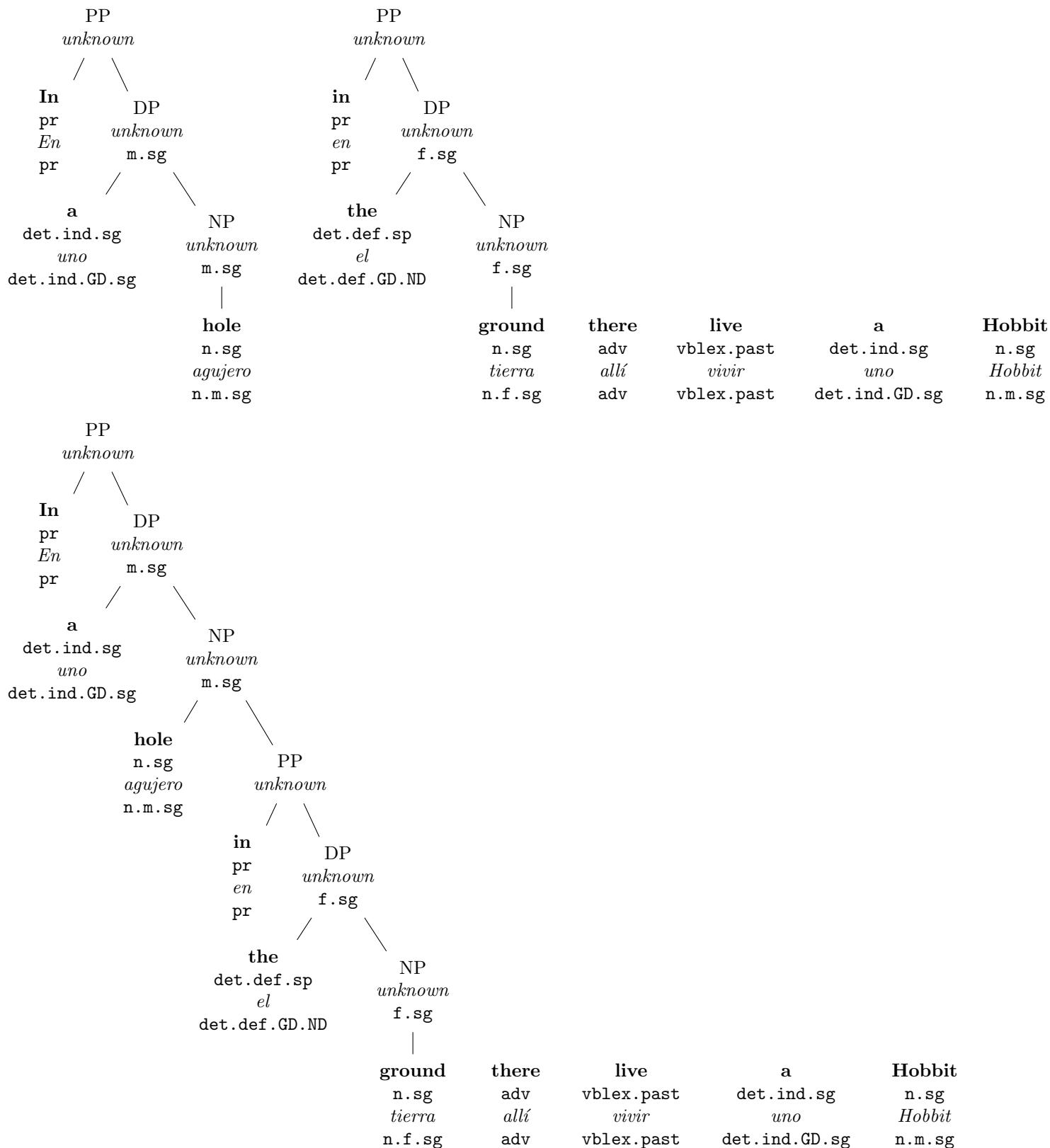
3.11 DP → det NP



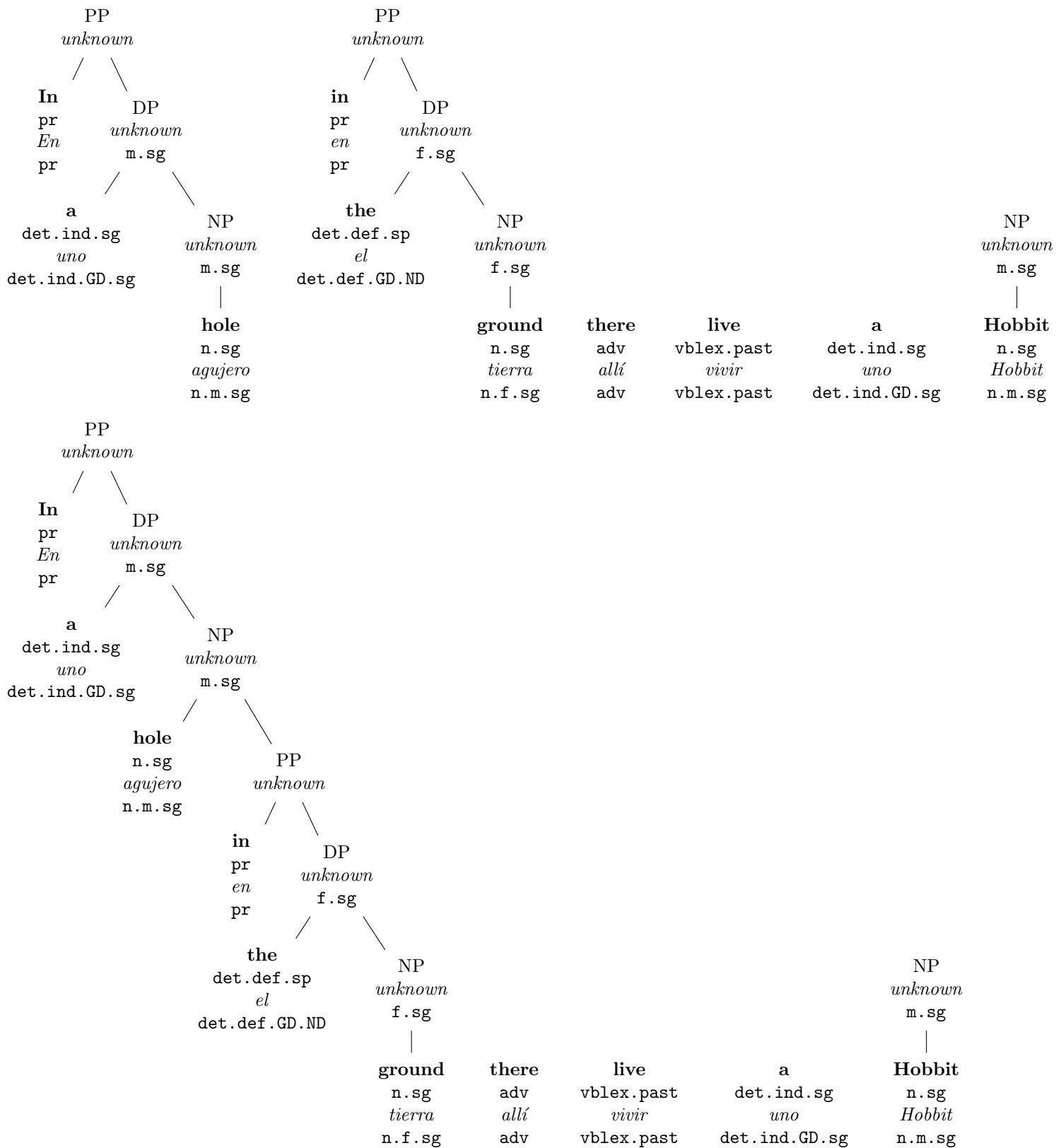
3.12 PP → pr DP



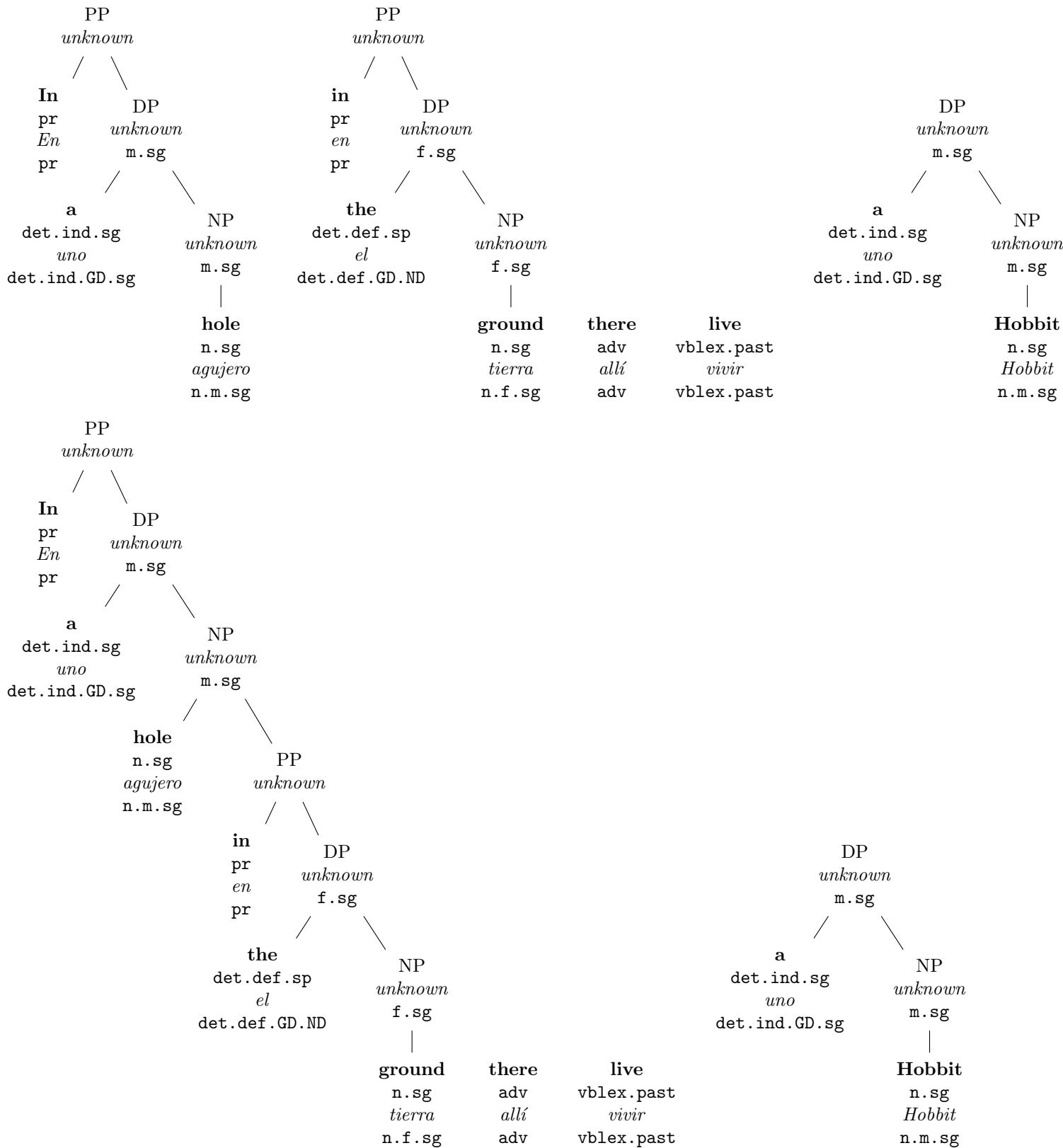
3.13 Read Some Input



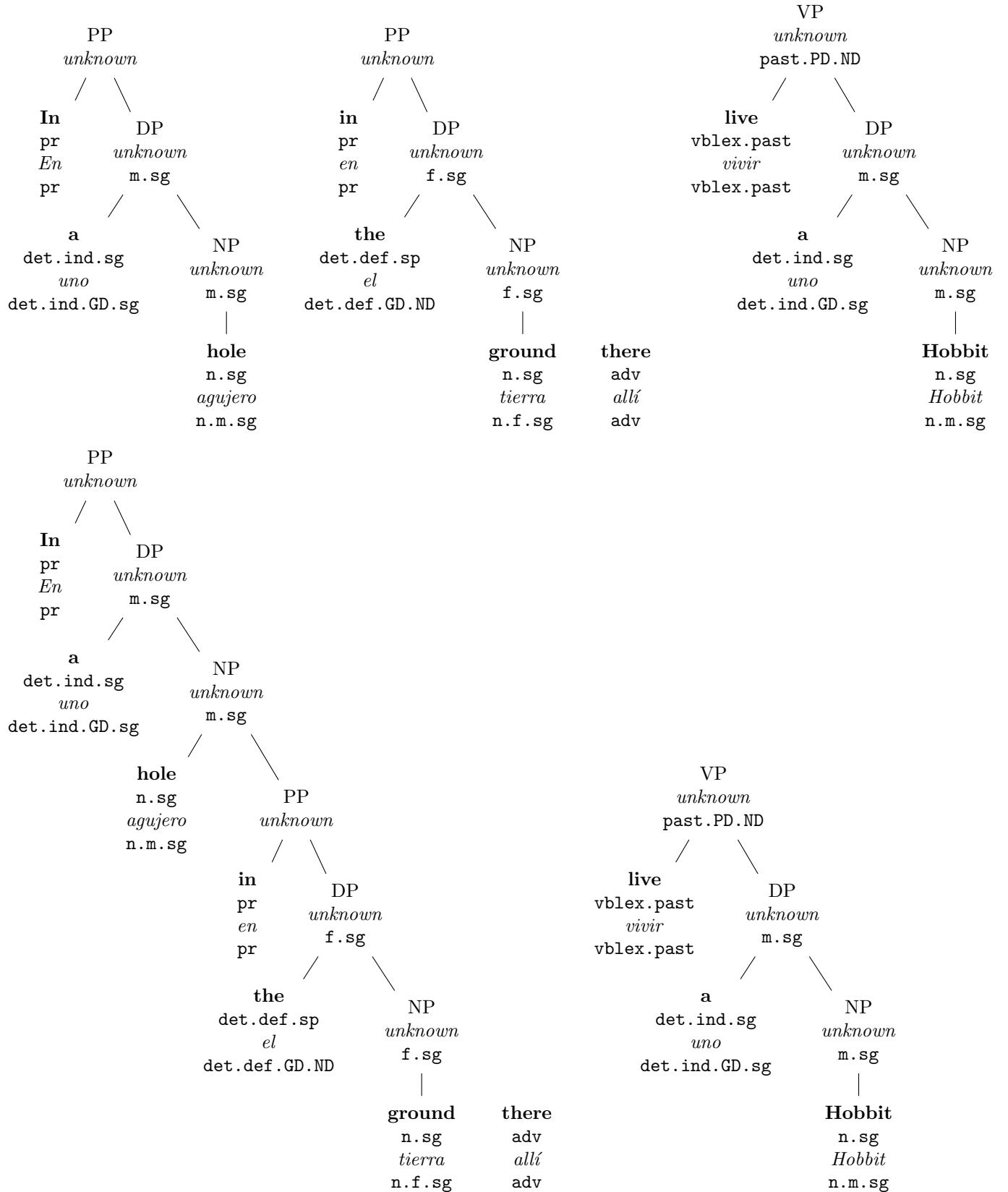
3.14 NP → n



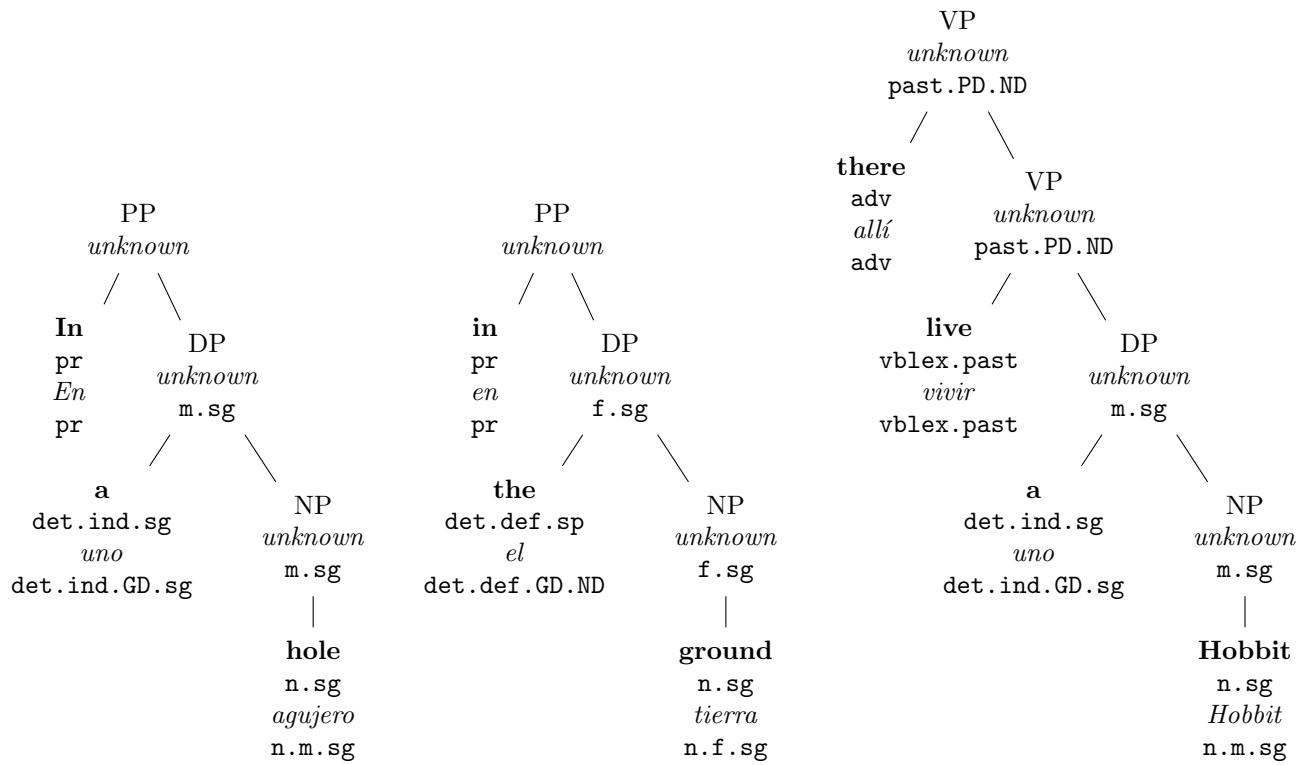
3.15 DP → det NP

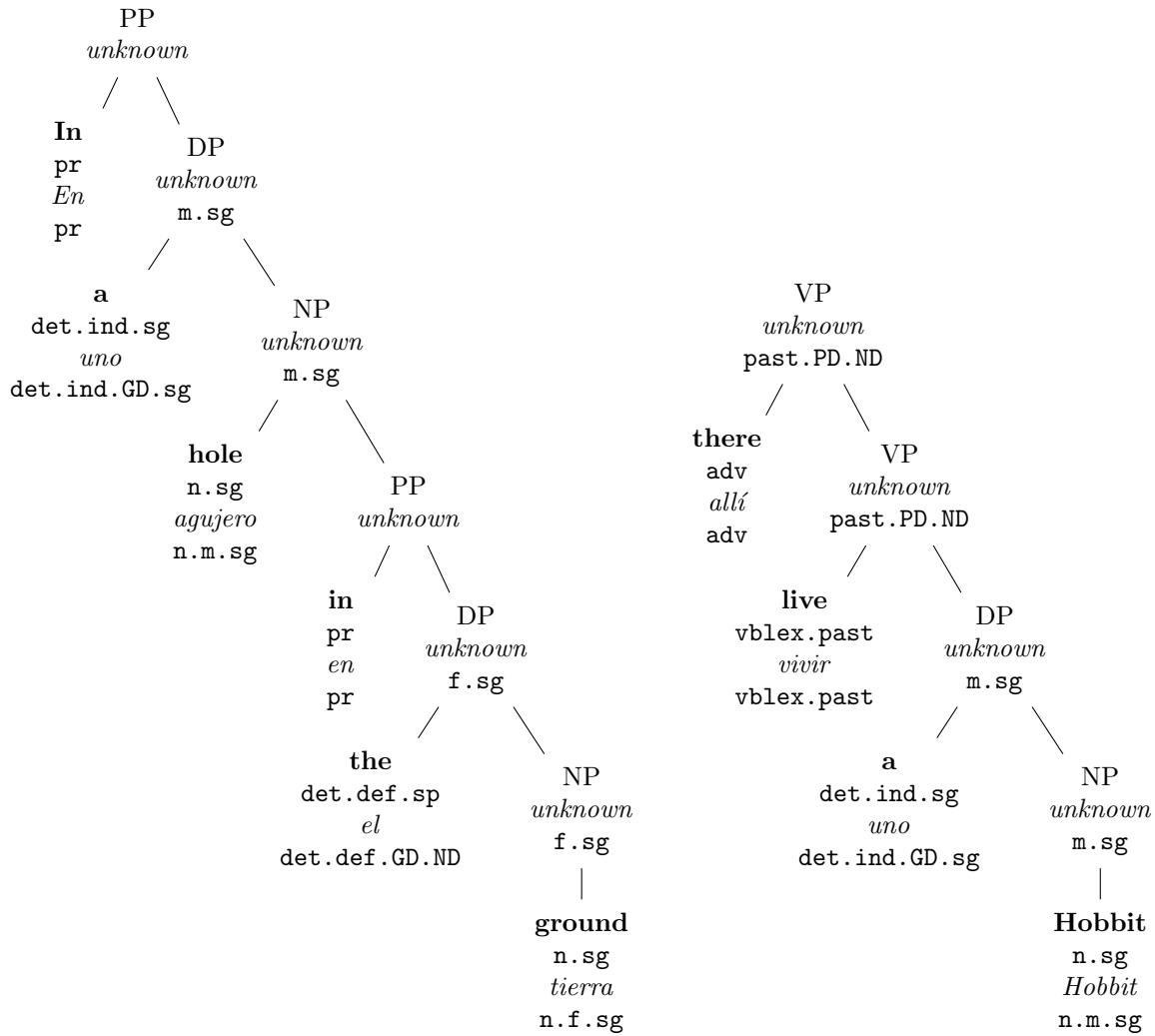


3.16 VP → vblex DP

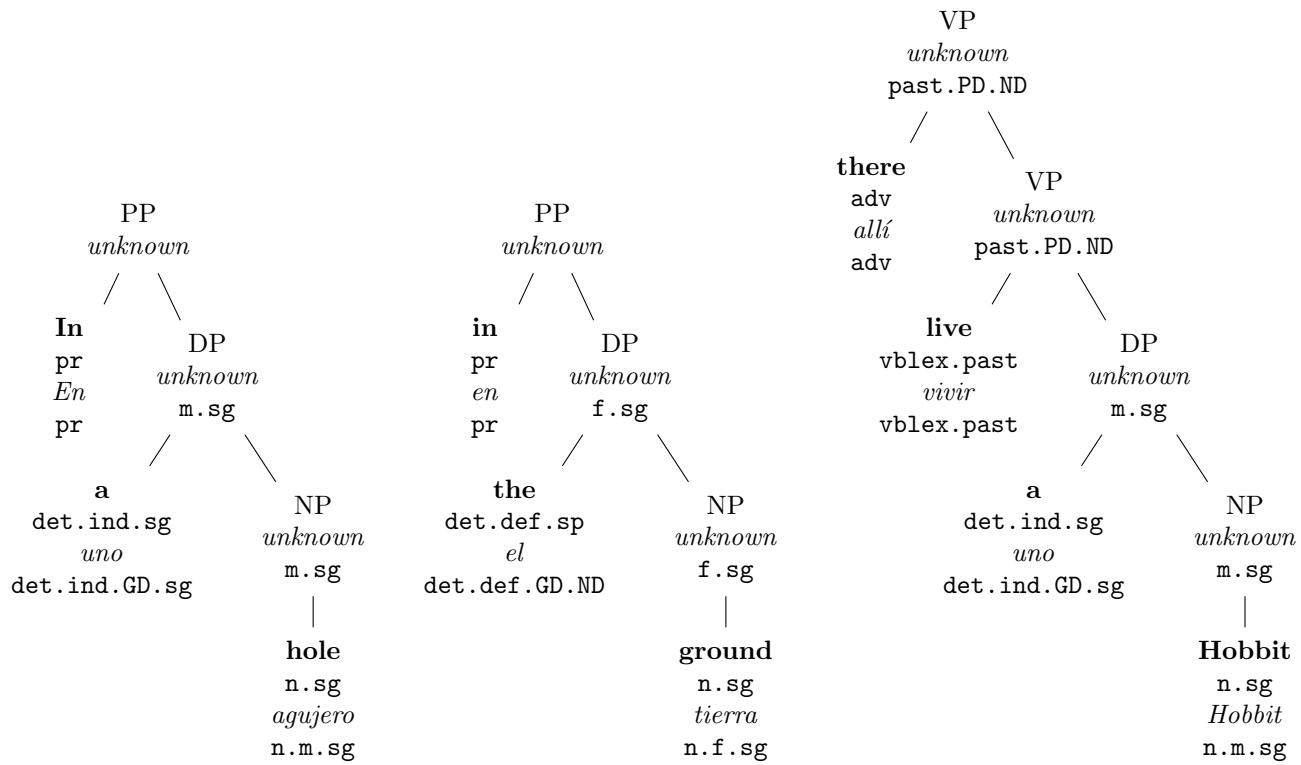


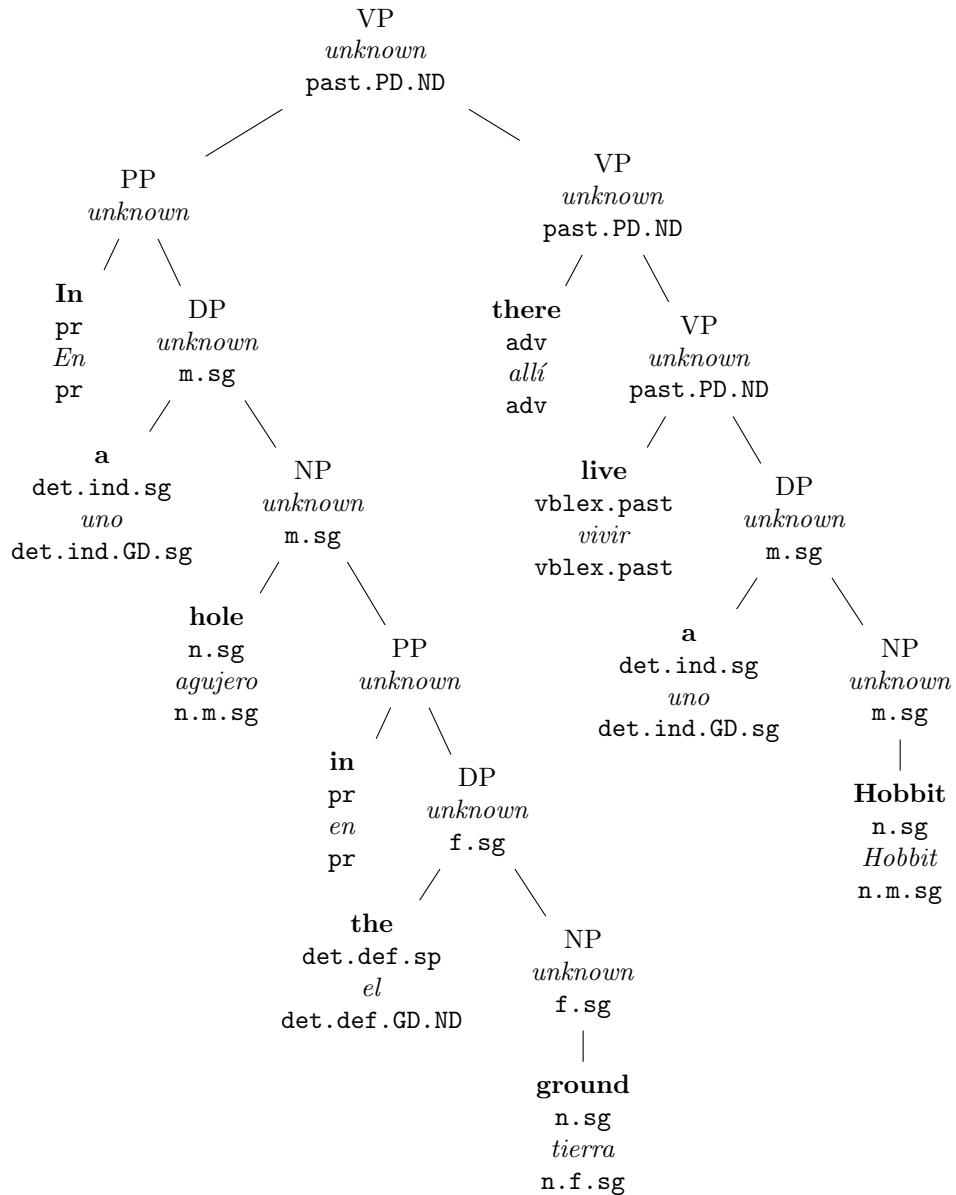
3.17 VP → adv VP



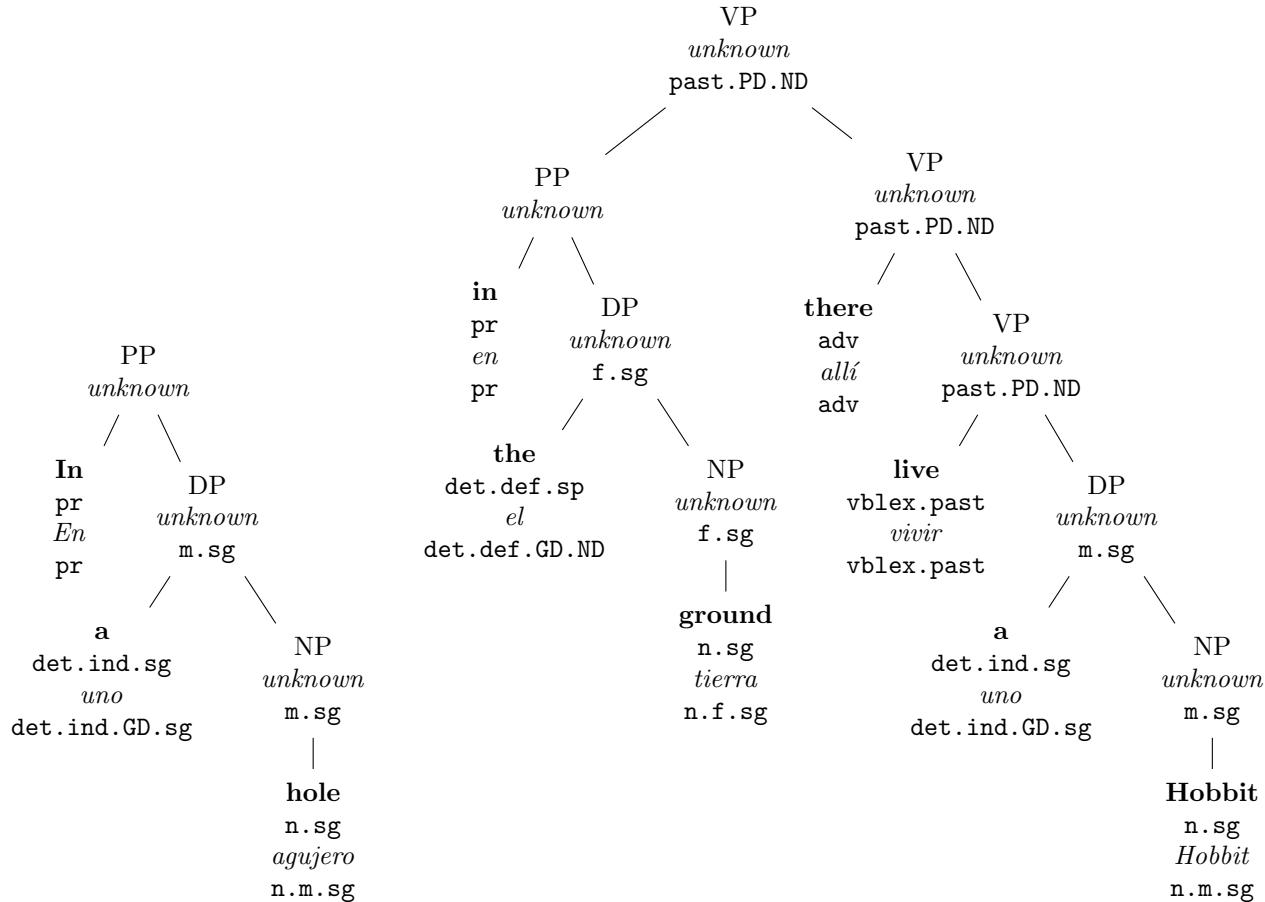


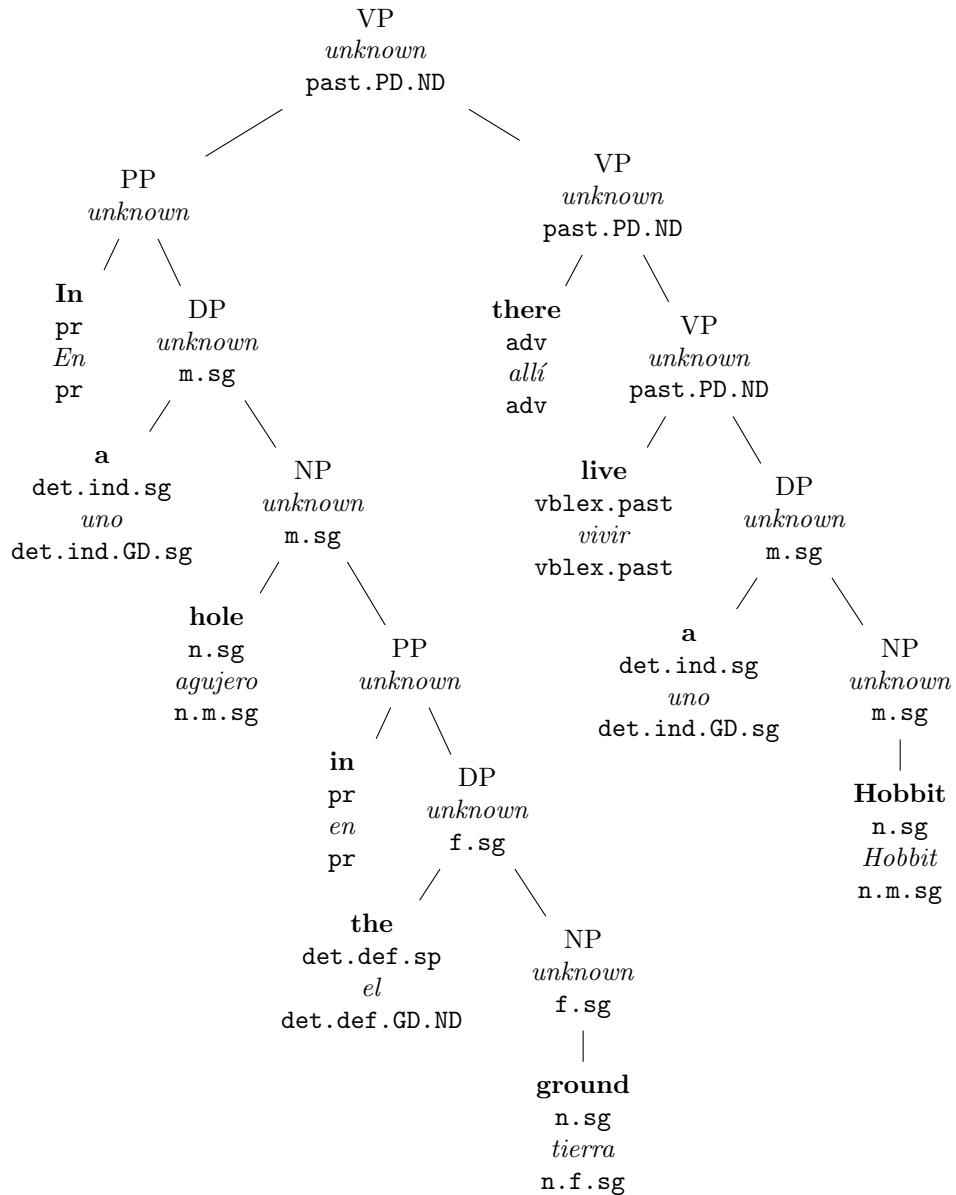
3.18 VP → PP VP



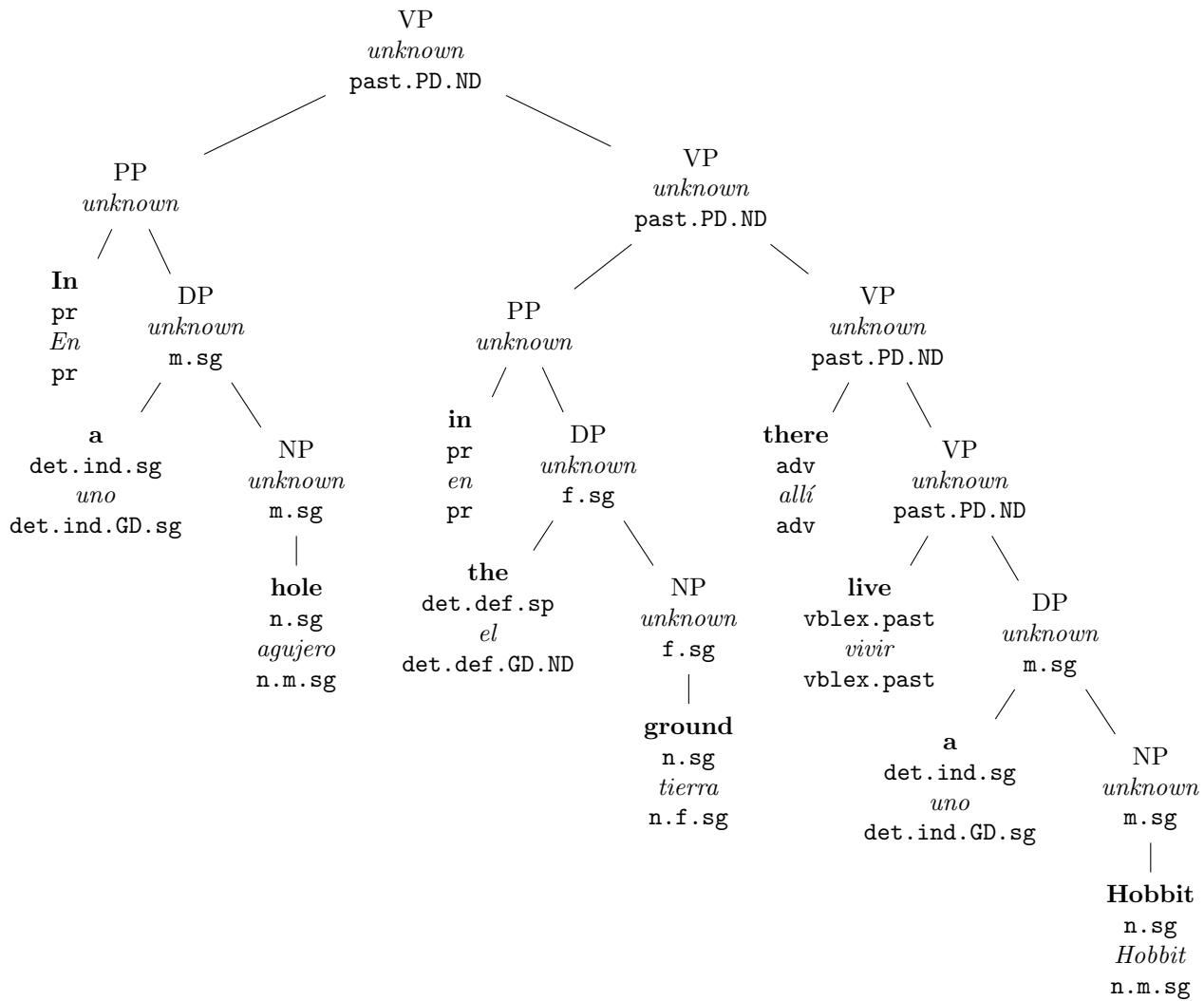


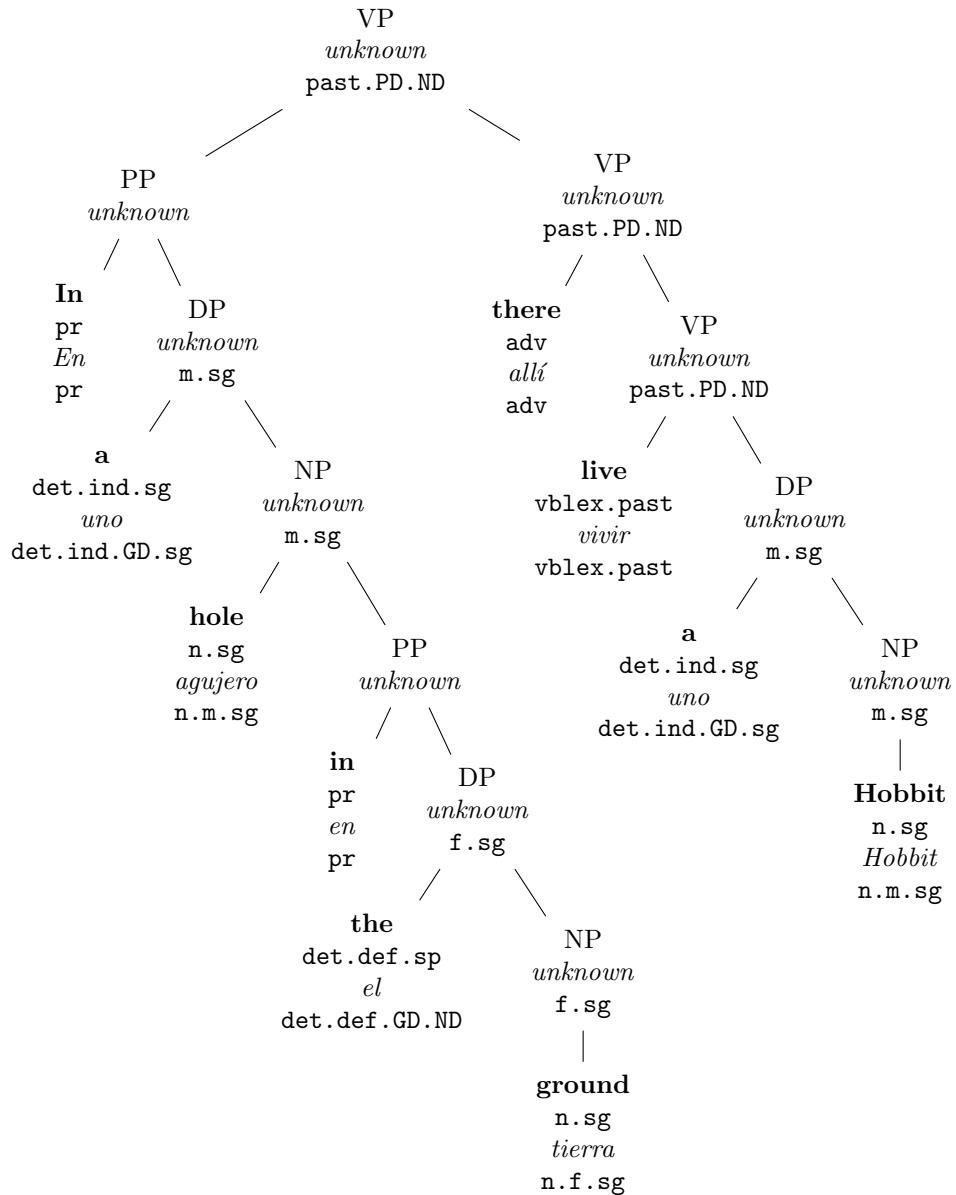
3.19 VP → PP VP



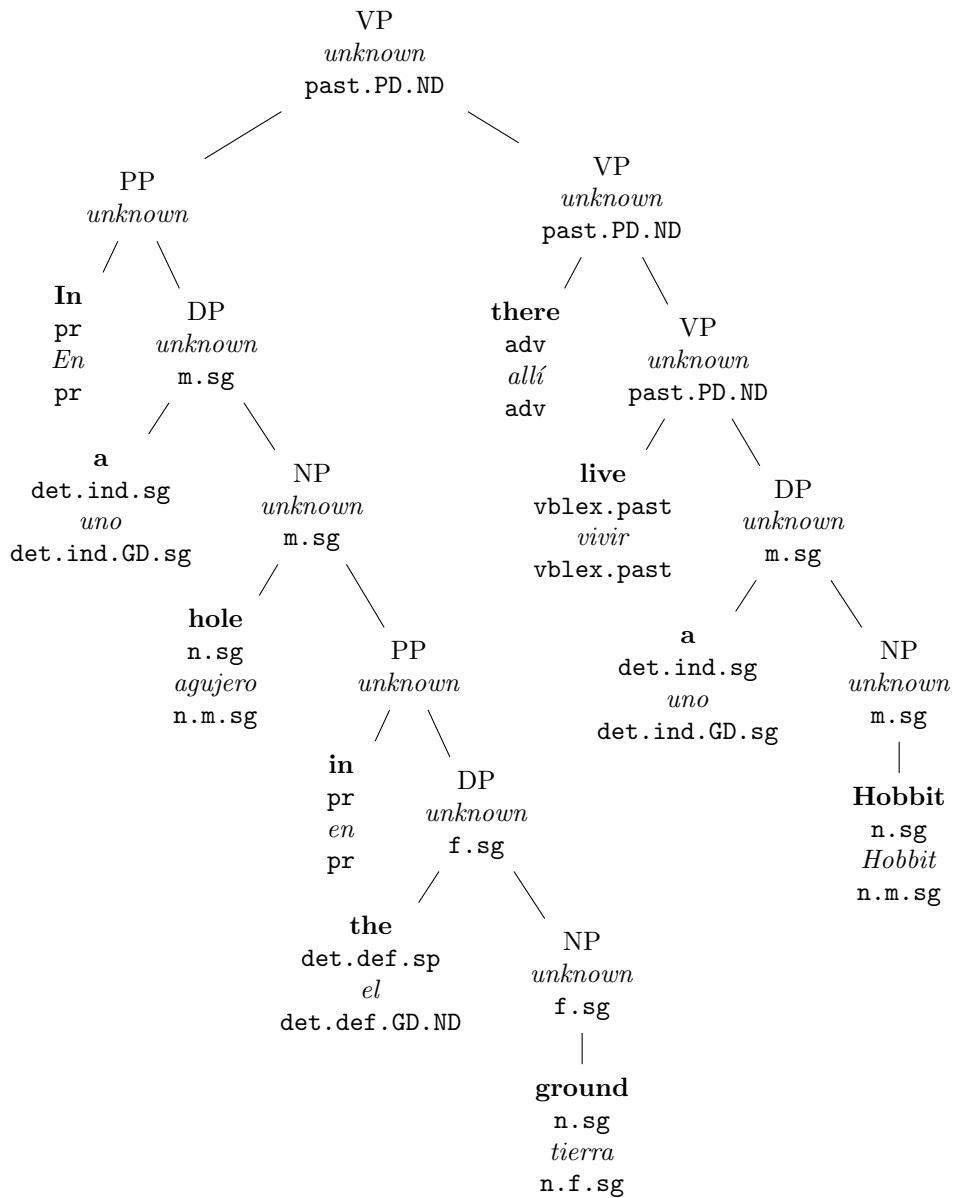


3.20 VP → PP VP



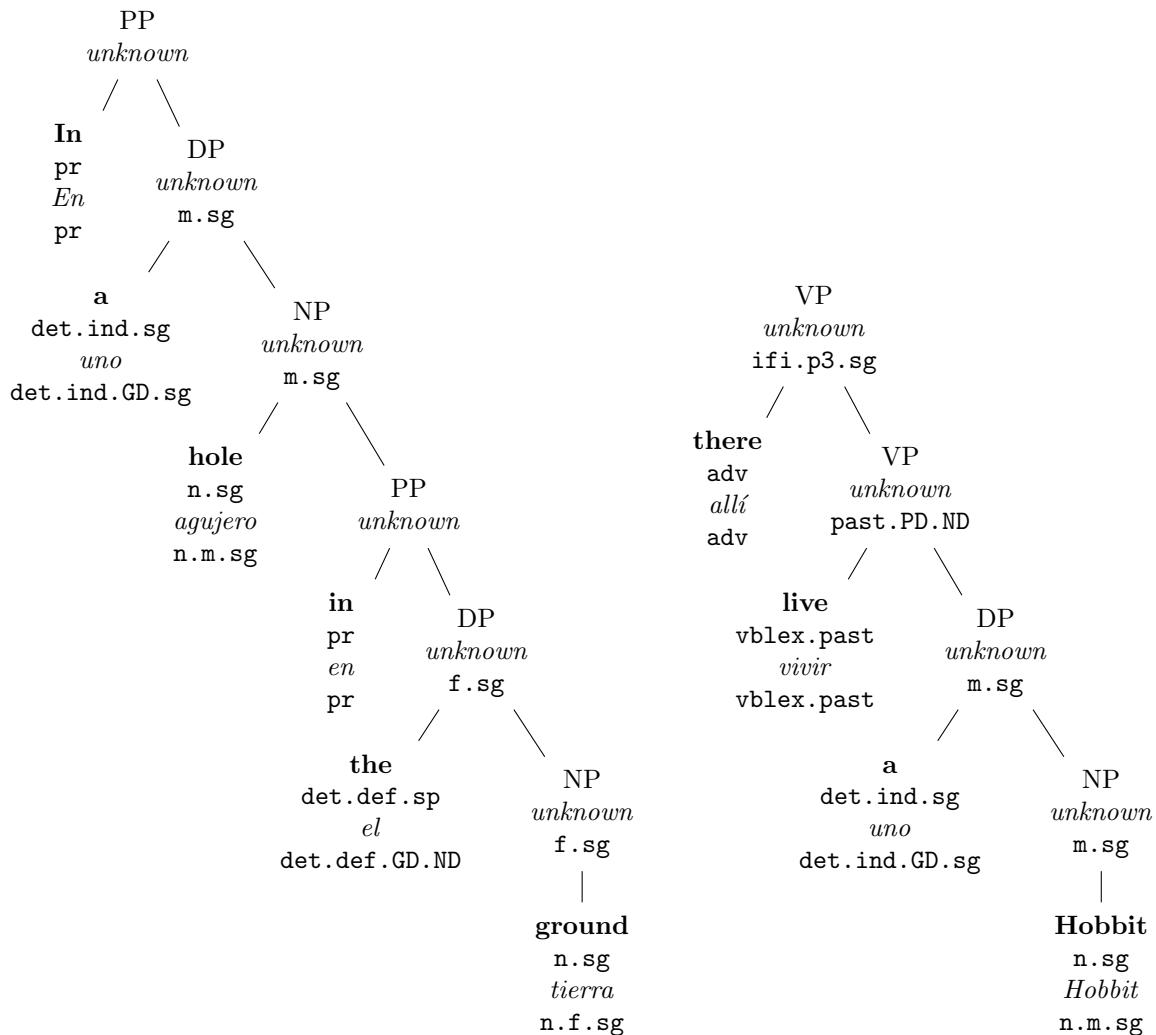


3.21 Prune Branches

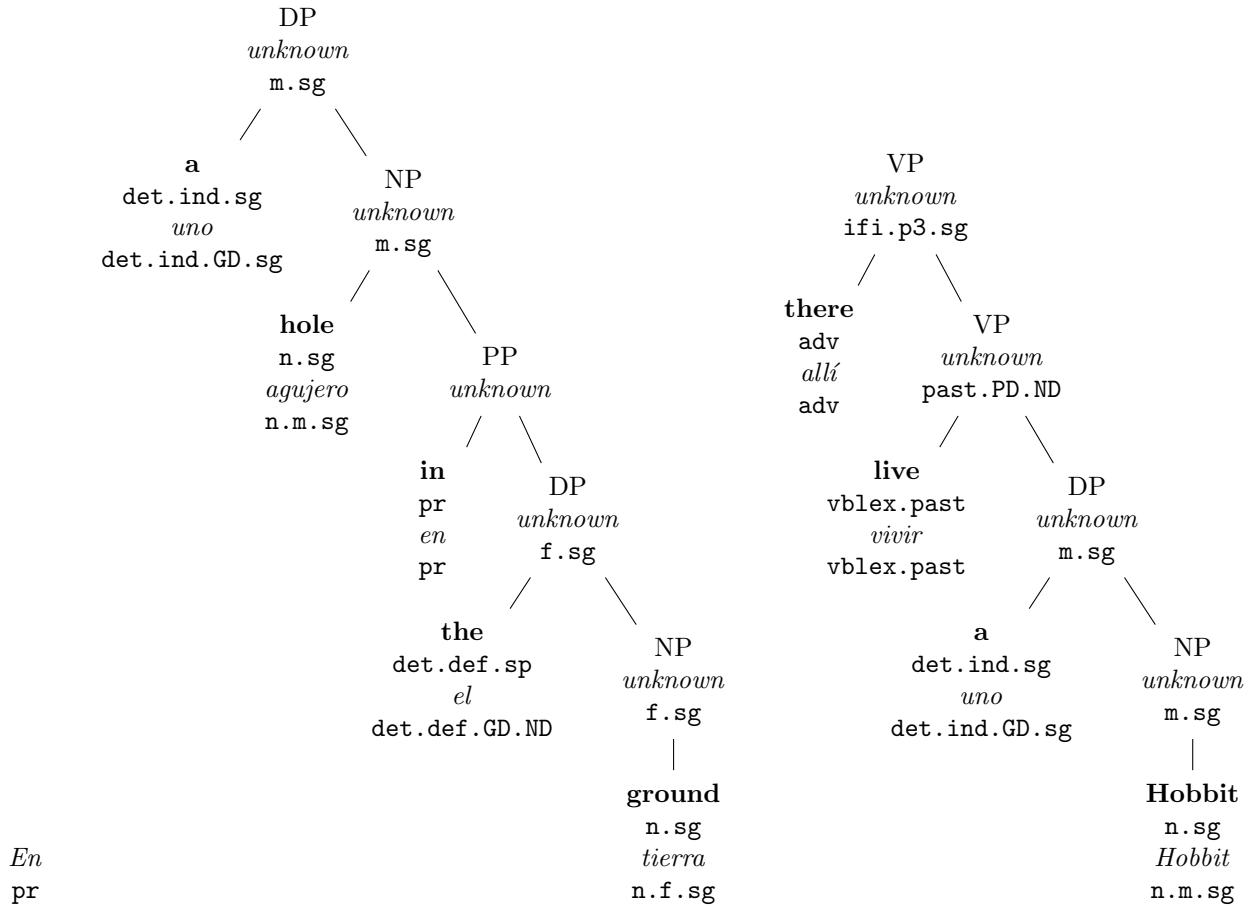


4 The Output

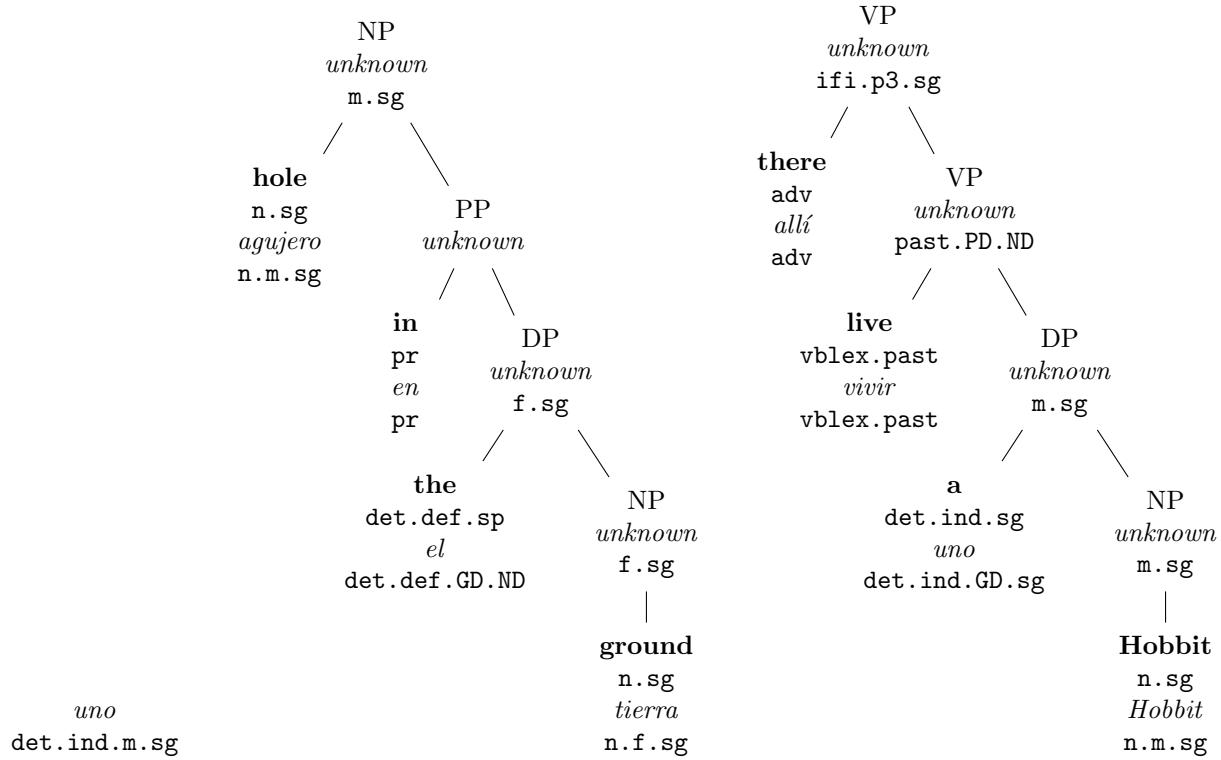
4.1 Output Step for $\text{VP} \rightarrow \text{PP VP}$



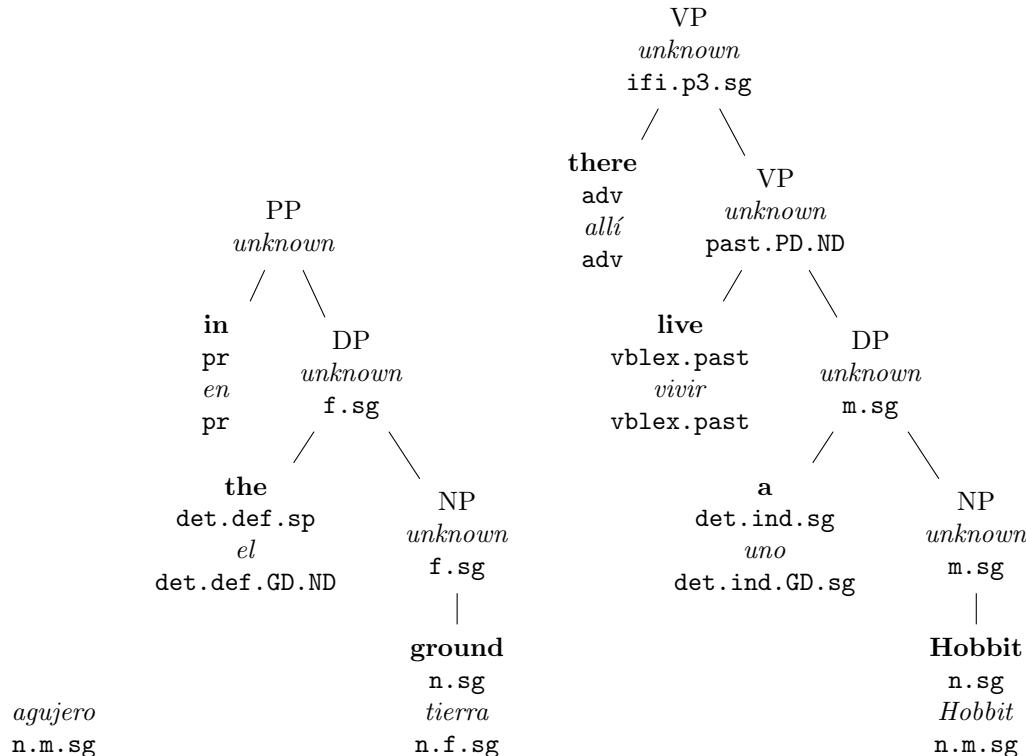
4.2 Output Step for PP → pr DP



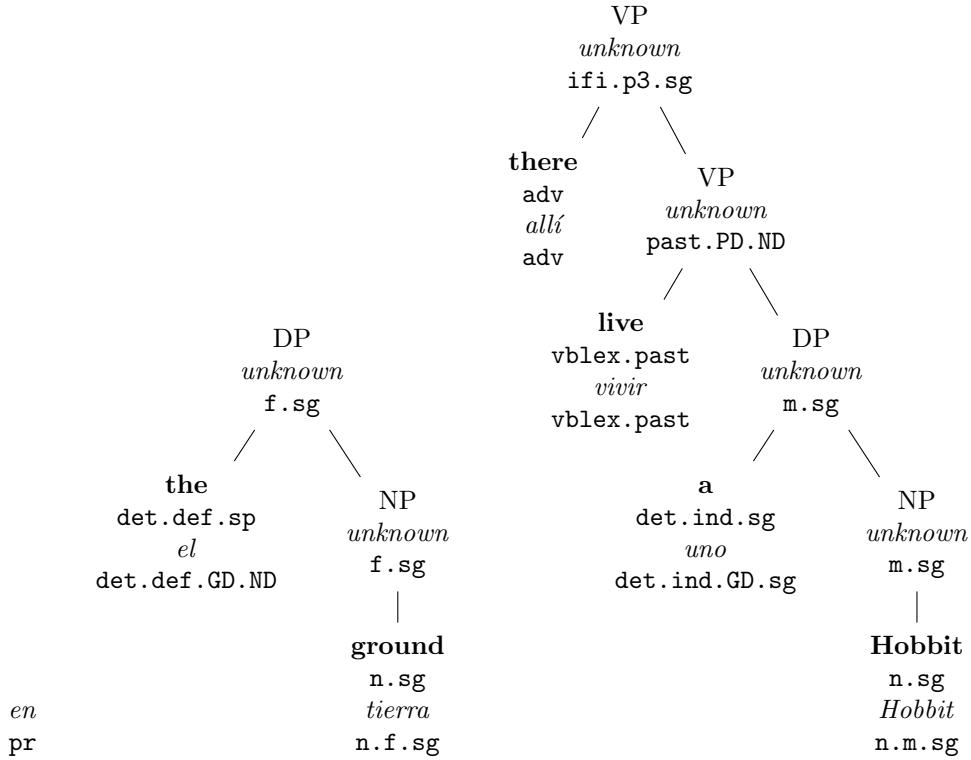
4.3 Output Step for DP → det NP



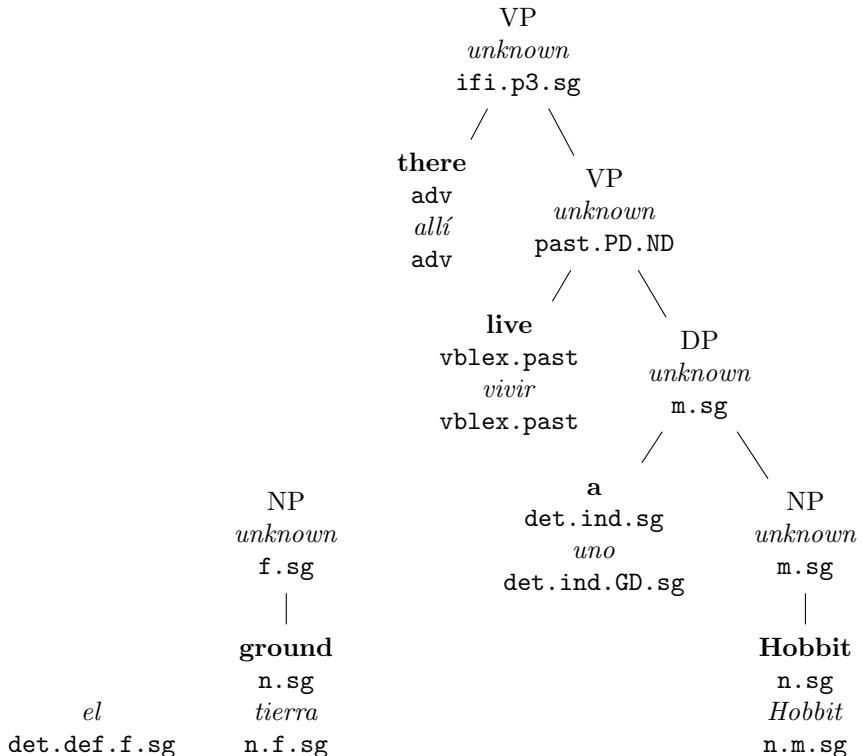
4.4 Output Step for NP → n PP



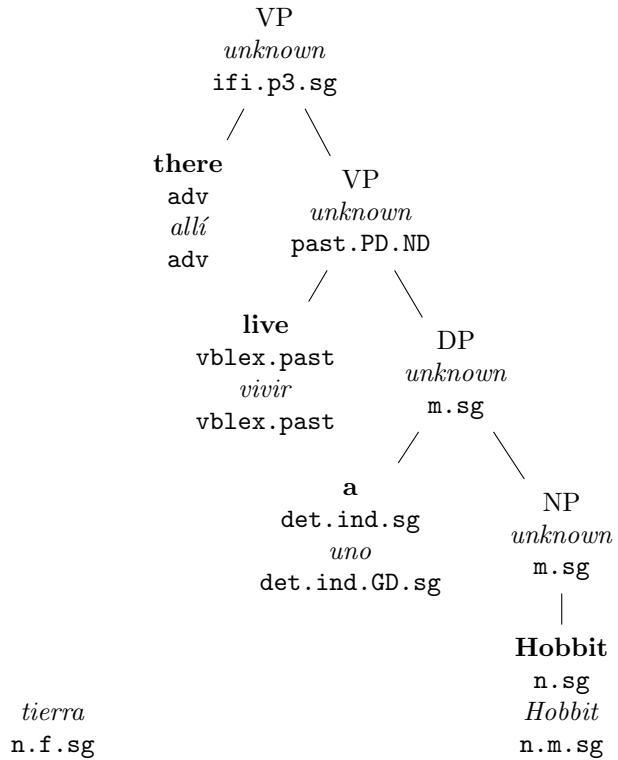
4.5 Output Step for PP → pr DP



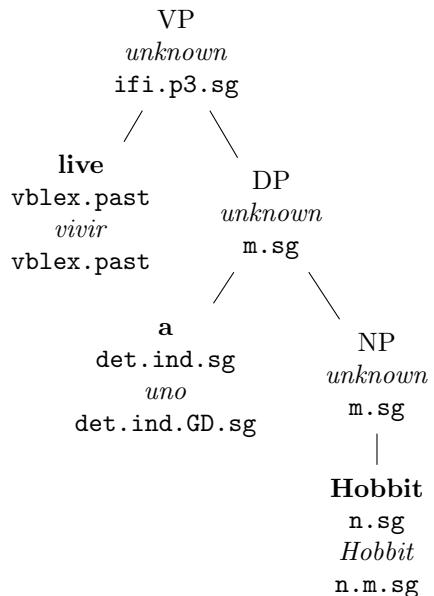
4.6 Output Step for DP → det NP



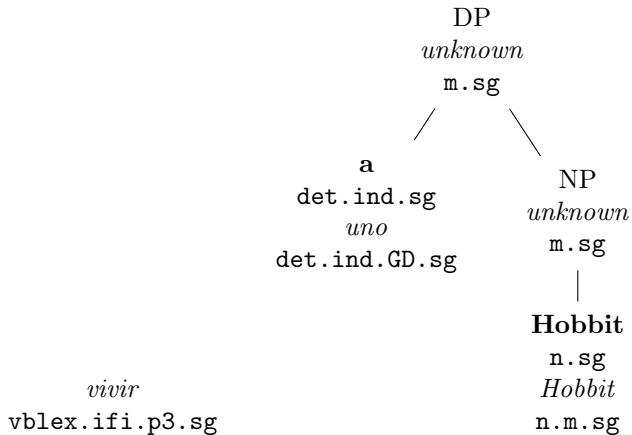
4.7 Output Step for NP → n



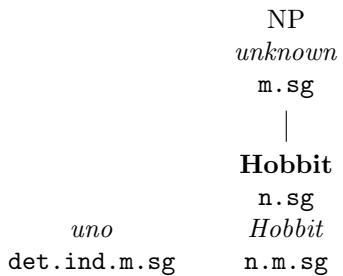
4.8 Output Step for VP → adv VP



4.9 Output Step for VP → vblex DP



4.10 Output Step for DP → det NP



4.11 Output Step for NP → n

Hobbit
n.m.sg

5 The Result

The immediate result:

~En<pr>\$ ^uno<det><ind><m><sg>\$ ^agujero<n><m><sg>\$ ^en<pr>\$ ^el<det><def><f><sg>\$ ^tierra<n><f><sg>\$ ~vivir<vblex><ififi><p3><sg>\$ ^uno<det><ind><m><sg>\$ ^Hobbit<n><m><sg>\$^.<sent>\$^.<sent>\$

Final output:

En un agujero en la tierra vivió un Hobbit.