Towards a strong generative capacity for phonology

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python supplement

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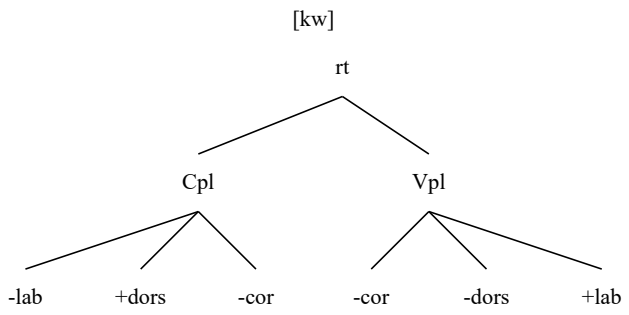
In [ ]:
```
import autosegx as ax

unified_f = {
    'p' : {('rt','Cpl'), ('Cpl','+lab1'), ('Cpl','-dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','-dors2'), ('Vpl','-cor2')},
    't' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','-dors1'), ('Cpl','+cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','-dors2'), ('Vpl','-cor2')},
    'k' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','+dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','-dors2'), ('Vpl','-cor2')},
    'pw' : {('rt','Cpl'), ('Cpl','+lab1'), ('Cpl','-dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','+lab2'), ('Vpl','-dors2'), ('Vpl','-cor2')},
    'tw' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','-dors1'), ('Cpl','+cor1'), ('rt','Vpl'), ('Vpl','+lab2'), ('Vpl','-dors2'), ('Vpl','-cor2')},
    'kw' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','+dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','+lab2'), ('Vpl','-dors2'), ('Vpl','-cor2')},
    'pj' : {('rt','Cpl'), ('Cpl','+lab1'), ('Cpl','-dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','-dors2'), ('Vpl','+cor2')},
    'tj' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','-dors1'), ('Cpl','+cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','-dors2'), ('Vpl','+cor2')},
    'kj' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','+dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','-dors2'), ('Vpl','+cor2')},
    'pɣ' : {('rt','Cpl'), ('Cpl','+lab1'), ('Cpl','-dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','+dors2'), ('Vpl','-cor2')},
    'tɣ' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','-dors1'), ('Cpl','+cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','+dors2'), ('Vpl','-cor2')},
    'kɣ' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','+dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','+dors2'), ('Vpl','-cor2')},
    'kp' : {('rt','Cpl'), ('Cpl','+lab1'), ('Cpl','+dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','-dors2'), ('Vpl','-cor2')},
    'tp' : {('rt','Cpl'), ('Cpl','+lab1'), ('Cpl','-dors1'), ('Cpl','+cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','-dors2'), ('Vpl','-cor2')},
    'kt' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','+dors1'), ('Cpl','+cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','-dors2'), ('Vpl','-cor2')},
    'y' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','-dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','+lab2'), ('Vpl','-dors2'), ('Vpl','+cor2')},
    'ʉ' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','-dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','+lab2'), ('Vpl','-dors2'), ('Vpl','-cor2')},
    'u' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','-dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','+lab2'), ('Vpl','+dors2'), ('Vpl','-cor2')},
    'i' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','-dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','-dors2'), ('Vpl','+cor2')},
    'ɨ' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','-dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','-dors2'), ('Vpl','-cor2')},
    'ɯ' : {('rt','Cpl'), ('Cpl','-lab1'), ('Cpl','-dors1'), ('Cpl','-cor1'), ('rt','Vpl'), ('Vpl','-lab2'), ('Vpl','+dors2'), ('Vpl','-cor2')},
}

v_features_f = {
    'p' : {('rt','Pl'), ('Pl','+lab'), ('Pl','-dors'), ('Pl','-cor'), ('rt','-rnd'), ('rt','-bck'), ('rt','-frnt')},
    't' : {('rt','Pl'), ('Pl','-lab'), ('Pl','-dors'), ('Pl','+cor'), ('rt','-rnd'), ('rt','-bck'), ('rt','-frnt')},
    'k' : {('rt','Pl'), ('Pl','-lab'), ('Pl','+dors'), ('Pl','-cor'), ('rt','-rnd'), ('rt','-bck'), ('rt','-frnt')},
    'pw' : {('rt','Pl'), ('Pl','+lab'), ('Pl','-dors'), ('Pl','-cor'), ('rt','+rnd'), ('rt','-bck'), ('rt','-frnt')},
    'tw' : {('rt','Pl'), ('Pl','-lab'), ('Pl','-dors'), ('Pl','+cor'), ('rt','+rnd'), ('rt','-bck'), ('rt','-frnt')},
    'kw' : {('rt','Pl'), ('Pl','-lab'), ('Pl','+dors'), ('Pl','-cor'), ('rt','+rnd'), ('rt','-bck'), ('rt','-frnt')},
    'pj' : {('rt','Pl'), ('Pl','+lab'), ('Pl','-dors'), ('Pl','-cor'), ('rt','-rnd'), ('rt','-bck'), ('rt','+frnt')},
    'tj' : {('rt','Pl'), ('Pl','-lab'), ('Pl','-dors'), ('Pl','+cor'), ('rt','-rnd'), ('rt','-bck'), ('rt','+frnt')},
    'kj' : {('rt','Pl'), ('Pl','-lab'), ('Pl','+dors'), ('Pl','-cor'), ('rt','-rnd'), ('rt','-bck'), ('rt','+frnt')},
    'pɣ' : {('rt','Pl'), ('Pl','+lab'), ('Pl','-dors'), ('Pl','-cor'), ('rt','-rnd'), ('rt','+bck'), ('rt','-frnt')},
    'tɣ' : {('rt','Pl'), ('Pl','-lab'), ('Pl','-dors'), ('Pl','+cor'), ('rt','-rnd'), ('rt','+bck'), ('rt','-frnt')},
    'kɣ' : {('rt','Pl'), ('Pl','-lab'), ('Pl','+dors'), ('Pl','-cor'), ('rt','-rnd'), ('rt','+bck'), ('rt','-frnt')},
    'kp' : {('rt','Pl'), ('Pl','+lab'), ('Pl','+dors'), ('Pl','-cor'), ('rt','-rnd'), ('rt','-bck'), ('rt','-frnt')},
    'tp' : {('rt','Pl'), ('Pl','+lab'), ('Pl','-dors'), ('Pl','+cor'), ('rt','-rnd'), ('rt','-bck'), ('rt','-frnt')},
    'kt' : {('rt','Pl'), ('Pl','-lab'), ('Pl','+dors'), ('Pl','+cor'), ('rt','-rnd'), ('rt','-bck'), ('rt','-frnt')},
    'y' : {('rt','Pl'), ('Pl','-lab'), ('Pl','-dors'), ('Pl','-cor'), ('rt','+rnd'), ('rt','-bck'), ('rt','+frnt')},
    'ʉ' : {('rt','Pl'), ('Pl','-lab'), ('Pl','-dors'), ('Pl','-cor'), ('rt','+rnd'), ('rt','-bck'), ('rt','-frnt')},
    'u' : {('rt','Pl'), ('Pl','-lab'), ('Pl','-dors'), ('Pl','-cor'), ('rt','+rnd'), ('rt','+bck'), ('rt','-frnt')},
    'i' : {('rt','Pl'), ('Pl','-lab'), ('Pl','-dors'), ('Pl','-cor'), ('rt','-rnd'), ('rt','-bck'), ('rt','+frnt')},
    'ɨ' : {('rt','Pl'), ('Pl','-lab'), ('Pl','-dors'), ('Pl','-cor'), ('rt','-rnd'), ('rt','-bck'), ('rt','-frnt')},
    'ɯ' : {('rt','Pl'), ('Pl','-lab'), ('Pl','-dors'), ('Pl','-cor'), ('rt','-rnd'), ('rt','+bck'), ('rt','-frnt')},
}

unified = ax.Theory(unified_f, name="unified")
v_features = ax.Theory(v_features_f, name="v-features")

report = ax.Comparison([unified, v_features])
```

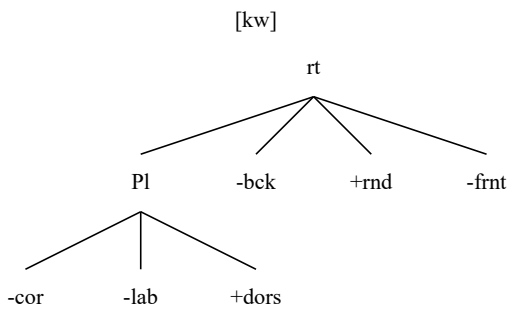
In [ ]:
```
unified.segments['kw'].gv()
```

Out[ ]:



In [ ]:
```
v_features.segments['kw'].gv()
```

Out[ ]:



In [ ]:
```
report.results(verbose = 2, shared = False)
```

```
The theories are NOT natural class preserving.

6 natural class(es) unique to unified.
        1. [ k kj kp kt kw kɣ pɣ tɣ u ɯ ]
                Defining factors:
                (1) +dors
        2. [ kp kw p pj pw pɣ tp tw u y ʉ ]
                Defining factors:
                (1) +lab
        3. [ i k kj kp kt kw kɣ p pj pɣ t tj tp tw tɣ u y ɨ ɯ ʉ ]
                Defining factors:
                (1) -lab
        4. [ i kj kt pj t tj tp tw tɣ y ]
                Defining factors:
                (1) +cor
        5. [ i k kj kp kt kw kɣ p pj pw pɣ t tp tw tɣ u y ɨ ɯ ʉ ]
                Defining factors:
                (1) -cor
        6. [ i k kj kp kt kw p pj pw pɣ t tj tp tw tɣ u y ɨ ɯ ʉ ]
                Defining factors:
                (1) -dors

0 natural class(es) unique to v-features.

238 natural class(es) shared.
```