

```

1 type MARK = {subst, subst, nadj, foot, anchor, coanchor, flex}
2 type CAT = {np, v, vp, s}
3 type PHON = {e}
4 type CASE = {nom, acc, none}
5 type AGR = [ pers : PERS,
6   thirdsing : bool,
7   num : NUM,
8   gen : GEN ]
9 type NUM = {plur, sing}
10 type PERS = {1, 2, 3}
11 type GEN = {masc, fem, neuter}
12 property mark : MARK
13 feature cat : CAT
14 feature case : CASE
15 feature agr : AGR
16 % TREE FRAGMENTS:
17 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
18 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
19 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
20 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
21 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
22 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
23 class VerbProjection
24 export ?VP ?V ?VMARK ?AGR
25 declare ?VP ?V ?VMARK ?AGR
26 {<syn>{
27   node ?VP [cat = vp];
28   node ?V (mark = ?VMARK) [cat = v, agr = ?AGR];
29   ?VP -> ?V
30 }
31 }
32 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
33 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
34 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
35 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
36 class Subject
37 export ?S ?NP ?VP ?NPMARK ?AGR
38 declare ?S ?NP ?VP ?NPMARK ?AGR
39 {<syn>{
40   node ?S [cat = s]{
41     node ?NP (mark = ?NPMARK) [cat=np, case = nom, agr = ?AGR]
42     node ?VP [cat = vp]
43   }
44 }
45 }
46 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
47 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
48 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
49 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
50 class Object
51 export ?VP ?NP ?V ?NPMARK
52 declare ?VP ?NP ?V ?NPMARK
53 {<syn>{
54   node ?VP [cat = vp];
55   node ?NP (mark=?NPMARK) [cat=np, case = acc];
56   ?VP -> ?NP; ?VP -> ?V; ?V -> ?NP
57 }
58 }
59 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
60 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
61 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
62 class EmptyWord
63 export ?XP ?CASE ?AGR
64 declare ?XP ?CASE ?AGR
65 {<syn>{
66   node ?XP (mark=fLex) [phon = e, case = ?CASE, agr = ?AGR]
67 }
68 }
69 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
70 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
71 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
72 class WhNP
73 export ?S0 ?S2 ?NP ?WHMARK ?WHCASE ?WHAGR
74 declare ?S0 ?S2 ?NP ?WHMARK ?WHCASE ?WHAGR

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75 { <syn>{
76   node ?S0 [cat = s] {
77     node ?NP (mark=?WHMARK) [cat = np, case = ?WHCASE, agr = ?WHAGR]
78     node ?S2 [cat = s]
79   }
80 }
81 }
82 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
83 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
84 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
85 class nX0V
86 import VerbProjection[]
87 export ?S ?NP0 ?NPMARK
88 declare ?Subj ?S ?NP0 ?NPMARK
89 {
90   ?Subj = Subject[];
91   ?VP = ?Subj . ?VP;
92   ?AGR = ?Subj . ?AGR;
93   ?NP0 = ?Subj . ?NP;
94   ?S = ?Subj . ?S;
95   ?NPMARK = ?Subj . ?NPMARK
96 }
97 }
98 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
99 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
100 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
101 class nX0VnX1
102 import nX0V[]
103 export ?NP1 ?NPMARK
104 declare ?NP1 ?NPMARK ?Obj
105 {
106   ?Obj = Object[];
107   ?Obj . ?VP = ?VP;
108   ?Obj . ?V = ?V;
109   ?NP1 = ?Obj . ?NP;
110   ?NPMARK = ?Obj . ?NPMARK
111 }
112 }
113 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
114 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
115 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
116 class WnX0VnX1
117 import nX0VnX1[] WhNP[]
118 {
119   ?S2 = ?S
120 }
121 }
122 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
123 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
124 class WnX0V
125 import nX0V[] WhNP[]
126 {
127   ?S2 = ?S
128 }
129 }
130 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
131 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
132 % TREE TEMPLATES:
133 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
134 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
135 class alphaX0V
136 import nX0V[]
137 {
138   ?NPMARK = subst;
139   ?VMARK = anchor
140 }
141 }
142 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
143 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
144 class alphaX0VnX1
145 import nX0VnX1[]
146 {
147   ?NPMARK = subst;
148   ?VMARK = anchor;

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149     ?NP1MARK = subst
150 }
151 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
152 class alphaInx0Vnx1
153 import Wnx0Vnx1[]
154 declare ?EmptyYw
155 {
156     ?EmptyYw = EmptyWord[];
157     ?EmptyYw.?XP = ?NP1;
158     ?EmptyYw.?CASE = ?WHCASE;
159     ?EmptyYw.?AGR = ?WHAGR;
160
161     ?NP0MARK = subst;
162     ?VMARK = anchor;
163     ?WHMARK = subst
164 }
165 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
166 class alpha0Vnx1[]
167 import Wnx0Vnx1[]
168 declare ?EmptyYw
169 {
170     ?EmptyYw = EmptyWord[];
171     ?EmptyYw.?XP = ?NP0;
172     ?EmptyYw.?CASE = ?WHCASE;
173     ?EmptyYw.?AGR = ?WHAGR;
174
175     ?NP1MARK = subst;
176     ?VMARK = anchor;
177     ?WHMARK = subst
178 }
179 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
180 class alpha0Vnx1[]
181 import Wnx0Vnx1[]
182 declare ?EmptyYw
183 {
184     ?EmptyYw = EmptyWord[];
185     ?EmptyYw.?XP = ?NP0;
186     ?EmptyYw.?CASE = ?WHCASE;
187     ?EmptyYw.?AGR = ?WHAGR;
188
189     ?NP1MARK = subst;
190     ?VMARK = anchor;
191     ?WHMARK = subst
192 }
193 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
194 class alpha0Vnx1[]
195 import Wnx0Vnx1[]
196 declare ?EmptyYw
197 {
198     ?EmptyYw = EmptyWord[];
199     ?EmptyYw.?XP = ?NP0;
200     ?EmptyYw.?CASE = ?WHCASE;
201     ?EmptyYw.?AGR = ?WHAGR;
202
203     ?NP0MARK = subst;
204     ?VMARK = anchor;
205     ?WHMARK = subst
206 }
207 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
208 % TREE FAMILIES:
209 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
210 class Tnx0V
211 declare ?Tnx0V = ( alphaInx0V[] | alpha0Vnx1[] )
212
213 class Tnx0Vnx1
214 declare ?Tnx0Vnx1 = ( alphaInx0Vnx1[] | alpha0Vnx1[] | alphaInx0Vnx1[] )
215
216 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
217 % EVALUATION:
218 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
219
220
221
222

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223 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
224 value alphaInx0V
225 value alphaInx0Vnx1
226 value alphaInx0Vnx1
227 value alpha0Vnx1
228 value alpha0Vnx1
229 value alpha0Vnx1
230 value Tnx0V
231 value Tnx0Vnx1
232

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