1. Background on Tamazhaq

Tamazhaq (tömajq) is the language of the Tuareg,\(^1\) who are largely nomadic people living in the southern Sahara Desert in Algeria, Mali, and Niger. The Ethnologue puts the total Tuareg population of all countries at 640,000. Tamazhaq is a member of the Berber language family and hence is part of the Afroasiatic phylum, which also includes the Semitic, Cushitic, and Chadic families as well as now-extinct Egyptian. An interesting fact about Tamazhaq is that it is a written language, which uses an alphabet called Tāfināgh. The root of the name of the writing system is \(f-n-\gamma\), which is the same root found in “Phoenician”, the ancient Semitic syllabary that is the basis for all European writing systems. We can thus assume that Tāfināgh and the Greek and Roman alphabets ultimately all have the same origin.

In addition to the typical distinction between first, second, and third persons singular and plural, the pronominal systems of all Berber languages further distinguish masculine and feminine gender in nearly all functions in second and third person. Pronominal reference for subjects, objects of verbs and prepositions, and genitives are all affixes to the respective bases. Verbal objects also have the unusual property of being prefixes or suffixes depending on whether or not certain “paricles” precede the verb. This paper will describe verbal direct object pronoun affixes and will attempt to formalize the relationships between pronouns within and across direct object paradigms.

\(^1\) The Oxford English dictionary says the name Tuareg is a “native name”, but this cannot be correct for the simple reason that they call themselves imajjān, based on the same root as the name of the language, and as far as I know, the word “Tuareg” nor anything like it is used by speakers of Tamazhaq. It probably is an Arabic name, perhaps from the root \(t-r-q\) meaning ‘knock, rap’.
Tamazhaq has a number of regional dialects. The dialect here belongs to the Tayrt dialect group, spoken in north-central Niger. I collected most of the data in 1974 in Kano, Nigeria from Salisu ag Hamedu of Tanout, Niger. I have also referred to Alojaly (1980). This book focuses on the Tawallammat dialect of northeastern Niger, which is closely related to Tayrt, but the book also contains much information on Tayrt.

The main orthographic conventions used here are the following: \( \ddot{a} = \text{IPA} [\dot{a}], \sigma = \text{IPA} [i], j = \text{IPA} [\ddot{a}] \) or \([d]\) depending on dialect, \( y = \text{IPA} [j] \). Stress is marked by an acute accent, but stress plays no role in pronoun morphology, and I will not discuss it in this paper.

### 2. Tamazhaq Direct Object Pronouns

Table 1 presents the direct object pronouns of Tamazhaq.

<table>
<thead>
<tr>
<th>C-final verb</th>
<th>(\gamma)-final verb</th>
<th>V-final verb</th>
<th>Prefixed to verb</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘they called…’</td>
<td>‘you (sg)/I called…’</td>
<td>‘he called…’</td>
<td>‘she didn’t call…’</td>
</tr>
<tr>
<td>((\dot{y})(\dot{r})(\ddot{a}))</td>
<td>((\dot{t})(\dot{y})(\dot{r})(\ddot{e}))</td>
<td>((\dot{f})(\ddot{r}))</td>
<td>(wur-(\dot{t})(\dot{y})(\ddot{g}))</td>
</tr>
</tbody>
</table>
| 1 s               | \(\dot{y}\)\(\dot{r}\)\(\ddot{a}\)-i | \(\dot{t}\)\(\dot{y}\)\(\dot{r}\)\(\dot{e}\)-i | \(\dot{f}\)\(r\)-i | wur-d\(\dot{t}\)\(\dot{y}\)\(\ddot{y}\)ra
| 2 ms              | \(\dot{y}\)\(\dot{r}\)\(\ddot{a}\)-ki | \(\dot{y}\)req-qi | \(\dot{f}\)r-ik | wur-\(k\)\(\dot{m}\)-\(t\)\(\dot{y}\)\(\ddot{y}\)ra
| 2 fs              | \(\dot{y}\)\(\dot{r}\)\(\ddot{a}\)-k\(\ddot{a}\)m | \(\dot{y}\)req-\(\ddot{q}\)\(\ddot{m}\) | \(\dot{f}\)r-im | wur-\(k\)\(\ddot{m}\)-\(t\)\(\dot{y}\)\(\ddot{y}\)ra
| 3 ms              | \(\dot{y}\)\(\dot{r}\)\(\ddot{a}\)-tu | \(\dot{y}\req\)-qu | \(\dot{f}\)r-e↑ | wur-t\(\dot{u}\)-\(t\)\(\dot{y}\)\(\ddot{y}\)ra
| 3 fs              | \(\dot{y}\)\(\dot{r}\)\(\ddot{a}\)-t\(\ddot{t}\) | \(\dot{y}\req\)-q\(\ddot{a}\)t | \(\dot{f}\)r-et | wur-t\(\dot{a}\)-\(t\)\(\dot{y}\)\(\ddot{y}\)ra
| 1 p               | \(\dot{y}\)\(\dot{r}\)\(\ddot{a}\)-ana | \(\dot{t}\)\(\dot{a}\)\(r\)\(\dot{e}\)-\(\ddot{a}\)na | \(\dot{f}\)r-an\(a\) | wur-d\(\dot{a}\)-\(t\)\(\dot{y}\)\(\ddot{y}\)ra
| 2 mp              | \(\dot{y}\)\(\dot{r}\)\(\ddot{a}\)-k\(\ddot{a}\)w\(\ddot{a}\)n | \(\dot{a}\)\(r\)\(\dot{e}\)\(q\)-q\(\ddot{a}\)w\(\ddot{a}\)n | \(\dot{f}\)r\(\ddot{i}\)w\(\ddot{a}\)n | wur-k\(\ddot{w}\)\(\ddot{u}\)n-\(t\)\(\dot{y}\)\(\ddot{y}\)ra
| 2 fp              | \(\dot{y}\)\(\dot{r}\)\(\ddot{a}\)-k\(\ddot{a}\)m\(\ddot{a}\)t | \(\dot{a}\)\(r\)\(\dot{e}\)\(q\)-q\(\ddot{a}\)m\(\ddot{a}\)t | \(\dot{f}\)r\(\dot{i}\)k\(\ddot{m}\)\(\ddot{a}\)t | wur-\(k\)\(\ddot{m}\)\(\ddot{a}\)t-\(t\)\(\dot{y}\)\(\ddot{y}\)ra
| 3 mp              | \(\dot{y}\)\(\dot{r}\)\(\ddot{a}\)-t\(\ddot{a}\)n | \(\dot{a}\)\(r\)\(\dot{e}\)\(q\)-q\(\ddot{a}\)n | \(\dot{f}\)r\(\ddot{e}\)n | wur-t\(\ddot{a}\)-\(t\)\(\dot{y}\)\(\ddot{y}\)ra
| 3 fp              | \(\dot{y}\)\(\dot{r}\)\(\ddot{a}\)-t\(\ddot{a}\)n\(\dot{a}\)t | \(\dot{a}\)\(r\)\(\dot{e}\)\(q\)-q\(\ddot{a}\)n\(\dot{a}\)t | \(\dot{f}\)r\(\dot{e}\)n\(\dot{a}\)t | wur-t\(\dot{a}\)n\(\dot{a}\)-\(t\)\(\dot{y}\)\(\ddot{y}\)ra

2 Salisu was a nightwatchman/guard at a house where my wife and I were staying. Tuareg were popular as guards in Nigeria, probably because of their appearance—they always partially cover their faces with turbans, giving them a forbidding look, and they usually carry big swords! Salisu usually had a bunch of his pals around, so some of the data may have come from them.

3 My first work on Tamazhaq was actually with Ghobeid ag Alojaly, the author of Alojaly (1980), when I was a Peace Corps Volunteer in Agadez, Niger. Ghobeid was the Tuareg “disc jockey” at Radio Niger in Agadez.

4 The verb ends in a different vowel depending on whether or an object affix is present. Since the focus of this paper is the object affixes, I will not attempt to account or allomorphy in the verb stem.
There are four sets of direct object pronouns. The underlined column headings refer to the environments for the pronouns. The verb form in parentheses is the verb as it would appear with no object affixes. The major breakdown appears to be between the right-hand column, where the pronouns precede the verb, and the other columns where the pronouns follow the verb. Object pronouns are “attracted” to preverbal position when certain complementizers precede the verb. These include the negative wur, the future prefix /ad/, the dependent future prefix ze, and relative pronouns and question words. Table 1 illustrates with the negative. Examples with the future particle are a-dí-täγru ‘she will call me’, a-kí-täγru ‘she will call you (ms)’, etc. (/ad/ → [a] before another prefix), and in a relative clause ta tu-taŋγat ‘the (female) that (ta) killed him’ (the latter example from Alojaly 1980:229).

Among the suffixed pronouns, the main division is between those in the V-final verb column (base verb ends in a vowel) and the two left-hand columns (base verb ends in a consonant). The vowel associated with pronouns suffixed to V-final verbs replaces the final vowel of the verb. In Table 1 the base verb ends in –a, but in änγ-et ‘kill her’ the base verb is änγu (Alojaly 1980:229). The final consonant of the verb in the C-final verb column may be any consonant other than –γ of the 1st and 2nd person singular subject suffixes. The final consonant in Table-1 is the –n of the 3rd plural masculine subject suffix, but it could also be a root consonant, e.g. yíndåb-i ‘he shot me’, yíndåb-ki ‘he shot you (ms)’, etc.

Those in the γ-final column are a special case of those in the C-final column. Verbs with 1st or 2nd person singular subjects have a suffix with the following alternants:

---

5 The traditional Berber terminology refers to the object pronouns as “satellites”, viewing the pronouns as moons revolving around a planet (the verb).
-Vγ before V initial suffixes:  
\[ \text{tɒγɾɛγ-i} \] ‘you (sg) called me’  
\[ \text{ɒnɛɛγ-ak} \] ‘I said to you’

-\text{Vq} before suffixes beginning with a voiceless stop:  
\[ /\text{ɛγɾɛγ-ki} / \rightarrow [\text{ɛγɾɛq-qi}] \] ‘I called you (ms)’  
\[ /\text{ɛγɾɛγ-tu} / \rightarrow [\text{ɛγɾɛq-qu}] \] ‘I called him’

-\text{V} elsewhere:  
\[ \text{ɛγɾɛ} \] ‘I called’  
\[ \text{ɒsɛ-ددu} \] ‘I came’ (with -\text{ddu} ventive suffix)

The specific vowel of the subject suffix depends on verb class and verb tense—in this case a class of verbs with -e- for 1\textsuperscript{st} and 2\textsuperscript{nd} singular subjects and -a- for other persons in the perfective. Deletion of /γ/ in the -V allomorph is morphologically conditioned variation specific to this suffix, but the γ ~ q alternation is regular, seen for example, in  
\[ \text{ɪzɛɡɛγ} \] ‘it is red’ (with root final -γ), \text{t-ązɛwąγ-in} ‘red ones’, \text{t-ązɛwąγ-t} \rightarrow [t-ązɛwąq] ‘a red one’.\(^6\) In what follows, I will include γ-final as part of the C-final class, assuming that the output of the morphological rules will be input to regular phonological rules. The -γ of the suffix must be present lexically in order to condition use of the C-final object pronouns rather than the V-final ones. We assure this by deleting the -γ as part of the phonology rather than having a lexically specified allomorph ending in a vowel.

3. Analysis of the Direct Object Pronouns

The most striking difference between the columns in Table 1 is the fact that in the right-hand column the object pronouns precede whereas in the other columns, they follow. However, if one looks at the pronouns themselves, it is those used with V-final verbs that are set apart. All the others are alike except that (1), in the first person forms, the prefixed pronouns have a -d- that is absent in the suffixed forms (\text{-di-} vs. \text{-i-} and \text{-dan-} vs. \text{-ana-}) and (2) the prefixed forms have ə wherever the suffixed forms have ā.

---

\(^6\) Feminine nouns are formed by circumfixing a base with -t...t, with the final t being replaced by -in/-en in the plural. The name of the language, \text{tamajq}, from the root m-jγ, provides another example of the /γt/ \rightarrow [q] alternation.
Object pronouns in Tamazhag

(-k’am- vs. -kām-, etc.—I will assume that [u] in prefixed -kuwun- ‘you (mpl)’ is a phonological variant of /ə/ conditioned by the w). The pronouns in the V-final column are “missing things”—for the most part the initial consonant of the pronouns in the other series. Nonetheless there are certain elements that run across all the paradigms.

Let us think about these pronouns in terms of filling in matrix whose cells are defined by a set of features, as in the following schema:

<table>
<thead>
<tr>
<th>person</th>
<th>2 fem</th>
<th>3 pl</th>
</tr>
</thead>
<tbody>
<tr>
<td>kā-</td>
<td>-m-</td>
<td>-āt</td>
</tr>
<tr>
<td>tā-</td>
<td>-n-</td>
<td>-āt</td>
</tr>
</tbody>
</table>

Here are the main generalizations that run across all the paradigms:

• [+1st, -pl] always includes i, [+1st, +pl] always includes an
• [+1st, +pref] have initial d
• [+2nd] forms have k as the first C, except post-V [+fem, -pl] and [-fem, +pl] (abbreviatable as [αfem, -αpl])
• [+2nd, +fem] all have m as the second or only consonant
• [-1st, -2nd] forms have t as the first C, except post-V [-pl]
• [-1st, -2nd, +pl] all end in n (±Vt)
• [-1st, +fem] end in t, except for [+2nd, -pl]

These pronouns *almost* look as if they could be built by filling position classes with morphemes or building pronominal complexes by concatenation of more elemental morphemes, for example,

<table>
<thead>
<tr>
<th>person</th>
<th>fem</th>
</tr>
</thead>
<tbody>
<tr>
<td>kā-</td>
<td>-āt</td>
</tr>
<tr>
<td>tā-</td>
<td>-āt</td>
</tr>
</tbody>
</table>

---

7 In my notes, I have this vowel marked with an “up” arrow indicating that it is higher/more tense than a “normal” /e/, and even after all these years, I still remember having Salisu repeat this several times. Alojaly (1980:226) gives this pronoun as āy for the Tawollommat dialect, though he gives plain e for Tayrt. I suspect that the extra-high pronunciation is significant of something, but I will not try to account for it.
But there are anomalies in such an account. The 1st person morphemes 1 singular and 2 plural have nothing significant in common and would have to be listed as cumulative units in any account. The 2nd feminine morpheme -m- and a 3rd plural morpheme -n- do not form a natural class, yet they are mutually exclusive and occupy the same position class (or, stated as in a morpheme-based lexicon with rules of concatenation, they would require highly specific statements of combinatory potential and/or idiosyncratically restricted rules). And assuming that we would want to relate the C final set and the V final set, we would need some strange pairings of suppletive allomorphs.

Given these and other problems arising in a concatenative approach. I propose an analysis in the spirit of the Extended Word and Paradigm (EWP) model of Anderson (1982). elaborated in Anderson (1992). In this model, inflectional morphemes are not lexical items, but rather, they are rules that define phonological output. The input to the rules is a set of morphosyntactic features supplied by the syntax and/or by features inherent to the lexical class of the base which is to receive inflection. In the present case, the syntax would supply the features [+dir obj] and [+pref]. (The [-pref] pronouns are divided into two groups depending on whether the verb ends in a consonant or a vowel, but this division is defined phonologically, not by a morphosyntactic feature.) The features [±fem] and [±pl] are inherent to any noun phrase and any constituent that has nominal reference, such as pronouns. The features [±1st, ±2nd] are inherent to pronouns.

Rules realize phonological content by reference to features. The normal form for such rules would be something like the following for the English –s 3rd singular present agreement affix: (1) [+3rd, -pl, +present] X \rightarrow X-s, (2) [+present] X \rightarrow X. Read this as,
“(1) An element carrying the morphosyntactic features for ‘3rd person singular present’ is realized phonologically as adding –s to the right; (2) otherwise, an element bearing the feature [+present] is realized with no additional elements.” In more complex systems, rules occur in blocks, which are ordered with respect to each other, and the rules within a block are also ordered. Here are rules for realizing the Tamazhaq object pronouns.

**Block 1: PRONOUN BASES**

(1) \[ \begin{array}{c}
\text{ [+dir obj] } \\
\text{ [+2nd] }
\end{array} \] \( \ldots V_{\text{VERB}} \Rightarrow \ldots V_{\text{VERB}} -i \)

Read this as, “V final verbs with the features [+dir obj] and [+2nd] add –i. For example, ‘he called…’ / \text{íra} / [+dir obj, +2nd] \( \Rightarrow \text{íra-i} \). A general rule will delete the final vowel of the verb before a suffix beginning in a vowel, and rules below will fill out the rest of the pronoun, to give, for example, \text{ír-im} ‘he called you (fs)’.

(2) \[ \begin{array}{c}
\text{ [+dir obj] } \\
\text{ -1st } \\
\text{ -2nd}
\end{array} \] \( \ldots V_{\text{VERB}} \Rightarrow \ldots V_{\text{VERB}} e \) (like (1) but for 3rd person objects)

(3) \[ \begin{array}{c}
\text{ [+dir obj] } \\
\text{ +1st } \\
\text{ -pl}
\end{array} \] \( X[-\text{pref}] \Rightarrow X-i, X[+\text{pref}] \Rightarrow i-X \)

Rule (3) suffixes or prefixes –i to verbs with features indicating a 1st singular object ‘me’. This and later rules will give forms like \text{díyrān-i} ‘they called me’ and \text{wur-d-i-tāyra} ‘she didn’t call me’. Things get messy because for this and all the other pronouns below, there have to be paired rules to account for the suffixes and the prefixes. This is an artifact of limitations on our notation for “mirror-image” rules. One solution would be to push the problem into the syntax—have all pronouns start as suffixes, then once the rules had realized the pronouns phonologically, move the prefixes to their proper solution. Dumb! Differences between the suffixes and prefixes are there precisely because they
are suffixes and prefixes! It makes no sense to build a *prefixed* form in a *suffixed* position. In rules (4-6), I will write the rules \( X \rightarrow X+\text{affix} \), where the “+” means “suffix if \( X \) bears the feature [-pref] and prefix if \( X \) bears the feature [+pref]”.

(4) \[
\begin{array}{c}
+\text{dir obj} \\
+1\text{st} \\
+\text{pl} \\
\end{array}
\] 
\( X \rightarrow X+\text{an} \) (like (3), but for a 1\text{st} plural object)

(5) \[
\begin{array}{c}
+\text{dir obj} \\
+2\text{nd} \\
\end{array}
\] 
\( X \rightarrow X+k \) \text{EXCEPT} \ [\text{αfem, -αpl}]

Messy! All 2\text{nd} person objects have \( k \) as the first consonant except for V final verbs with feminine singular objects (\( ı\text{y}r-\text{im} \) ‘he called you(fs)’) or masculine plural objects (\( ı\text{y}r-\text{iwān} \) ‘he called you (mp)’). Rule (5) says just that.

(6) \[
\begin{array}{c}
+\text{dir obj} \\
-1\text{st} \\
-2\text{nd} \\
\end{array}
\] 
\( X \rightarrow X+t \) \text{elsewhere, i.e. except cases covered in rule (2)}

Here is where rule ordering is crucial. Rules are ordered within a block such that more specific cases are covered first, then more general cases. Rule (2) added \(-\text{e}\) to V final verbs with 3\text{rd} person objects. For V-final verbs, rule (2) preempts rule (6), which adds \(-\text{t}\) to all other verbs with 3\text{rd} person objects.

The rules of Block 1 provide bases for all the object pronouns. The rules of Block 2 fill those pronouns out, in some cases just adding something to make them pronounceable (like the \(-\text{u}\) of 3\text{rd} masculine singular \( \text{tu} \)), in other cases adding something corresponding to morphosyntactic features (like the \( \text{m} \) of 2\text{nd} feminine singular). In this block, “\( X \)” stands for just the pronoun base. We thus avoid the mirror-image problem of Block 1.

**Block 2: FILLING OUT OBJECT PRONOUNS**

(7) \[
\begin{array}{c}
+\text{dir obj} \\
+1\text{st} \\
+\text{pl} \\
-\text{pref} \\
\end{array}
\] 
\( X \rightarrow X-\text{a} \) \text{(an from rule (4) \( \rightarrow -\text{ana} \) in suffixes)}
Object pronouns in Tamazhaq

These rules fill in the phonological forms of the pronouns in Table 1. The notion of a paradigm is crucial, because it is this notion that provides the system of morphosyntactic features that the rules refer to. The rules allow us to state the sort of generalizations that listing morphemes as individual items would provide, for example, that the canonical markers of second and third person are /k/ and /t/ respectively—rules (5-6)—while at the same time accounting for idiosyncratic exceptions in terms of restrictive rules—rules (1-2), which apply only to V-final verbs.
REFERENCES


**NOTE TO LINGUISTICS 105 STUDENTS**

This paper is meant to be a sample of a paper about inflectional morphology and paradigms. The last few pages probably get more technical and formal than most of you want to get. It would be a perfectly acceptable paper if you gave background and laid out the data pretty much as on pages 1-5, then described in words the general patterns and exceptions or problems with describing those patterns. For example, you could observe that most second person pronouns start with a k but there are some exceptions, especially with V-final verbs. You would then describe exactly what the problems are, maybe suggesting how they might be handled by suppletive allomorphs.

I originally intended to describe both direct and indirect object pronouns, but just the direct objects turned out to be about the right size for a 105 paper. Below is a paradigm of the indirect objects. If you are interested, you might see if you can work out a system like that for direct objects, and maybe even a system that incorporates all object pronouns, direct and indirect. It could be a 105 paper topic!

**Table 2. Indirect objects**

<table>
<thead>
<tr>
<th>C-final</th>
<th>γ-final</th>
<th>V-final</th>
<th>Preceding-V</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘he told…’</td>
<td>‘you (sg/I told…’</td>
<td>‘he said to…’</td>
<td>‘she didn’t tell…”</td>
</tr>
<tr>
<td>(yómál)</td>
<td>(tó̄mála/smála)</td>
<td>(yónna)</td>
<td>(wúr-tamé)</td>
</tr>
<tr>
<td>1 s</td>
<td>yómál-i</td>
<td>tómálaγ-i</td>
<td>yónn-i</td>
</tr>
<tr>
<td>2 ms</td>
<td>yómál-ak</td>
<td>ôngálγ-ak</td>
<td>yónn-ak</td>
</tr>
<tr>
<td>2 fs</td>
<td>yómál-am</td>
<td>ôngálγ-am</td>
<td>yónn-am</td>
</tr>
<tr>
<td>3 ms</td>
<td>yómál-as</td>
<td>ôngálγ-as</td>
<td>yónn-as</td>
</tr>
<tr>
<td>3 fs</td>
<td>yómál-as</td>
<td>ôngálγ-as</td>
<td>yónn-as</td>
</tr>
<tr>
<td>1 p</td>
<td>yómál-ana</td>
<td>tómálaγ-ana</td>
<td>yónn-ana</td>
</tr>
<tr>
<td>2 mp</td>
<td>yómál-awárn</td>
<td>ôngálγ-awårn</td>
<td>yónn-awårn</td>
</tr>
<tr>
<td>2 fp</td>
<td>yómál-akmät (sic)8</td>
<td>ôngálγ-akmät</td>
<td>yónn-akmät</td>
</tr>
<tr>
<td>3 mp</td>
<td>yómál-asán</td>
<td>ôngálγ-asán</td>
<td>yónn-asán</td>
</tr>
<tr>
<td>3 fp</td>
<td>yómál-asnät</td>
<td>ôngálγ-asnät</td>
<td>yónn-asnät</td>
</tr>
</tbody>
</table>

---

8 Stress on verb forms is normally on the anti-penultimate (third from last) syllable. For some reason, stress on this one form is on the penultimate syllable. The notation “sic” indicates that I noticed and checked this form. It doesn’t seem to be just a transcription error. However, this would have no effect on the analysis of the pronouns since stress is not relevant to pronoun formation.