A miniresource grammar for Tswana (and Zulu)

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Tswana

- Southern Bantu language, Sotho-Tswana-group
- SVO
- Agglutinative
- Verb prefixes written disjunctively
- Verb suffixes written conjunctively
- Morphotactics (morpheme sequences)
- Alternation rules (sound changes)
<table>
<thead>
<tr>
<th>Class gender</th>
<th>Prefixes</th>
<th>Semantic content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2</td>
<td><em>mo-, ba-</em></td>
<td>exclusively personal</td>
</tr>
<tr>
<td>1a, 2a</td>
<td><em>(-), bo-</em></td>
<td>proper names, kinship terms, personifications</td>
</tr>
<tr>
<td>3, 4</td>
<td><em>mo-, me-</em></td>
<td>exclusively impersonal, mostly plants, especially trees</td>
</tr>
<tr>
<td>5, 6</td>
<td><em>le-, ma-</em></td>
<td>miscellaneous, many plants</td>
</tr>
<tr>
<td>7, 8</td>
<td><em>se-, di-</em></td>
<td>miscellaneous, names of languages, their customs and habits, plants</td>
</tr>
<tr>
<td>9, 10</td>
<td><em>(-), di-</em></td>
<td>miscellaneous, most animal names</td>
</tr>
<tr>
<td>11, 10</td>
<td><em>lo-, di-</em></td>
<td>miscellaneous, disappearing</td>
</tr>
<tr>
<td>14, 6</td>
<td><em>bo-, ma-</em></td>
<td>abstract and neutral</td>
</tr>
<tr>
<td>15</td>
<td><em>go-</em></td>
<td>infinitives</td>
</tr>
<tr>
<td>16</td>
<td><em>fa-</em></td>
<td>place or locality</td>
</tr>
<tr>
<td>17</td>
<td><em>go-</em></td>
<td>place or locality</td>
</tr>
<tr>
<td>18</td>
<td><em>mo-</em></td>
<td>place or locality</td>
</tr>
<tr>
<td>19</td>
<td><em>ga-</em></td>
<td>place or locality</td>
</tr>
<tr>
<td>20</td>
<td>*(-)</td>
<td>place or locality</td>
</tr>
</tbody>
</table>
# Tswana - verb

<table>
<thead>
<tr>
<th>Structure</th>
<th>Morpheme</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefix</td>
<td>infinitive</td>
<td>go</td>
</tr>
<tr>
<td></td>
<td>negative</td>
<td>ga</td>
</tr>
<tr>
<td></td>
<td>subject concord</td>
<td>as per class</td>
</tr>
<tr>
<td></td>
<td>negative</td>
<td>se, sa, a</td>
</tr>
<tr>
<td></td>
<td>aspectual</td>
<td>a, sa, ka</td>
</tr>
<tr>
<td></td>
<td>temporal</td>
<td>tla</td>
</tr>
<tr>
<td></td>
<td>object concord</td>
<td>as per class, reflexive i-</td>
</tr>
<tr>
<td>Root</td>
<td>causative</td>
<td>-is-</td>
</tr>
<tr>
<td></td>
<td>applicative</td>
<td>-el-</td>
</tr>
<tr>
<td></td>
<td>reciprocal</td>
<td>-an-</td>
</tr>
<tr>
<td></td>
<td>perfective</td>
<td>-il-</td>
</tr>
<tr>
<td></td>
<td>passive</td>
<td>-w-, -iw-</td>
</tr>
<tr>
<td>Verbal ending</td>
<td></td>
<td>-a, -e, -ng</td>
</tr>
</tbody>
</table>
Tswana - concordial agreement

Minimal sentence

* o a raga
* o a rag-a
* sc1 long-pt root+ve
* he kicks

Extended sentence

* mosimane o a raga
* mo-simane o a rag-a
* c1+root sc1 long-pt root+ve
* the boy kicks

Sentence with overt object (SVO)

* mosimane o raga bolo
* mo-simane o raga (>-bolo
* c1+root sc1 root+ve c9+root
* the boy kicks the ball

Sentence without overt object (SV)

* mosimane o a e raga
* mo-simane o a e rag-a
* c1+root sc1 long-pt oc9 root+ve
* the boy kicks it
Tswana - mood

Tswana mood categories

Non-predicative  Predicative

Imperative  Infinitive Independent Dependent

Indicating  Modifying  Consecutive  Habitual  Subjunctive

Indicative  Participial Relative
<table>
<thead>
<tr>
<th>Present</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unmarked</td>
<td><em>Mosimane o a raga</em></td>
<td><em>Mosimane ga a raga</em></td>
</tr>
<tr>
<td></td>
<td>The boy kicks</td>
<td>The boy does not kick</td>
</tr>
<tr>
<td>Progressive</td>
<td><em>Mosimane o sa raga</em></td>
<td><em>Mosimane ga a sa raga</em></td>
</tr>
<tr>
<td></td>
<td>The boy still kicks</td>
<td>The boy does not still kick</td>
</tr>
<tr>
<td>Potential</td>
<td><em>Mosimane a ka raga</em></td>
<td><em>Mosimane a ka se raga</em></td>
</tr>
<tr>
<td></td>
<td>The boy can kick</td>
<td>The boy cannot kick</td>
</tr>
</tbody>
</table>

| Future           | Positive              | Negative                          |
|------------------|-----------------------|                                   |
| Aspect           |                       |                                   |
| Unmarked         | *Mosimane o tla raga* | *Mosimane ga a ketla a raga*      |
|                  | The boy will kick     | The boy will not kick              |
| Progressive      | *Mosimane o tlabo a santse a raga* | *Mosimane o tlabo a sa tlhole a raga* |
|                  | The boy will still be kicking | The boy will not still be kicking |
| Potential        | *Mosimane o tlabo a kgona go raga* | *Mosimane o tlabo a sa kgone go raga* |
|                  | The boy will be able to kick | The boy will not be able to kick |

| Past definite    | Positive              | Negative                          |
|------------------|-----------------------|                                   |
| Aspect           |                       |                                   |
| Unmarked         | *Mosimane o ragile*   | *Mosimane ga a a raga*            |
|                  | The boy kicked        | The boy did not kick               |
| Progressive      | -                     | -                                 |
| Potential        | *Mosimane o kab o a ragile* | *Mosimane o tlabo a sa kgone go raga* |
|                  | The boy could kick    | The boy could not kick             |

| Past indefinite  | Positive              | Negative                          |
|------------------|-----------------------|                                   |
| Aspect           |                       |                                   |
| Unmarked         | *Mosimane o ne a raga* | *Mosimane ga a sa raga*           |
|                  | The boy was kicking    | The boy was not kicking            |
| Progressive      | *Mosimane o ne a santse a raga* | *Mosimane o ne a sa tlhole a raga* |
|                  | The boy was still kicking | The boy was not still kicking      |
| Potential        | *Mosimane o ne a kgona go raga* | *Mosimane o ne a sa kgone go raga* |
|                  | The boy could kick     | The boy could not kick             |
Tswana - GF parameters

\[
\text{param}
\]
\[
\text{Mood} = \text{TM Mood} \mid \text{DM Mood} \mid \text{IM Mood} ;
\text{TM Mood} = \text{Indic} \mid \text{Rel} ;
\text{DM Mood} = \text{Consec} ;
\text{IM Mood} = \text{Imper} ;
\text{TPol} = \text{Pos} \mid \text{Neg} ;
\text{TTemp} = \text{Past Def} \mid \text{Past Indef} \mid \text{Pres} \mid \text{Fut} ;
\text{Aspect} = \text{Null} \mid \text{Prog} \mid \text{Pot} ;
\text{VForm} = \text{VFT TM Mood TPol TTemp Aspect} \mid \text{VFD DM Mood TPol} \mid \text{VFI IM Mood TPol} ;
\text{Number} = \text{Sg} \mid \text{Pl} ;
\text{ClassPair} = \text{C1_2} \mid \text{C3_4} \mid \text{C5_6} \mid \text{C7_8} \mid \text{C9_10} \mid \text{C11_10} \mid \text{C14_6} \mid \text{C15} \mid \text{C16} \mid \text{C17} \mid \text{C18} \mid \text{C19} \mid \text{C20} ;
\text{Agr} = \text{First Number} \mid \text{Second Number} \mid \text{Third Number ClassPair} ;
\]
Tswana - GF noun phrase

```
NP = {
    s : Str ;
    agr : Agr ;
    pron : Bool
} ;

Det = {
    s : Str ;
    n : Number
} ;

N, CN = {
    stem : Number => Str ;
    class : ClassPair
} ;
```

```
{  
    s = "lekau" ;
    agr = Third Sg C5_6 ;
    pron = False
}
```

```
theSg_Det = {
    s = [] ;
    n = Sg
} ;
```

```
young_man_N = {
    s = table {
        Sg => "lekau" ;
        Pl => "makau"
    } ;
    class = C5_6
} ;
```
Tswana - GF verb phrase

```
VP = {
    v : Verb;
    vtype : VType;
    comp : Str;
    oc : Str;
    asp : Aspect;
    long : Bool;
    pron : Bool;
    agr : Agr
}

V, V2 = {
    root : VForm => Agr => Str;
    impform : Number => TPol => Agr => Bool => Str;
}
```

```
mkRoot : Str -> VForm => Agr => Str = \root ->
    table {
        VFT Indic Pos (PastDef) _ => table {
            (First Sg) => case root of { "ts" => (nConjRoot (root + "itse"));
                x + "el" => (nConjRoot (x + "etse"));
                _ => (nConjRoot (root + "ile")) }
            _ => case root of { "ts" => root + "itse";
                x + "el" => x + "etse";
                _ => root + "ile" }
        }
        VFT Indic Pos _ _ => table {
            (First Sg) => (nConjRoot root)+"a";
            _ => root+"a"
        }
        VFT Indic Neg (PastDef) _ => table {
            (First Sg) => (nConjRoot root)+"a";
            _ => root+"a"
        }
        VFT Indic Neg (PastIndef) (Pot|Prog) => table {
            (First Sg) => (nConjRoot root)+"a";
            _ => root+"a"
        }
        VFT Indic Neg (PastIndef) _ => table {
            (First Sg) => (nConjRoot root)+"e";
            _ => root+"e"
        }
        VFT Indic Neg Pres Prog => table {
            (First Sg) => (nConjRoot root)+"a";
            _ => root+"a"
        }
    }
```
Tswana - GF verb phrase

```json
see_v2 = {
    root = mkRoot "bon" ;
    impform = impForm "bon"
} ;
```

```json
v = see_V2 ;
 vtype = Vb2 ;
 comp = "ditau" ;
 oc = [] ;
 asp = Null ;
 long = False ;
 pron = False ;
 agr = Third Pl C9_10
}
```

```json
s = "ditau" ;
 agr = Third Pl C9_10 ;
 pron = False
}
```

```json
them10_NP = {
    s = [] ;
    agr = Third Pl C9_10 ;
    pron = True
} ;
```
negpref : VForm => Str =

    table {
        VFT Indic Neg Pres Pot => [] ;
        VFT Indic Neg _ _ => "ga" ;
        VFT Indic Neg (PastDef) Pot => [] ;
        VFT Indic Neg (PastDef) _ _ => "ga" ;
        VFT Indic _ _ _ => [] ;
        VFT _ _ _ _ => [] ;
        VFD _ _ => [] ;
        VFI _ _ => [] ;
    } ;

negpref2 : VForm => Str =

    table {
        VFT Indic Neg (PastDef) (Null|Prog) => "a" ;
        VFT Indic Neg (PastIndef) Null => "sa" ;

        VFT Rel Neg ((PastDef) | (PastIndef) | Pres) Null => "sa" ;
        VFT _ _ _ _ => [] ;

        VFI Imper Neg => "se" ;
        VFI _ _ => [] ;

        VFD Consec Neg => "se" ;
        VFD _ _ => [] ;
    } ;
Tswana - GF clause

```plaintext
Cl = {
  s : TPol => TTemp => Mood => Str
};

{v = see_V2;
 vtype = Vb2;
 comp = [];
 oc = "di";
 asp = Null;
 long = False;
 pron = True;
 agr = Third Pl C9_10
};
```
Tswana - GF clause

```plaintext
PredVP np vp = {
    s = \pol, temp, mood =>
        let
            vform = case mood of {
                TM m => VFT m \pol temp (vp.asp) ;
                DM m => VFD m \pol ;
                IM m => VFI m \pol
            }
        in
            case vform of {
                VFT n ___ =>
                    np.s ++
                    pastdefault!m!pol!temp!(vp.asp)!np.agr ++
                    pastindefault!m!pol!temp!(vp.asp)!np.agr ++
                    futnegaux!m!pol!temp!(vp.asp)!np.agr ++
                    negpref!vform ++
                    subjconc!vform!np.agr ++
                    negpref2!vform ++
                    asppref!vform ++
                    negprefsswitch!vform ++
                    temppref!vform ++
            }
    case vp.long of {
        True => case vform of {
            VFT Indic Pos Pres Null => "a" ;
            VFT ___ ___ => [] ;
            (VFD ___ | VFI ___) => []
        };
        False => []
    } ++
    vp.oc ++
    (vp.v).root!vform!vp.agr ++
    vp.comp ;
    (VFD ___ | VFI ___) =>
        np.s ++
        subjconc!vform!np.agr ++
        negpref2!vform ++
        asppref!vform ++
        (vp.v).root!vform!vp.agr ++
        vp.comp
}; ;
```
the young man runs

he runs
Tswana - examples

the young man sees the lions

the young man sees them

[Diagram of Tswana sentence structures]
Tswana - examples

the young man will see them

the young man saw them
Tswana - examples

the young man sees me

the young man saw me
Zulu - code demo