

Tashlhiyt Berber grammar synopsis

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Purpose: provide a skeletal summary of the main linguistic structures of Tashlhiyt Berber (TB), cross-referenced with the relevant literature. This synopsis is mostly used for internal consistency with our own research projects, but other researchers may find it useful as a reference on Berber linguistics.

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1. Introduction

(1) Language background

- a. Classification: Afro-Asiatic, Berber, Northern, Atlas (Ethnologue.org)
- b. Alternate names (sometimes names of specific varieties): Shilha, Soussiya, Southern Shilha, Susiya, Tachilhit, Tashelheyt, Tashelhit (common French spelling), Tashilheet, Tashlhiyt, Tasoussit
- c. Speakers: official 2004 census lists 3.8m, however, this vastly undershoots other estimates (close to 9m by Galand (1988)), and may not include urban native speakers and speakers of Tashlhiyt-like varieties that use different names. Counts of speakers of Berber languages can be politically motivated (Saib 2001: 430).
- d. Location: generally southwestern Morocco, bound by the Atlantic Ocean to the west, the northern slopes of the Haut Atlas Mountains to the north, by the southern slopes of the Anti-Atlas Mountains to the south, and by Ouarzazate to the east.
- e. Variation within Tashlhiyt: largely phonological, morphological and lexical, but many studies simply identify a variety by a region/city; eastern regions where TB is spoken are more problematic because it is a transition point between TB and Middle-Atlas Berber; an important phonological feature is spirantization of *t*, *d*, e.g., *tifiyi* → *sifiyi* ‘meat’ (Ida Oultit area) and also *b* (Guedmioua area); grammatical morphemes like ‘in’ also alternate *ɛ* ~ *χ* ~ *ħ*; these facts and important morphological differences in the construct state, prepositional clitics, relativizers, and verb stems, and also lexical differences and preverb ordering are nicely summarized in Stroomer (1998); see also Boukous (2012) for detailed discussion of spirantization and its sociolinguistic implications.

(2) Tashlhiyt Berber within Morocco and the larger Berber language family

- a. Other major Berber languages in Morocco: Tamazight and Tarifit, which appear to have similar morphology and syntax, but differ mainly in the lexicon and phonology; for the most part, these languages are not mutually intelligible with each other and Tashlhiyt
- b. Other major branches of the Berber language family: Eastern, which includes Siwa (a language of Egypt); Northern, which is subdivided into Atlas (large group that includes Tashlhiyt and Tamazight, two large languages of Morocco), Kabyle (mainly Kabyle of Algeria), and Zenati (which includes Tarifit of Morocco); Tamasheq, which includes many languages of Algeria, Niger and Mali; Zenaga, group composed of Zenaga, a language of Mauritania.
- c. Contact: DE02: 8 ff. give a nice illustration of the effects of contact between Moroccan Arabic and Tashlhiyt Berber in urban areas; see also Boukous (2012) for a comprehensive study of contact between the two languages, including the existence of consonantal nuclei, the adoption of Arabic words for certain lexical items like female animal terms, mastery of verb conjugation like with imperfectives, and other grammatical morphemes like preverbs, prepositions, and noun phrase structure.
- d. General overviews of the language family: Applegate (1970), Basset (1952), Galand (1988), Galand (1989), and for Berber phonology in particular, see Kossmann and Stroomer (1997); Chaker (1994) is a nice overview of TB; Galand (1988) is an excellent and short overview of Berber grammar (in French), covering many of the core constructions and grammatical categories one finds in Berber languages.

(3) Significant grammatical works on TB

- a. Dell and Elmedlaoui (1989); Dell and Elmedlaoui (1991); Dell and Elmedlaoui (2002) (short forms uses here: DE89, DE91, DE02): though the 2002 book is primarily focused is on the syllabification system, the introduction and background chapters give nice summaries of the morpho-syntax and many important details of the morpho-phonemics of verbs and nouns; DE 1989/1991 are authoritative works on the morpho-syntax and stem allomorphy in verbs.
- b. Aspinion (1953) ('Asp53' below): essentially a pedagogical grammar, but covers most of what would be covered in a reference grammar; many excellent examples and really the most comprehensive grammatical account of TG to date. Transcription note: Aspinion transcribes some transitional vowels with /e/, which is not transcribed in many linguistic research papers; the examples taken from Asp53 have some of these vowels.
- c. Applegate (1958): a 70 page grammar sketch with five medium sized texts and a vocabulary of approximately 1190 words; describes the phonemes and conditioned allophones, some of the important phonological and morpho-phonemic processes, like voice assimilation and consonant drop with preverbs like *rad* and *ur*; gives a short morphological sketch that identifies different morpheme classes and subclasses of nouns and verbs, and also a description of basic noun phrases; however, rather dated and hard to understand.

(4) Dictionaries and other lexical resources

- a. Destaing (1914): bilingual dictionary from French to the Beni-snous dialect of Berber; approximately 1865 words, but rather old and contains no introductory material to help understand the entries
- b. Dicovia.com: an Internet resource with several thousand words that can be searched from French to Tashlhiyt and the other way.
- c. El Mountassir (2003): bilingual Tashlhiyt-French dictionary of approximately 1330 verbs, verbs are ordered by Tashlhiyt stem, showing all four stem forms, related secondary bases and syntactic subcategories; includes 20 pages of introductory material that explains verb derivation, inflection and morpho-syntactic facts; also has an appendix with 224 proverbs and riddles
- d. Boumalk (2003): set of paradigm charts for 203 verbs; paradigms include fully inflected forms for perfectives, aorists, imperfectives and imperatives; 38 pages of introductory material covers details of verb derivation and inflection, the morpho-syntax of preverbs, pronouns, and irregular verbs; all verbs have French glosses in an appendix

(5) Major works focused on selected topics

Preamble: a great deal of what we know about Tashlhiyt is documented in thesis work associated with universities, some of which we try to summarize here.

- a. Jebbour (1985): study of the distribution and alternations involving velars with secondary labialization (see below)
- b. Boukous (1987): phonotactics of TB and prosodic domains
- c. Lasri (1991): extensive study of the segmental phonology of TB (variety spoken in Tidli) guided by ideas in autosegmental phonology; topics include labial assimilation and dissimilation, assimilation in coronals, gemination and degemination, and the prosodic morphology of noun plurals

- d. Elmedlaoui (1995): extensive study of ‘action-at-a-distance’ assimilation and dissimilation in TB (variety spoken in Imdlawn) as well as other Semitic languages; topics include sibilant harmony, labial dissimilation, different types of ‘emphasis’, and the proper analysis of palatals
- e. Jebbour (1996): extensive study of syllabification and prosodic morphology of TB (variety spoken in Tiznit), with algorithms for generating syllable structure and a pedagogical purpose
- f. Bensoukas (2001): presents detailed analysis of stem allomorphy, epenthesis and vowel copying, the prosodic morphology of gemination, and proposes a new classification of roots based on C-final and V-final distinction; analyses are in Optimality Theory
- g. Lahrouchi (2001): verb stem allomorphy in TB (variety spoken in Agadir)
- h. Ridouane (2003): detailed investigation of the phonetics and phonology of geminate consonants and sequences of consonants

(6) Bibliographies

- a. Galand (1979): book form of yearly surveys of Berber linguistics with useful annotations
- b. Chaker (1992): survey of Berber linguistics for years after Galand (1979), 1980-1990
- c. Jucovy and Alderete (2001): larger but not annotated bibliography, no coverage after 2006, and spotty after 2001
- d. Bensoukas (2005): survey of approximately 100 morphological studies on the three major Berber languages of Morocco, assesses coverage of morphological problems, theoretical orientation and specific languages

(7) Electronic resources and websites

- a. Bibliothèque Numérique Franco-Berbère <<http://bnfb.cartago-alliance.org/>>: general resource on Berber studies, including linguistics
- b. Online archives of the Institut Royal de la Culture Amazighe <www.ircam.ma>: perhaps the most comprehensive archive of Berber language publications written in Arabic and French.

2. Phonetics and phonology

Goal: documenting the phonemes and conditioned allophones, ‘natural’ phonological rules and rules tied to particular constructions, phonetic details of Berber sounds, syllabification and stress.

2.1 Segmental phonology

(8) Consonants

	labial	dent./alveolar	post-alv.	velar	uvular	pharyngeal/glottal
		t t ^ɕ		k k ^w	q q ^w	
b		d d ^ɕ		g g ^w		
	f	s s ^ɕ	ʃ ʃ ^ɕ		χ χ ^w	ħ h
		z z ^ɕ	ʒ ʒ ^ɕ		ʁ ʁ ^w	ʕ
m		n n ^ɕ				
		l l ^ɕ	r r ^ɕ			
w			y			

Notes:

- Every consonant has a short sound and geminate counterpart (or, for some, this is a tense/lax contrast), which is lexically contrastive; see below on the phonetic details of this contrast and why it is generally believed that length is the primary phonological structure realizing the contrast, and other attributes (voicing, RMS amplitude, etc.) are secondary.
- C^ɕ is a pharyngealized or emphatic consonant; it is only phonemic in coronals (excluding the glide), but lexically specified pharyngealization is typically spread to neighboring segments in a syllable or word (see below). Because emphasis is a property of roots, sometimes these words are written with an initial '!', e.g., *!afud* 'leave', which has pharyngealization throughout the word that is due to the emphatic *d^ɕ*.
- The uvular fricatives are sometimes written with IPA velar fricatives, i.e., *x* for *χ* and *ɣ* for *ʁ*, but we will use the uvular IPA symbols; to be consistent with prior work, we use the non-IPA symbol *y* for the coronal semi-vowel.
- ħ* and *ʕ* are classified as 'pharyngeals', but they are really aryepiglottals produced with tight constriction between the arytenoids and the base of the epiglottis (Ridouane 2003).
- r* is an alveolar tap and geminate *rr* is a trill.
- h* is a laryngeal with vocal fold vibration; often described as a murmured glottal fricative.

(9) Stops and fricatives, see Ridouane (2008) and references therein

- Obstruents (excluding labial, uvular stops, and the glottal) have a voicing contrast. Short voiced stops are fully voiced pre-vocalically, and voiced geminates are produced with incomplete voicing in non-intervocalic position (the amount of voicing depends on place of articulation and speaker variation).
- Voiced obstruents are devoiced before a voiceless obstruent, e.g., */idqqi/* → *i[t]qqi* 'clay'.
- Aspiration is not distinctive, but voiceless stops are partially aspirated; the amount of aspiration, or voice-onset-time depends on place of articulation and emphasis, e.g., *t* and *k* have approx. 50 ms of VOT, while *q* has 30 ms, and *t^ɕ* has almost no aspiration with 10-20 ms of VOT

- d. Voiceless stops have a notable release utterance finally, but word-internally, the stop release is obligatory before another non-homorganic stop, e.g., *tqqama* ‘she stayed’, but forbidden at certain morphological boundaries, like the suffix+clitic boundary, as in /ut=t/ ‘hit him’, *t+t* is *tt*. Release is also forbidden in /tn/ clusters.

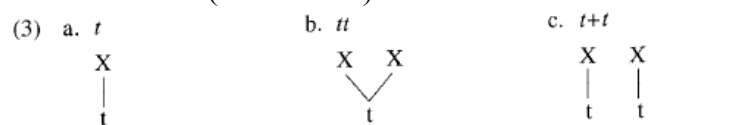
(10) Illustration: geminates (data from Ridouane (2014))

Medial <i>b</i> vs. <i>bb</i>	bibi ‘turkey’, cf. tibbit ‘breast’
Initial <i>t</i> vs. <i>tt</i>	tut ‘she hit’, cf. ttut ‘forget him!’
Medial <i>d</i> vs. <i>dd</i>	tidi ‘sweat’, cf. tididi ‘size’
Final <i>f</i> vs. <i>ff</i>	juf ‘he was better’, cf. juff ‘he puffed’
Final <i>s</i> vs. <i>ss</i>	ifis ‘hyena’, cf. ifiss ‘he shat up’
Medial χ^w vs. $\chi\chi^w$	$i\chi^w$ la ‘he was mad’, cf. $i\chi\chi^w$ na ‘bottoms’
Medial <i>m</i> vs. <i>mm</i>	imi ‘mouth’, cf. immi ‘mother’
Medial <i>r</i> vs. <i>rr</i>	taguri ‘word’, cf. tirra ‘writing’

Comment: a broad distinction in the sound system is made between singleton and geminate consonants. Every consonant can be contrasted lexically for this distinction, and the contrast is attested in medial, word-initial, and word-final positions. However, geminates are somewhat rare in some sounds, including pharyngeals, glottals, labialized uvulars (initial and final position), and pharyngealized *dd^ʕ* and *zz^ʕ* (word-final). Geminate consonants are longer than their singleton counterparts, a difference of approx. 1:2.5 for stops and 1:2 for fricatives, but this contrast is also correlated with other phonetic attributes, including shorter vowel duration, higher RMS amplitude, and complete stop closure for the geminates (for the phonetic attributes of this contrast see Ouakrim (1994); Ridouane (2007); Ridouane (2010); Ridouane (2014)).

(11) Standard view on geminates

- References: expressed originally for Tamazight Berber by Saib (1976) and Guerssel (1977); see Dell and Elmedlaoui (2002) for extended argument for this view on Tashlhiyt Berber
- Analysis: a widely accepted view of geminates, advocated by Dell and Elmedlaoui and colleagues, is that the singleton/geminate contrast is one of phonological length; singletons have one prosodic slot, while geminates have two, both linked to a single root node; two singletons at a morpheme boundary may fuse as a single geminate, though this is restricted morphologically. The additional phonetic correlates that accompany length types are assumed to be phonetic enhancements of length that facilitate recognition of the different length types (which can be hard to recognize initially and finally).
- Alternative, see especially Galand (1997): long and short consonants contrast for the feature [+/-tense], i.e., a tense/lax distinction found in other languages; has some appeal in other Berber languages
- Illustration (from DE02):



(12) Synopsis of Dell and Elmedlaoui's arguments for the standard view (DE02: 41 ff.)

- a. Fusion of two short consonants: two short consonants at certain morpheme boundaries fuse into a single long consonant, e.g., /gn-n/ 'they slept' and /g=nn/ 'put yonder' are homophonous. On the standard view, this can be treated as a simple merging of two identical root nodes each dominated by a prosodic slot; it's not obvious at all why two [-tense] sounds would merge into a single [+tense] sound.
- b. Total consonant assimilation: certain grammatical morphemes can completely assimilate to the following consonant under certain conditions, and this complete assimilation is again amenable to an analysis like the merging of two short consonants above. Example: as an optional rule, the genitive preposition *n* completely assimilates to a sonorant (excluding *a*) in the following word, e.g., *a-ydi n msaawd ~ ayda m msaawd* 'Messaoud's property'.
- c. Syllabification: native speakers have intuitions about the syllabification of long and short consonants, and these intuitions are consistent with the assumed length contrast; in e.g., *im.lul* 'be white (aorist)' with singleton onset, cf. *i.ml.lul* 'be white (pf, 3ms)', with the heterosyllabic geminate. If geminates are a prosodic sequence of some kind, this is entirely expected, but this is not true with a [tense] distinction. These intuitions are also reflected in verse.
- d. Templatic effects: the template morphology has certain restrictions that are easily expressed on the prosodic account (standard approach). Example: 'ukris' words have a *uCCiC* template; geminates can occupy the first CC and the CiC positions; but a long consonant cannot occupy just the first C of the template, so words like *ummlis* are not possible; this is expressible on the standard view because long consonants must either occupy two slots or be shortened; on the featural analysis, it's not obvious how to rule it out.
- e. Potential problem: the geminate glide *yy* is problematic because when it occurs between a consonant and vowel it is realized as [iy], e.g., /hyya/ is [hiya], and the two parts of the geminate should not behave differently; note this is a problem for any analysis; DE assume that *i* and *y* have the same feature bundle and that onset *y* is strengthened.

(13) Types of geminates

- a. Lexical geminates: prosodic length specified in the lexicon
- b. Phonologically derived geminates: geminates derived from consonant fusion, i.e., when two identical sounds abut each other, e.g., [fas sin] 'give him two!' or total assimilation. There is a phonetic difference between these two: assimilated geminates cause phonetic shortening of the preceding vowel, ones that result from concatenation do not (Ridouane 2010).
- c. Morphological geminates: geminates derived from morphological processes, e.g., imperfective stems, *ftu* 'go! (perfective)', cf. *fttu* 'go! (imperfective)'.

(14) Vowels

i u

a

Notes:

- a. Contrasts: there are three underlying vowels that contrast initially, medially, and finally. No underlying length contrast, but vowels can surface as long under special circumstances: two short *a*'s can fuse to form a long *a:*, and tautosyllabic /iy/ and /uw/ surface as *i:* and *u:* respectively.

- b. Quality: surface phonetic quality is greatly affected by context; see DE02: 68-69, Ridouane (2003), Ridouane (2014), and below for the effect of neighboring emphatic consonants and other details of vowel allophones

(15) The phonology of glides /y w/

- a. Contrast: glides contrast with their corresponding vowels, e.g., *rwl* ‘escape!’, cf. *ruh* ‘go away!’
- b. Neutralization: post-vocalic vowels are glided, neutralizing this contrast; in general, vowels that are not the nucleus of a syllable are glided
- c. Length: /y: w:/ surface phonetically like vowel + glide sequences
- d. References: DE02 ch7, Ridouane (2014)

(16) De-labialization of primary labial consonants

	no labial in stem	stem contains labial
a. Reciprocal verbs	m- χ azar (χ zr ‘scowl’) m-saggal (siggl ‘look for’) mm- ζ la (ζ la ‘lose’)	n-fara (fra ‘disentangle’) n- \hbar ajfam (\hbar ajfm ‘be shy’) n- χ alaf (χ alf ‘place cross-wise’)
b. Agentive nouns	am-las (las ‘shear’) am-krz (krz ‘plow’) am-agur (agur ‘remain’)	an-lrmi (lrmi ‘be tired’) an-bur (bur ‘remain celebrate’) an-lazum (lazum ‘fast’)

Notes:

- a. Nutshell: derivational affixes and fixed segments containing *m* used in non-concatenative morphology delabialize to *n* when they combine with a stem also containing a primary labial segment /b f m/; /u w/ do not trigger delabialization.
- b. Contexts: inflectional affixes, e.g., *-m* (2 person masc. plural) do not trigger delabialization, so restricted to stem morphology; observed in reciprocals, agentive nouns, nonconcatenative morphology with ‘azddayru’ template
- c. Blocking: Elmedlaoui (1995) observes that delabialization is blocked in reciprocals when the stem begins with a coronal sonorant, e.g., m-laqqaf ‘catch in air’, though this does not appear to be the case in agentives.
- d. References: see Bensoukas (2015) for comprehensive description and analysis, Selkirk (1993) for short description and analysis of this and delabialization of secondary labial, and the following theses for original documentation: Elmedlaoui (1985), Jebbour (1985), Lasri (1991), Elmedlaoui (1995).

(17) Loss of secondary labialization

a. Derived nominals	a- χ jjaynu, cf. χ^w fn ‘be ugly’ a-g ζ aymu, cf. (g)g w zm ‘be amputated’		
b. Verb stem allomorphy	perfective	aorist	imperfective
	g w na/i	gnu	gnu ‘sew’
	k w na/i	knu	knnu ‘lean’
	qq w la	qq w lu	ttqq w lu ‘fry’

Notes:

- a. Nutshell: secondary labialization is lost in stems that contain *u/w*.

- b. Wider context: *u ~ w* alternation is syllabically motivated (see below), and *w* can sometimes be hardened to *g^w* in morpho-phonological alternations, e.g., *nwa* ‘cook (aorist)’, *ngg^wa* (imperfective) which establishes them as a natural class; labialized velars also interact with primary labials in some dialects (see Jebbour (1985) and Lasri (1991)) in alternations where velars delabialize when adjacent to a primary labial, e.g., *amgru*, cf., *g^wru* ‘glean (agentive, aorist)’.
- c. References: see above, and especially Jebbour (1985)

(18) The phonology of emphasis spread (a.k.a., dorsopharyngealization)

	Lexical representation	Surface	
a.	/t-i-!g ^w mmad-in/	<u>ti</u> g ^w m:adin	‘(river) banks (dim.)’
b.	/iɁ i-!sɁmmid asi=t/	<u>iɁis</u> mmidasit	‘if it has cooled down, take it’
c.	/t-!kkd-t/	<u>t^hk</u> : ^h t: ^h	‘you poked (eye)’
d.	/t-kk-t=t/	t ^h k: ^h t: ^h	‘(and then) you went through it’

Notes:

- a. Nutshell: emphasis spread is a process by which lexically specified emphatic consonants realize emphasis on neighboring sounds (shown with underlying above).
- b. Lexical specification: emphasis is contrastive in roots that contain coronal consonants (see (c) and (d) above); all coronals can be specified for emphasis, but it is very rare in *f*: and *n*:; emphasis is a contrast made over roots (or verbal kernels), so it is not contrastive in grammatical morphemes like affixes, clitics and prepositions; if an emphatic root contains more than one coronal, it is impossible to determine source of emphasis because both have emphasis at the surface.
- c. Transcription conventions: IPA diacritic, e.g., *t^ɕ*, used in descriptions of single sounds, underlining of the ‘emphasis span’ (surface realization in neighboring sounds) in the surface representation of larger words (see above), and ‘!’ before emphatic roots that contain an emphatic.
- d. Surface distribution: rather unclear due to free variation and unclear judgements, but lexically specified emphasis is realized at the surface minimally as a syllable, maximally as a phonological word; note that morpho-syntactic boundaries are not always respected (see (b) above); two apparently exceptionless facts are that CV sequences are always fully plain or emphatic, but not split, and if an emphatic root contains two coronals, both coronals are emphatic at the surface.
- e. References: see DE02: 58 for an excellent summary of the phenomena, Ridouane (2014) for a shorter summary with phonetic facts, and Elmedlaoui (1995) for a more extensive analysis including an autosegmental analysis of the actual phonological spreading operation.

(19) The phonetics of emphasis

- a. Articulation: emphasis involves enlargement of the oral cavity; the tongue moves towards the posterior pharyngeal wall and the tongue is lowered; the glottal opening for e.g., *t^ɕ*, is smaller than *t*, which may explain the differences in VOT (emphatic voiceless stops have shorter VOT).

- b. Acoustics: VOT is shorter in emphatic voiceless stops and fricatives; F1 is raised and F2 is lowered in adjacent vowels, giving the impression of the following vowel quality changes: $u \rightarrow o$, $i \rightarrow e$, $u, a \rightarrow a$.
- c. Example: /t-i-!g^wm^mad-in/ → tig^wm:adin [tug^wm:aduun].

(20) Synopsis of regular phonological processes

Preamble: summary of automatic phonological processes, as well as some that seem to be tied to particular constructions.

- a. Obstruent devoicing
Obstruents devoice before a voiceless obstruent.
- b. Consonantal fusion (see discussion of geminates above)
Two identical short consonants fuse into a single long consonant at morpheme boundaries.
- c. Total consonant assimilation (see discussion of geminates above, preverbs below, Lasri 1991)
Certain consonants (usually coronals) in grammatical morphemes assimilate completely to the following consonant.
- d. Sibilant harmony (see causative formation below and Lasri (1991))
Coronal fricatives agree in voicing and anteriority with other coronals elsewhere in the stem.
- e. Emphasis spread (see above)
Dorsopharyngealization lexically specified on a coronal can be spread to adjacent segments within a word, minimally to a syllable, maximally to the phonological word.
- f. Dissimilation of primary labial (see above)
Labial nasals in grammatical morphemes delabialize to *n* within stems that also contain a primary labial /b f m/.
- g. Loss of secondary labialization (see above)
Labialized velars lose their secondary labialization when they combine with *u/w* in a stem.

2.2 Prosodic phonology

(21) Syllabification: introduction

- a. Remarkable facts: TB differs from many languages, and even some Berber languages, in that it allows certain consonant classes to occupy the nucleus position of a syllable; words like *tʃk*, which would receive epenthetic vowels in many languages, are syllabified [tʃk] with consonantal nuclei (shown in caps). Despite these unique structures, there are clear principles that have the effect of centering high-sonority segments over syllable nuclei.
- b. Theoretical importance: TB syllabification has been used to motivate several theoretical innovations, including the idea that phonology is driven by constraints rather than rules (Dell & Elmedlaoui 2002; Prince & Smolensky 1993/2004), constraint-based phonology in connectionist networks (Goldsmith & Larson 1990; Legendre et al. 2006), the depth of sonority-based generalizations in syllabification (Dell & Elmedlaoui 1988; Dell & Elmedlaoui 1985), the nature of syllable quantity (Dell & Elmedlaoui 2002; Jebbour 1999), and syllable structure in prosodic morphology (Bensoukas 2001; Dell & Elmedlaoui 1992; Jebbour 1996).
- c. Issues: does TB have consonantal nuclei (DE 1985 et seq.) or not (Coleman 2001); what is the syllable weight of CC and CCC syllables (Dell & Elmedlaoui 2002; Jebbour 1999)

- d. References: see Dell & Elmedlaoui (1985, 1988) for the original proposal of sonority-based syllabification and the existence of consonantal nuclei; DE02 bring the original insights together with a new way of documenting syllables through verse, which leads to some different syllabifications (e.g., obstruent nuclei next to a pause)

(22) Evidence for syllable structure

- Questions: what are the phonological segments that get syllabified, how many syllables does a word have, and what are the syllable boundaries?
- Native speaker interviews: early work in DE 1985/1988 based on the native speaker intuitions of M. Elmedlaoui; essentially, ME said phrases and then asked himself how many syllables there are in a phrase and where the peaks are.
- Verse: DE02 examined nearly 1,000 lines of verse and used the known tune of the verse to infer syllable nuclei; syllable counts could be inferred from nuclei, and then the authors used linguistic analysis to infer the syllable boundaries.
- Synchronic phonology and morphology: syllable structure is used as a means to describe phonological and morphological phenomena, e.g., gemination in imperfectives, which motivates the structure; also phonology used to establish the existence/non-existence of some segments, e.g., ‘voiced transitional vocoids’ do not interact with other phonological segments, so argued to be phonetic.
- Phonetic evidence: also, phonetic analyses used to ascertain the (non)-existence of some structures, like voiced transitional vocoids; see especially Ridouane (2008).

(23) Syllabification: Illustrations

Syllabified:	lAt.tN.tL.kMn	lɛ.dN.wA
Syllable quantity:	L L L H	L L L
Input	/lattntlkmn/	/iɛdnwa/
Sonority effects:	(lA)ttntlkmn (lA)ttn(tL)kmn (lA)t(tN)(tL)(kM)n (lAt)(tN)(tL)(kMn)	(l)ɛdn(wA) (l)ɛ(dN)(wA) (lɛ)(dN)(wA)
Ungrammatical (compare peaks):	*lAtt.nT.lK.mN	*i.ɛDn.wa

(24) Syllabification: Basic sonority-based algorithm

- Sonority scale: low vocoids, high vocoids, liquids, nasals, voiced fricatives, voiceless fricatives, voiced stops, voiceless stops
- Peak prominence: syllabification seeks to align high-sonority segments with peaks, following the above scale
- Onsets: single onsets are required, except word (or line) initially; no complex onsets
- Rime size: 1-3 X slots (can be C or V), but if there are three X slots, last two are occupied by both parts of a geminate.

- e. High vowel sequences: high vocoids in margins are syllabified as glides; when there are two high vocoids next to each other, the second as a rule is marginalized, e.g., tRb.bIw, *tRbb.yU.
- f. Syllable weight: one X rimes are light, and two slot rimes with a hinged geminate (second X is first part of a geminate) are usually light; other two and three slot rimes are heavy (though the syllable weight of CCC syllables are controversial: see Jebbour 1999 and DE02 ch5 for extensive discussion)
- g. More on geminates: may not be both the onset and nucleus of a syllable

(25) Syllabification: Refinements, variation/exceptions, and optional operations

- a. Optional detachment (DE02: 103 ff.): complex geminate codas can optionally be detached and form their own syllable, contrary to the general rule that geminates may not form their own syllable, e.g., (nUww) → (nU)(wW).
- b. Optional parses (DE02: 113): some potential nuclei of equal sonority give rise to two possible parses, e.g., yU.kRI.kA ~ yUk.rL,kA, and this kind of variation is even found medially when two sounds are of different sonority (stops vs. fricatives, fricatives vs. nasals).
- c. Compound syllables (DE02: 96): heavy syllables plus an onset that occur at the ends of verse lines, e.g., ʁAr.n, where the onset serves as the onset for the beginning of the next line or leads into a repeated refrain.

(26) Syllabification: Applications

- a. Imperfective gemination (DE02 ch5, DE91, cf. Jebbour 1999, Bensoukas 2001, Lahrouchi 2010): sonority-based syllabification used as a key assumption in predicting the position of the geminated consonant in imperfectives; in essence, the onset of the perfective form is geminated in the imperfective (see below)
- b. Causative prefix allomorphy: (DE02 ch5, Jebbour 1999): Jebbour argues that *s-* ~ *ss-* alternation arises out of a need to produce a L L syllable profile; though there also seem to be a need to lexically specify the allomorph.

(27) Syllabification: Arguments for consonantal nuclei

- a. Voiced transitional vocoids (VTVs): short schwa-like vocoids that vary in length may (or may not) occur between two consonants, e.g., !izn:^ək:^h ~ !izn:k:^h; native speakers (including M. Elmedlaoui) are not consciously aware of them.
- b. Issue: if these schwas are phonological syllables, then this obviates the need for many consonantal nuclei, which presents a many alternative to the standard approach to Berber syllables
- c. Coleman (2001): asserts that TB syllables require vowels, and that these schwas are systematically inserted before the would-be consonantal nuclei, and that the schwas can be devoiced and masked. Thus, most analyses assume VTVs are phonetic, but Coleman's claim is that they are phonological. (Though this is a coherent analysis of other Moroccan Berber languages, like Rifian, and Moroccan Arabic.)
- d. DE02, ch6: extended argument in support of consonantal nuclei and the claim that VTVs are phonetic; one argument hinges on constraints on morphemes with adjacent identical consonants, and DE argue that the differences in the treatment of these sequences is TB and other Berber languages is due to their different syllabification systems, which produces consonantal nuclei in

TB; a second argument is based on regressive obstruent devoicing, which can only be accurately stated if VTVs are phonetic, otherwise they would block this natural process.

- e. Ridouane (2008): pursues the consequences of both Coleman's and DE's positions with phonetic and phonological tests; DE predict that there will be no voicing for the duration of voiceless sequences and that VTV should not interact with the phonology (see also DE's arguments); using acoustic, fibroscopic, and photoelectroglottographic phonetic evidence, and a barrage of phonological tests, Ridouane shows that DE's predictions are borne out.

(28) Stress and intonation

- a. Preamble: somewhat understudied, but preliminary study suggests a need to distinguish word stress from larger phrases, including intonational phrases and smaller phrases because they use different phonetic structures.
- b. Word stress: more salient in words with sonorant and vowel nuclei, but non-phrase final words are characterized primarily by greater duration and intensity on their final syllable; words with obstruent nuclei do not contradict these patterns, but have little evidence for prominence.
- c. Phrase accent: characterized by higher f0 relative to non-phrase final syllables.
- d. Intonational phrases: in declarative and interrogative sentences, there is a rise in f0 associated with an internal H tone, and then a fall in pitch to a low point at the end of the phrase.
- e. References: Galand (1988), DE02: 14, Ridouane (2014) for short summaries, and Grice et al. (2011) and Gordon and Nafi (2012) for more extended treatments.

3. Sketch of basic sentences and the morpho-syntax of clitics and preverbs

Goal: give a brief sketch of basic sentences, the distribution and ordering of clitics and preverbs, and the morpho-syntax of preverb + verb sequences. This section is essentially a synopsis of Dell & Elmedlaoui (1989, 1991), which should be consulted for authoritative citation and richer detail.

(29) Some basic syntactic properties

- a. Verb-subject-object word order: the verb precedes the logical subject and object, and the subject precedes the object; subjects may precede the verb with an intonational phrase break.
- b. Subject verb agreement: the verb agrees with the subject in person, number and gender.
- c. Preverbs: clauses may contain 'preverbs', which are grammatical morphemes (including tense/aspect markers, negation, complementizers, subordinating conjunctions) that precede the verb and attract clitics that would otherwise encliticize to the verb
- d. Clitic sequences: a series of clitics may follow either the verb or the last preverb; they include object clitics, cliticized prepositional phrases, adverbials, and deictics.

(30) Illustration (DE89: 168)

- a. i-ga ufruχ ifullusn ɤ tgm̄mi
3ms-put:pf boy:c chickens in house:c
'The boy put the chickens into the house'
- b. i-ga tn gi-s ufruχ
3ms-put:pf obj3mp in-3s boy:c
'The boy put them (m) into it (f)'

- c. is i-ga ufrux ifullusn κ tgm̄mi
 did 3ms-put:pf boy:c chickens in house:c
 ‘Did the boy put the chickens in the house?’
- d. is tn gi-s i-ga ufrux
 did obj3mp in-3s 3ms-put:pf boy:c
 ‘Did the boy put them (m) into it (f)?’

Notes (see appendix for abbreviation conventions):

- (a) illustrates the canonical verb-subject-object word order.
 (b) replaces the logical object and prepositional phrase from (a) with clitics that are encliticized to the verb.
 (c) is the question corresponding to (a), and contains the preverb *is* ‘did’
 In (d), the object clitic and cliticized preposition are encliticized to the preverb, before the verb.

(31) Subject agreement marking in verbs

	Paradigm rule	‘remember (pf)’	‘remember (impf)’	‘wear (pf)’
1s	X-χ	k̄ti-χ	k̄tti-χ	lsi-χ
2s	t-X-t	t-k̄ti-t	t-k̄tti-t	t-lsi-t
3ms	i-X	i-k̄ti	i-k̄tti	i-lsa
3fs	t-X	t-k̄ti	t-k̄tti	t-lsa
1p	n-X	n-k̄ti	n-k̄tti	n-lsa
2mp	t-X-m	t-k̄ti-m	t-k̄tti-m	t-lsa-m
2fp	t-X-mt	t-k̄ti-mt	t-k̄tti-mt	t-lsa-mt
3mp	X-n	k̄ti-n	k̄tti-n	lsa-n
3fp	X-nt	k̄ti-nt	k̄tti-nt	lsa-nt

Notes:

- a. Verbs are marked for person, number, and gender according to the paradigm rules sketched above. These rules are very general—they apply to all verb classes (perfective, imperfective, etc.) and there are no real distinct conjugation classes (though some exceptional patterns).
- b. In general, stem form is unaffected by the inflectional rules, but there are several verbs that have vowel alternations in the 1s and 2s in which a final *a* becomes *i*, as illustrated by ‘wear (pf)’ above. DE91: 80 ff. dub this ‘1s2s ablaut’, and it correlates with a consistent change of *a* to *i* in the related negative form, e.g., the perfective stem *lsi/lsa* has the related negative *lsi*, which is invariant throughout the paradigm.

(32) Clitic possibilities and order (DE91: 169ff.)

1	2	3	4 (or before 1)	5
datives	object	deictic	adverbs	cliticized prepositions
see below	see below	<i>d</i> ‘here’ <i>nn</i> ‘there’	<i>akk^w</i> ‘completely’, <i>ba:da</i> ‘as for’, <i>bahra</i> ‘very (much)’, <i>bd(d)a</i> ‘always’, <i>bzzaf</i> ‘very (much)’, <i>daχ</i> ‘again’, <i>hlli</i> ‘only’, <i>ka</i> ‘only’, <i>kullu</i> ‘all’,	<i>κ-</i> locative <i>d-</i> comitative ‘with’ <i>f-</i> ‘upon’ <i>s-</i> ‘toward/with’ <i>ssκ-</i> ‘from’

			<i>sar</i> ‘never’, <i>sul</i> ‘still, finally’, <i>ta</i> ‘not yet’, <i>ukan</i> ‘only’, <i>yad</i> ‘already’, <i>za</i> ‘indeed, really’, <i>zwar</i> ‘first’, <i>fwi(y)</i> ‘a little’, <i>ʒʒu</i> ‘never’	<i>dar-</i> ‘at X’s place’ deictic PPs: <i>ʒid</i> ‘to here’ <i>ʒinn</i> ‘to there’
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Notes:

- When a clause contains more than one clitic, they are always adjacent to each other and in the order shown above; adverbs (4) may appear between deictics and PPs, but they may also appear in the beginning of the clitic sequence
- While the occurrence of a clitic in slots 2 and 3 preclude another clitic from that same slot, several dative clitics, adverbs, and PPs can occur in the same clause.
- The clitic sequence of a clause follows the last preverb of a clause, or the verb if there is no preverb.
- Slots 1, 2 and 5 are ‘inflected’ in the sense that there are special clitic forms depending on person, number and gender, as show below.

(33) Clitic paradigms (DE91: 169)

	<i>cf.</i> verbs	object	dative	<i>dar-</i>	<i>ʒ-</i>
1s	X-χ	iji	iji	dar-i	gi-g-i
2ms	t-X-t	k	a-k	dar-k	gi-k
2fs	t-X-t	km	a-m	dar-m	gi-m
3ms	i-X	t	a-s	dar-s	gi-s
3fs	t-X	tt	a-s	dar-s	gi-s
1p	n-X	aχ	aχ	dar-nχ	gi-(t)-nχ
2mp	t-X-m	k ^w n	a-wn	dar-un	gi-wn / gi-ti-un
2fp	t-X-mt	k ^w nt	a-wnt	dar-unt	gi-wnt / gi-t-unt
3mp	X-n	tn	a-sn	dar-sn	gi-(t)-sn
3fp	X-nt	tnt	a-snt	dar-snt	gi-(t)-snt

Notes:

- PNG marking in clitics is completely separate from the marking of the same categories in verbs.
- The datives and cliticized prepositional phrases use essentially the same PNG suffixes, with the exception of the first person sg and pl, but they are rather different from the object clitics

(34) Preverb possibilities and order

1	2	3
IP, ‘initial preverbs’	Neg, negation	TA, tense/aspect
Complementizers: <i>ad</i> , <i>is</i> , <i>mmi</i> , <i>s</i> ; amar optative; <i>amk</i> neg. oaths, <i>ar</i> affirm. oaths, conditional clauses: <i>ib</i> , <i>!mqqar</i> , <i>mra</i> , <i>ukun</i> , <i>waxxa</i> ; <i>nʒ</i> ‘or’, <i>maʒ</i> ‘as long as, until’, <i>ar (d)</i> ‘until’, <i>kissar</i> ‘as long as’, <i>llir</i> ‘when’, <i>hra</i> immediate past	∅ <i>ur</i> negation	∅ <i>rad</i> future <i>ar</i> durative

Notes:

- Preverbs tend to occur in the order shown above; every clause has one and only one option in slots 2 and 3.

- b. Initial preverbs are generally complementizers or subordinating conjunctions, with the exception of *ħra* (immediate past).
- c. Preverbs exert morpho-syntactic requirements on the verbs they occur with (see below).
- d. The TA preverb *rad* may copy the PNG prefix of verb root, as in *n-rad n-fk* ‘I will give to him’, but it never copies the suffix.
- e. The above order is required in words that lack initial preverbs, but in clauses with preverbs both Neg-TA and TA-Neg orders are possible, with the TA-Neg order being much preferred.

(35) Morpho-syntactic requirements on verb base form (see DE89: 175)

		PERFECTIVE			imperfective
		perfective	negative	aorist	
		I	II	III	IV
		<i>lsa</i>	<i>lsi</i>	<i>ls</i>	<i>lssa</i>
A.	<i>rad</i>			+	+
B.	<i>ur + rad</i>			+	+
C.	<i>ar</i>				+
D.	<i>ur + a(r)</i>				+
E.		+	+	+	+
F.	<i>ur</i>		+	+	+

Notes:

- a. There are four basic stem classes in verbs (I-IV), as in the stems for ‘dress’ above, and there are a host of restrictions on the combinations of preverbs and certain stem forms. See also section 6 below.
- b. Whether the verb of a clause is in PERFECTIVE (one of I-III) or imperfective is an independent choice for any sentence, but these classes have different morpho-syntactic restrictions
- c. *ar* (durative) can only occur with an imperfective stem
- d. A verb occurring after *rad* can either be PERFECTIVE or imperfective, but if the former, it must be in aorist.
- e. A number of other morpho-syntactic contexts support an open choice of PERFECTIVE or imperfective verb stems, e.g., when the clitic *iyt* is present or in imperatives (see DE89: 175-176)
- f. When *ur* cooccurs with a nonaorist PERFECTIVE verb it must be a negative stem; other preverbs, e.g., *amk* (negative oaths) also require II stems.

(36) Illustration: preverb + verb combinations (DE89: 177)

A-III	rad ks-n ass n ssbt	they will pasture saturday
A-IV	rad kssa-n ass n ssbt	they will pasture saturday
B-III	ur rad ks-n ass n ssbt	they will not pasture saturday
C-IV	ar kssa-n ass n ssbt	they pasture on saturdays
D-IV	ur kssa-n ass n ssbt	they do not pasture on saturdays
E-I	ksa-n ass n ssbt	they pastured saturday
F-II	ur ksi-n ass n ssbt	they did not pasture saturday

(37) Patterns of allomorphy for grammatical morphemes

- a. [r] apocopy: the [r] of *ar* (durative) drops when *ar* is preceded by another preverb or in relative clauses (see DE89: 180 ff).
- b. *ar* drop: the preverb *ar* is dropped in relative clauses headed by *mmi* and in relative clauses in which the relativized noun phrase is a subject or a direct object (see DE89: 187)
- c. [ʁ] insertion before *ar* (durative): within a clause, [ʁ] is inserted into ...*a ar*
- d. Alternations of the final [d] of *ad* and *rad*: depending on the morphological and syntactic status, and the C/V status, the final [d] of these morphemes may drop, e.g., before a widow preposition, or assimilate completely to the following consonant, e.g., before a pronoun, deictic or preverb; drop may be optional or obligatory; see DE89: 1988 for specific contexts and conditions.
- e. 3fs object pronoun [s] insertion: this pronoun *tt* is changed to *stt* after a noncontinuant coronal obstruent, e.g., *ut tt* 'hit her' is [utstt].
- f. Verbal deictics: deictics *d* and *nn* are [id] and [inn] in certain environments (DE89: 192 ff.)
- g. Release in *t-tt*: when the PNG marker *t-* is used before a stem-initial *tt-*, the first *t* is released before starting producing the following *tt*; however, the PNG *t* is dropped before the *tt-* used in the imperfective.

4. Word classes and subcategories

Goal: give an inventory of the morpho-syntactic units of Tashlhiyt, the lexical and functional categories, subcategories of nouns and verbs. This section is preliminary.

(38) Morpho-syntactic units

- a. Word: a morpho-syntactic stem plus any obligatory inflections; may be distinct from phonological words
- b. Stem: morpho-syntactic word minus inflections; may be complex through inclusion of derivational affixes; see section 6 on distinction made in verbs of primary bases and secondary bases, where the former is the input for the latter and forms new verb lexemes
- c. Root: morpho-syntactic stem minus any derivational morphology; see also the concept of 'radical' and 'verb kernel', sometimes used for nonconcatenative morphology
- d. Derivational affix: an affix that attaches to a noun or verb and changes its meaning
- e. Inflectional affix: obligatory affixes used primarily to mark person, number, and gender in verbs and number, gender, free/bound (i.e., construct state); see section 3 and 5 for illustrations
- f. Clitic: morpho-syntactic words that are phonologically bound to a host; see section 3 for details of verbal clitics and enclisis
- g. Compounds: somewhat rare, though mentioned in passing in DE02: 37

(39) Lexical categories

- a. Nouns: inflect for person, number, gender, and free/bound; see section 5 for inflectional and derivational morphology
- b. Verbs: inflect for person, number, and gender; see sections 3 and 6 for inflectional and derivational morphology and the morpho-syntactic contexts for verb forms
- c. Adjectives: a minor word class, largely derivative from verbs (see Asp53: 197-200)

(40) Functional categories

- a. TA markers: *rad* (future), *ar* (durative)
- b. Negation: *ur*
- c. Complementizers: e.g., *ad*, *is*, *mmi* (see section for list)
- d. Conjunctions: see section 3

Notes:

- i. Morpho-syntactic properties: see rules governing preverbs in section 3
- ii. Articles: there do not seem to be any grammatical morphemes like articles in other languages (Aspinion 1953: 6)

(41) Subcategories of verbs (from El Mountassir 2003: 18 ff.)

- a. Transitives with direct object: e.g., *gru* 'pick up', *ar tgrru taydrin* 'she picks up the spikes'.
- b. Transitives with indirect object: *aws* 'to help', *ar ittaws i-g^wma-s* 'he helps his brother' (see El Mountassir p. 20 ff. for list of prepositions used with indirect objects).
- c. Intransitives (lack an object): *azzl* 'to run', *ar ittizzal* 'he runs'.
- d. Neutral transitive/intransitives: (not sure of example; includes passive morphology)

5. Morphology and phonology of nouns

Goal: lay out rules of inflectional and derivational noun morphology

5.1 Inflectional morphology

(42) Inflectional morphology: Introduction

- a. Tashlhiyt nouns are marked for number (singular or plural), gender (masculine or feminine), and state (construct state or free). Nouns have eight forms, with some exceptions (DE02: 27).
- b. Typical noun structure (DE02: 94): (af_{infl}) [(theme vowel) + verb kernel/radical]_{stem} (af_{infl})

(43) Gender marking, by lexical strata (Asp53: 7-10; x/y is disjunction, X a stem, cc coronal geminate)

	Masculine	Feminine
Berber Nouns	a/i/uX	tX(t) tadawt 'back' tifiya 'meat'
Arabic Loanwords: Berberized	a/i/uX	ta/talXt talhurst 'ring'
Arabic Loanwords: Retained Forms	l/ccX lfaher 'coal' ssif 'summer'	l/ccXt lfesst 'alfalfa' ddunit 'world'

Notes:

- a. Exception: some feminine nouns begin with vowels, e.g. *imma* 'my mother'.

- b. Source of gender value: for humans and some animals gender is determined by biological gender, e.g. *a-fruḫ* (m) 'boy' and *t-a-fruḫ-t* (f) 'girl', and otherwise is idiosyncratic, e.g. *ayyur* (m) 'moon' and *t-afuk-t* (f) 'sun' (DE02)
- c. Feminine forms can be created from masculine forms by adding a /t-/ prefix and /-t/ suffix, e.g. *afullus* 'rooster' *tafullust* 'chicken' (Aspinion, 1953: 11).

(44) Number: Introduction

- a. Nouns are either singular or plural. Plurality is marked with affixation (external), stem changes (internal), or a combination of both (Asp53: 38-62; Idrissi, 2000).
- b. Issue: the nature of plural morphology and the degree to which non-concatenative morphology is necessary is unclear. Dell and Elmedlaoui (2002) present a largely concatenative analysis, whereas Idrissi (2000) favors a non-concatenative analysis, including vowel changes, degemination and insertion of whole syllables. Here, we summarize the main descriptive patterns described in detail in Asp53: see page numbers for specific patterns.
- c. Collective nouns: intrinsically masculine or feminine and indicate gender, species, or material, e.g. *uzzal* 'iron' (Asp53: 64). They are predominantly singular, though there are some collective nouns with singular and plural forms, e.g. *adfel* 'snow, sg' *idflan* 'snow, l' (Asp53: 65).
- d. References: Asp53: 38-62, Jebbour (1988), DE02, Idrissi (2000)

(45) Summary of masculine plural forms (X or X...Y = verb stem)

	Singular	Plural
Group 1 (external) p. 38-42	a/iX uX adrar 'mountain'	iXen(yn)/an/ten/wen/awen/iwen uXen/an/ten/awen idraren 'mountains' N.b.: /-en/ is realized as /-yn/ when the stem ends in i
Group 2 (internal) p. 42-45	a/iXe/i/uY uXeY aXaYuZ aXu aXaYu andaru 'henhouse'	iXaY uXaY iXuYaZ iXa iXuYa indura 'henhouses'
Group 3 (mixed) p. 45	i/aXu/iY uXeY afud 'knee'	iXaYen/an/iwen uXaYn ifadden 'knees'
Exceptions p. 46	aX ada 'gut' iX !id 'night' uX anu 'well'	aXen/ten/iwen adan 'guts' aXen/an/iwen !adan 'nights' uXa/an una 'wells'
Special Plurals	(1) Arabic plurals: retain Arabic plural forms lktab 'book' (2) /id-/ prefix plurals bu-tgra 'tortoise'	lktub 'books' id-bu-tgra 'tortoises'

p. 47-48	(3) plurals with different singular forms aydi 'dog' !idan 'dogs'
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(46) Summary of feminine plural nouns

	Singular	Plural
Group 1: external p. 52	ta/tiX(t) tuX(t) tafullust 'chicken'	tiXin/win/awin/iwin tuXin/iwin tifullusin 'chickens'
Group 2: internal p. 53	taXe/i/uX(t) taXaYu/iZ(t) ta/tiX(t) taXaYu(t) tagertilt 'mat'	tiXaY tiXu/iYaZ tiXa tiXuYa tigertal 'mats'
Group 3: mixed p. 57	ta/tiXY(t) tuXY(t) timikert 'thief, f'	tiXaYin tiXa/iYiwin tuXaYin timakarin 'thieves, f'
Exceptions p. 58-59	taX(t) taddagt 'tree' tiX(t) tileft 'wild sow' tuX(t) tanut 'small well' tXat/it takat 'fire'	taXin/win/iwin taddagin 'trees' taXwin/iwin talfiwin 'wild sows' tuXa/in tuna 'small wells' tXatin/atin takatin 'fires'
Special Plurals p. 59-60	(1) Arabic plurals: retain Arabic plural forms luqt 'moment', lawqat 'moments' (2) Plurals with /id-/ or /istt-/ prefix εamti 'my paternal aunt', id-εamti / istt-εamti (3) Plurals with different singular and plural forms tili 'sheep', ulli , tatten	

(47) Construct state: Introduction

- The inflectional category: nouns are inflected for whether they are 'free' or 'bound', which is referred to as the construct state in many Afro-asiatic languages.
- Contexts: the construct state is required in a number of contexts, and the free form is required elsewhere; the construct state is required after most prepositions (with some exceptions, see Asp53: 19-20), in conjunctions (Asp53: 25), determinative complements (Asp53: 28-29), post-verbal subjects (Asp53: 34-35), following cardinal numbers 1-10 (DE02: 27), following *mnnaw* 'how many, several' (DE02: 27).
- Number: the construct state is the same in singular and plural for masculine (Asp53: 48) and feminine (p. 60).

(48) Construct state: Masculine nouns (Asp53: 20-21, 48-49)

Free	Construct
aX argaz 'man'	uX i-urgaz 'for man'
iX ifri 'cave'	iX κ-ifri 'in the cave'
iger 'field'	jiX κ-yiger 'in the field'
uX	wuX κ-wurti 'in the garden'
CX medden 'people'	CX s-medden 'among the people'
Exception	
aX aman 'water'	waX κ-waman 'in the water'

(49) Construct state: Feminine singular nouns (Asp53: 22-24, 60-61)

Free	Construct
taX tafelhit 'Berber'	tX s-tfelhit 'in Berber'
tiX tigemmi 'home'	tX s-tgemmi 'to home'
tuX tuzlin 'scissors'	tuX s-tuzlin 'with scissors'
CX (C ≠ t) !lfesst 'alfalfa'	CX (C ≠ t) κ-!lfesst 'in the alfalfa'
Exception	
taX tagant 'forest'	taX κ-tagant 'in the forest'
tiX tisent 'salt'	tiX s-tisent 'with salt'

(50) Construct state: Further analysis (DE02 26-37)

Preamble: DE02 derive feminine forms from masculine forms (resulting in predominantly vowel-initial stems). Vowel-initial stems are divided into two groups: initial vowels from stems and initial vowels from a prefix called an 'augment' (see DE02, Lasri (1991), Guerssel (1976)). The arguments for this are many, as summarized below.

- Augments that are [a] are always [i] in the plural, whereas initial stem vowels do not change in quality, e.g. *adrar* (ms) *idrarn* (mp) /a-drar/ 'mountain', *aylal* (ms) *aylaln* (mp) /aylal/ 'bird'.
- Augments are deleted in bound forms (with some exceptions); initial stem vowels are not, e.g. *tdrart* (fs) /t-a-drar-t/ 'mountain, bound', *taylalt* (fs) /t-aylal-t/ 'bird, bound'.
- Gemination of the first consonant in a noun only occurs with initial stem vowels, e.g. augment: *a-ddukkl* (a+stem), *adukkl*; stem: *azzar*, *azzar*.
- Initial stem vowels contribute to causative forms; augments do not, e.g. augment: *a-qkkaz* (a+stem), *ss-qukkz* (causative); stem: *adf* (stem), *ss-idf* (causative).

5.2 Derivational morphology

(51) Word derivation with non-concatenative morphology (Dell & Elmedlaoui 1992)

Pg #	Label	Template	Templatic Meaning	Derivation	
97 ff.	TIRRUGZA	t-i-CCuCCa	"the condition of someone who is an X"	Noun → Noun	i-nbgi → t-i-nnubga
101 ff.	UKRIS	uCCiC	"someone who or something that is X"	Verb → Noun, Adjective	lmmus → ulmis
105 ff.	ABNAKLIY	a(C)CCaCC-iy	"someone whose trade or occupation involves X"		i-hnbl → a-hnabl-y
117 ff.	TIFRDI	t-i-(C)CCi	"the action involved in X"	Verb → Noun	frd → t-i-frdi
121 ff.	AZDDAYRU	a-CC:aCCu	"(person who or thing which) has the property X, has undergone X"	Verb → Noun, Adjective	!nɔurfa → a-!nqqarfu

Note:

- Template mapping: consonants are transferred from the base to the template in the same right-to-left order; vowels are generally ignored.

(52) Word derivation with affixation (Asp53, DE02)

Derivation:	Input	Operation	Input	Output	Reference
Augmentative	Fem. Noun	tXt	t-agan-t 'forest'	agan 'large forest'	Asp53: 13
Diminutive	Masc. Noun	tXt	!adar 'foot'	t-!adar-t 'little foot'	Asp53: 13
Individuative	Masc. Noun	tXt	!azalim 'onions'	t-!azalim-t 'an onion'	Asp53: 66
	Masc. Noun	taXt	luqid 'matches'	ta-luqit-t 'a match'	Asp53: 66
Nouns of Jobs	Masc. Noun	tXt	aherraz 'shoemaker'	t-aherraz-t 'making shoes'	Asp53: 12
Language Names			brtqqiz 'Portugal'	t-a-brtqqis-t 'Portuguese'	DE02: 26
Citizenship			sbbalyun 'Spain'	a-sbbalyun 'Spaniard, ms'	DE02: 37
Action Nouns	Verb	aX (other)	mger 'to harvest'	tamegra 'harvest, f'	Asp53: 307-8, DE02: 37
Agentives	Verb	aX (other)	mger 'to harvest'	anemgar 'harvester, m'	Asp53: 310, DE02: 37
	Masc. Agentive	tXt			
Instrument Nouns	Verb	unknown	agum 'to draw water'	asagum 'bucket'	Asp53: 311

Occupation Noun	Noun	aXiy	l-bulis 'police'	a-bulis-iy 'policeman'	DE02:105
Adjective of origin	Place name	aX-iy	t-a-rudan-t 'Taroudant'	a-rudan-iy 'from Taroudant'	DE02: 105, Asp53: 12, 39, 53

Notes:

- a. Gender: some forms of derivational morphology are achieved through deriving secondary genders, where a masculine noun is derived as feminine or vice versa
- b. Restrictions: diminutives cannot be formed from feminine nouns or if the masculine form has a feminine counterpart, and augmentative derivations are rarely used (Asp53: 13)

6. Morphology and phonology of verbs

Goal: summarize the morphological processes involved in verb inflection and derivation, with special focus on the rather complex systems of stem allomorphy. We follow the basic analysis of DE91, and draw on much of their data, but also attempt to reference later research that has built upon this work.

6.1. Stem sets and morphological bases

(53) Verb words and verb stems for 'remember'

	perfective	imperfective
1s	k _{ti} -χ	k _{tti} -χ
2s	t-k _{ti} -t	t-k _{tti} -t
3ms	i-k _{ti}	i-k _{tti}
3fs	t-k _{ti}	t-k _{tti}
stem	<i>k_{ti}</i>	<i>k_{tti}</i>

Notes:

- a. As described in section 3, verb words are inflected for person, number, and gender (PNG), and the inflectional morphology is very general; it does not involve distinct conjugation classes.
- b. 'Verb stems' are simply verb words minus inflections, as show above for two stem forms of 'remember'.

(54) Verb bases (cf., lexeme)

I	II	III	IV	
perfective (pf)	negative (neg)	aorist (aor)	imperfective (impf)	
ħada	ħada	ħada	tt-ħada	'be next to'
ull	ull	all	tt-all	'be tall'
lsa	lsi	ls	lssa	'wear'
ss-lsa	ss-lsi	ss-ls	ss-lsa	'dress (caus. 'wear')'

Notes:

- a. The notion of a 'verb base' is a generalization across four characteristic forms in TB that share the same basic concept and argument structure. Compare with the notion of a lexeme, though the stem forms do correlate with changes in tense/aspect. (These stem sets can be smaller or larger in other Berber languages, e.g., Tarifit and Figuig have five member sets, with negative impf forms; see Bensoukas (2012) for a review).

- b. The choice of a particular stem is sometimes free and sometimes predicted by the morpho-syntactic context—see section 3 ‘Morpho-syntactic requirements on verb base form’.
- c. *lsa* and *ss-lsa* are different verb bases because they have different argument structures.
- d. Stem forms across the verb base are not entirely predictable, but there are characteristic patterns that, with sufficient lexical specification of minor rules, accounts for the allomorphy (see below).
- e. Stem allomorphy within I-III members is rather straightforward, but IV is not. Often the pf form is taken as the base for all other forms, and this form is often used to refer to the entire stem set.

(54) Primary vs. secondary bases (DE91: 78)

pf	neg	aor	impf	
lsa	lsi	ls	lssa	‘wear’
mm-lsa	mm-lsi	mm-ls	tt-mm-lsa	reciprocal
ss-lsa	ss-lsi	ss-ls	ss-lsa	causative
tt-yawlsa	tt-yawlsa	tt-yawlsa	tt-yawlsa	passive
ħada	ħada	ħada	tt-ħada	‘be next to’
m-ħada	m-ħada	m-ħada	tt-m-ħada	reciprocal
s-m-ħada	s-m-ħada	s-m-ħada	s-m-ħada	causative of reciprocal

Notes:

- a. ‘Secondary bases’ include reciprocals (/mm-/ ‘augment’), causatives (/ss-/), and passives (/tt-/) and more complex derivatives, e.g., *s-m-ħada*. The meaning of secondary bases are typically listed in the lexicon because they are not always predictable.
- b. ‘Primary bases’ serve as the input to secondary bases; they lack a derivational prefix ‘augment’. The stem set (*lsa*, *lsi*, *ls*, *lssa*) is a primary verb base that acts as the input to the secondary reciprocal base (*mm-lsa*, *mm-lsi*, *mm-ls*, *tt-mm-lsa*).
- c. Secondary bases can be the input to other secondary bases, subject to the following restrictions (DE91: 78): passives can’t be the input to any secondary bases; reciprocals can be input to causatives but not passives; causatives can be input to both passives and reciprocals.
- d. ‘Verb root’ is a term used to relate secondary and primary bases; it is the verb structure shared across verb bases, though it is not always a concrete morpheme. ‘Verb kernels’ (=stem minus any concatenative morphology), and ‘radicals’ (DE91: 96 ff., =stem minus derivational prefix augments, used more often with nonconcatenative morphology) are related notions.
- e. Both the derivational prefixes and the secondary base stems exhibit allomorphy, e.g., *mm-* ~ *m-*, though the primary base stems are often carried over to secondary base stems in non-imperfectives.

(55) Morphological frame for verbs

$$af_{infl} [tt + af_{der}^* + verb\ root]_{stem} af_{infl}$$

Notes:

- a. Inflectional affixes surround the stem.
- b. Multiple derivational prefixes may be used to form secondary bases, though more than two are very rare.

6.2 Formation of primary base verb stems

(56) 1s2s ablaut in *lsa* perfective paradigm (DE91: 81)

	singular	plural
1	lsi-χ	n-lsa
2m	t-lis-t	t-lsa-m
2f	t-lis-t	t-lsa-mt
3m	i-lsa	lsa-n
3f	t-lsa	lsa-nt

Observation: many perfective stems ending in *a* have a stem alternation of *a* → *i* in 1 and 2 singular, hence ‘1s2s ablaut’.

(57) Characteristic stem allomorphy patterns (DE91: 81)

			pf	neg	aor	impf	
a.	variable	detachable	lsa/i	lsi	ls	lssa	‘wear’
b.		mutable	fda/i	fdi	fdu	tt-fdu	‘buy back’
c.			u33a/i	u33i	a33i	tt-a33i	‘let’
d.			ura/i	uri	ara	tt-ara	‘write’
e.	invariable		wala	wala	wala	tt-wala	‘follow’

Notes:

- Stems with 1s2s ablaut are ‘variable’, and those lacking it are ‘invariable’. In general, verbs ending in a final *a* are variable, unless they have the form *CaCa*, as in *wala*.
- Negative stems are by and large identical to the perfectives, with two main exceptions: 1) if a pf stem has 1s2s ablaut, then the neg stem has the ablauted form, e.g., *lsa/i*, *lsi*; 2) if the pf stem ends in a contoid that is immediately preceded by another contoid or a nonsyllabic vocoid, then the neg stem has two free variants with an inserted *i*, e.g., *rwl_{pf}*, *rwl* ~ *rwil_{neg}* ‘flee’.
- Aorist stems retain the consonants of the pf stems, but a final *a* of a variable stem may either be removed, e.g., *ls* (= ‘detachable’), or changed, e.g., *fdu*, *a33i*, *ara* (= ‘mutable’). The detachability and specific change to a high vowel must be listed in the lexicon.
- Aorist stems also exhibit a more regular rule that changes any stem initial vowel that serves as a syllable nucleus to *a*, as in *a33i* and *ara*. In general, the three way vowel contrast is neutralized in these stem-initials. A systematic exception to this involves stems beginning with *uw*, e.g., *uwzn_{pf}*, *uwzn_{aor}* ‘weigh’, which DE91: 95 argue is not a real exception because the sequence is a geminate, so exhibits geminate inalterability.
- Imperfective stems involve more complex allomorphy, but they retain all the vowels of the aorist stem, as shown above. However, detachable final *a* is also retained in the impf from the pf, e.g., *lsa/i*, *ls*, *lssa*.

(58) Imperfective: stem allomorphy

		perfective	aorist	imperfective	
a.	<i>tt</i> -prefixation	iws	aws	tt-aws	‘help’
		drus	idras	tt-idras	‘be few’
b.	gemination	dl		ddal	‘cover’
		mrz		mmraz	‘be wounded in head’
		gr-a		grru	‘pick up’
		m χ		mss χ	‘transform’
c.	vowel insertion	skkiws		tt-skkiwis	‘be present’
		fl		ffal	‘leave’
		bddl		tt-bddal	‘change’
		sli		slay	‘graze’

Notes:

- While there are conditions on which stems undergo gemination and vowel insertion, many stems need to be lexically marked for the allomorphy patterns they exhibit.
- When a stem does undergo gemination, DE 91: 86 argue it is fully predictable which consonant is geminated. In particular, it is the onset in their sonority-based syllabification system. Example: in aor stem *g(ru)*, so *r* geminated. Correctly predicts that final consonant is never geminated. See DE 91: 85 for a set of conditions that must obtain for the stem to exhibit gemination, which tend to have the overall effect of restrict gemination to small stems with only final vocoids.
- In stems with vowel insertion, the vowel is always inserted into the last two segments. The quality of the vowel is the same as the preceding vowel, if there is one; otherwise, it defaults to *a*. See DE91: 88 for a host of other conditions that must obtain for this pattern, including many restrictions on the existence of segments that occupy the nucleus position.
- In general, gemination and vowel insertion are rather rare, and *tt*- prefixation and gemination are in complementary distribution. However, the combination of *tt*- prefixation and vowel insertion is rather common.

(59) Further research on the imperfective

- Preamble: the imperfective is a much-discussed topic in Berber linguistics, relating to a host of issues, including the proper treatment of syllabification, syllable weight, and prosody morphology and the existence of root-and-pattern morphology in Berber. We attempt to summarize some of this research below.
- Jebbour (1996); Jebbour (1999): uses the imperfective as a way of studying syllable weight in syllables with consonantal nuclei, arguing that CC and CCC syllables can be only mono-moraic; supports an output constraint on imperfectives that they are a sequence of two light syllables.
- Lahrouchi (2010), cf. Lahrouchi (2008): analyzes gemination in the imperfective, or lack of it, as a consequence of binary-branching head complement structure similar to structures used in Government Phonology; see extensive rebuttal of original DE analysis in Dell and Elmedlaoui (2013).
- Bensoukas (2001): proposes an analysis of the imperfective in Optimality Theory in which the observed allomorphy is the result of conflicting demands on the realization of a floating mora; extends the analysis to degemination as well.

6.3 Formation of secondary base verb stems

(60) Causative secondary bases (DE91: 97-98)

	perfective	negative	aorist	imperfective	
a.	lkm ss-lkm	lkm ~ lkim ss-lkm ~ ss-lkim	lkm ss-lkm	lkkm ss-lkm	‘reach’
b.	kti ss-kti	kti ss-kti	kti ss-kti	ktti ss-ktay	‘remember’
c.	qqł ss-qqł	qqł ~ qqıl ss-qqł ~ ss-qqıl	qqł ss-qqł	tt-qqł ss-qqal	‘wait’
d.	akkut s-ukkt		X s-ukkt	tt-akkut s-ukkut	‘scatter’

Notes:

- Causatives generally contain the prefix /ss-/, which has many allomorphs (see below).
- Non-imperfective stems do not alternate in primary and secondary bases, but there are two important differences in the imperfective: there is no *tt-* prefix in secondary bases (like all imperfectives beginning with a coronal fricative, e.g., *srs*_{pf}, *srus*_{impf} ‘lay down’), gemination never occurs (it is undone if the corresponding primary base has one).
- In addition to the arguably concatenative patterns of (a-c) above, there are other stems that appear to require nonconcatenative morphology: when the primary base is of the form *aC(:)uC* the secondary base base is *uC(:)C* or *iC(:)C* in the causative perfective and *uC(:)uC* or *iC(:)iC* in the imperfective.
- The causative prefix /ss-/ can be realized as a singleton, and alternates in voicing and place based on the following rule: *z(z)-* if there is another [+anterior] voiced coronal elsewhere in the stem, and *ʒ(ʒ)-* if there is a [-anterior] voiced coronal elsewhere in the stem; but voicing is blocked by stem-initial voiceless segments.

(61) Reciprocal secondary bases (DE91: 100 ff.)

	perfective	negative	aorist	imperfective	
nontemplatic					
a.	kti mm-kti	kti mm-kti	kti mm-kti	ktti tt-mm-ktay	‘remember’
b.	ʒla mm-ʒla	ʒli mm-ʒli	ʒlu mm-ʒlu	ʒllu tt-mm-ʒlaw	‘lose’
templatic					
c.	fra n-fara	fri n-fara	fru n-fara	frru/tt-fru tt-n-fara	‘disentangle’
d.	smuqqł mm-smaqqał	smuqq(i)ł mm- smaqqał	smuqqł mm-smaqqał	smuqqul tt-mm-smaqqał	‘look’

Notes:

- a. Reciprocals can be divided into three classes: those that use nontemplatic morphology, retaining the essential stem structure of the primary base, those that use templatic morphology in which the reciprocal stem has a (C)CaCa(C) structure, and those that have nontemplatic and templatic free variants.
- b. Nontemplatic reciprocals, as illustrated in (a-b) above, are formed from the corresponding primary bases, with the differences in imperfectives observed in causatives, and contain the prefix /mm-/.
- c. Imperfectives also receive /tt-/ before the reciprocal prefix, unlike causatives (which start with *s*, and thus shun *tt-*).
- d. The reciprocal prefix has many allomorphs, alternating in quantity (*mm-* vs. *m-*) and place; *m(m)-* delabializes when the stem contains a primary labial consonant /b f m/.

(62) Passive secondary bases (DE91: 102 ff.)

	perfective	negative	aorist	imperfective	
a.	skr tt-skr tt-yawskar	sk(i)r tt-sk(i)r tt-yawskar	skr tt-skr tt-yawskar	skar tt-skar tt-yawskar	'do'
b.	ttu tt-ttu tt-yawttaw	ttu tt-ttu tt-yawttaw	ttu tt-ttu tt-yawttaw	tt-ttu tt-ttu tt-yawttaw	'forget'

Notes:

- a. Passives are formed in two ways: (i) with nontemplatic morphology in which *tt-* is attached to corresponding primary base, and (ii) with templatic morphology in which *tt-* is prefixed to a stem of the form *ya(w)YaZ* (*Z* is one segment at most).
- b. Passives may have two or three syllables containing *a*: if two nonsyllabic segments are separated by a vowel in the base input, they must be separated by a vowel in the corresponding passive, e.g., *χalf_{pf}*, *tt-yawχalaf_{pass}* 'place crosswise', cf. *zgr_{pf}*, *tt-yawzgar_{pass}* 'go across'.

7. Noun phrase structure

(63) Noun phrase schemata

- a. (DET) N {-DEM/-POSS} (Rel. C.)
- b. (DET) N {-DEM/-POSS} (P)
- c. (DET) N {-DEM/-POSS} (AdjP), e.g., *afullus umlil* 'a white rooster'

Each of these are extended and illustrated below.

7.1 Pronouns and possession

N.b.: need to consider re-arranging this section so that possession is in the NP section, and the general facts of pronouns (subject markers, free pronouns, etc.) are in section 4.

(64) Pronoun types

- Independent personal pronouns: independent pronouns and can fill argument positions
- Clitic pronouns: object and indirect (dative) pronouns that encliticize to a verb or preverb; see section 3 for more details
- Inflectional affixes: inflectional affixes on verbs code information about the subject, and therefore mark some of the information marked by pronouns, and they are the sole marker when the subject is not expanded.
- Pronominal suffixes marking possession: suffixes indicating person, number, and gender of the possessor of a possessed noun
- Free possessive pronouns: independent words that mark person, number, gender of possessed noun.
- Free interrogative possessive pronouns
- Pronouns indicating a familiar relation: suffixes used with family members to mark person, number, gender of the possessor
- Demonstrative pronouns (Asp53: 93-96)

(65) Independent personal pronouns (El Mountassir 2003: 15)

	masculine	feminine
1 sg	nkki	nkki
2 sg	kiyyi	kmmi
3 sg	ntta/nttan	nttat
1 pl	nkkni/nkk ^w ni	nkknti/nkk ^w nti
2 pl	k ^w nni	k ^w nninti
3 pl	nttni	ntnti

(66) Affixed pronouns marking possession (Asp53: 68-71)

	Person		After a Vowel	After a Consonant	
Singular	1st person	(2 g.)	-nu aydi-nu 'my dog' tihsi-nu 'my sheep' iggulla-nu 'my plows' (2 g.)	-inu ag ^w mar-inu 'my horse' tamazirt-inu 'my country' igran-inu 'my fields' (2 g.)	my
	2nd person	m	-nnek aydi-nnek 'your dog' tihsi-nnek 'your sheep' iggulla-nnek 'your plows' (of a man)	-ennek ag ^w mar-ennek 'your horse' tamazirt-ennek 'your country' igran-ennek 'your fields' (of a man)	your
	2nd person	f	-nnem aydi-nnem 'your dog' tihsi-nnem 'your sheep' iggulla-nnem 'your plows' (of a woman)	-ennem ag ^w mar-ennem 'your horse' tamazirt-ennem 'your country' igran-ennem 'your fields' (of a woman)	
		ms			
		fs			
		pl			

3rd person (2 g.)
ms
fs
pl

-nnes
aydi-nnes 'his/her dog'
tihsi-nnes 'his/her sheep'
iggulla-nnes 'his/her plows'
(2 g.)

-ennes
ag^wmar-ennes 'his/her horse'
tamazirt-ennes 'his/her country'
igran-ennes 'his/her fields'
(2 g.)

his, her

Person	Gender	After a Vowel		After a Consonant		
		Pronoun	Gloss	Pronoun	Gloss	
Plural	1st person (2 g.)	nneḵ	aydi-nneḵ 'our dog' tihsi-nneḵ 'our sheep' iggulla-nneḵ 'our plows' (2 g.)	enneḵ	ag ^w mar-enneḵ 'our horse' tamazirt-enneḵ 'our country' igran-enneḵ 'our fields' (2 g.)	our
	2nd person m	nnun	aydi-nnun 'your dog' tihsi-nnun 'your sheep' iggulla-nnun 'your plows' (of men)	ennun	ag ^w mar-ennun 'your horse' tamazirt-ennun 'your country' igran-ennun 'your fields' (of men)	your
	2nd person f	nnunt	aydi-nnunt 'your dog' tihsi-nnunt 'your sheep' iggulla-nnunt 'your plows' (of women)	ennunt	ag ^w mar-ennunt 'your horse' tamazirt-ennunt 'your country' igran-ennunt 'your fields' (of women)	
	3rd person m	nnsen	aydi-nnsen 'their dog' tihsi-nnsen 'their sheep' iggulla-nnsen 'their plows' (of men)	ennsen	ag ^w mar-ennsen 'their horse' tamazirt-ennsen 'their country' igran-ennsen 'their fields' (of men)	their
	3rd person f	nnsent	aydi-nnsent 'their dog' tihsi-nnsent 'their sheep' iggulla-nnsent 'their plows' (of women)	ennsent	ag ^w mar-ennsent 'their horse' tamazirt-ennsent 'their country' igran-ennsent 'their fields' (of women)	

Notes:

- The preposition /n/ goes between the noun and the suffixes listed above. Except 1st person singular in some dialects, which uses /nn/.
- Important Note: the possessive ending agrees with the possessor, not the possessed, in gender and number (p. 69).

(67) Free possessive pronouns (Asp53: 98-100)

Singular				Illustrations
Person	Gender	Pronoun	Gloss	
1st person	2 g.	wi-nu ti-nu	mine	<i>aydi-y-ad iga wi-nu</i> 'This dog (m) is mine.' <i>taydit-ad tga ti-nu</i> 'This dog (f) is mine.'
2nd person	m	wi-nnek ti-nnek	yours (ms)	<i>ḅwa-nn iga wi-nnek</i> 'That one is yours (m)'
	f	wi-nnem ti-nnek	yours (fs)	<i>ḅwa-nn iga wi-nnem</i> 'That one is yours (f)'
3rd person	2 g.	wi-nnes ti-nnes	his/hers	<i>χta-d tga ti-nnes</i> 'This one is hers'

Plural				
Person	Gender	Pronoun	Gloss	Illustrations
1st person	2 g.	wi-nneκ (χ) ti-nneκ (χ)	ours	<i>!idan-ad gan wi-nneκ</i> 'These dogs (m) are ours.'
2nd person	m	wi-nnun ti-nnun	yours (mp)	<i>tifunasin-ad gant ti-nnun</i> 'These cows are yours (mp)'
	f	wi-nnunt ti-nnunt	yours (fp)	<i>tifunasin-ad gant ti-nnunt</i> 'These cows are yours (mp)'
3rd person	m	wi-nnsen ti-nnsen	theirs (mp)	<i>izgaren-ad gan wi-nnsen</i> 'These cattle are theirs (mp)'
	f	wi-nnsent ti-nnsent	theirs (fp)	

Notes:

- Possessive pronouns are formed with the masculine and feminine demonstratives /wi/ and /ti/, respectively, followed by the preposition /n/.
- Possessive pronouns are invariable in terms of number; they agree with the possessor in gender and number

(68) Possessives with full nouns (Asp53:100)

- aκyul-ad iga wi-n-urgaz-ad* 'This ass belongs to this man.'
ag^wmar-ad iga wi-m-Muħa 'This horse (m) belongs to Moħa'
tag^wmar-ad iga ti-n-εifa 'This mare belongs to Aħcha.'

Template: wi/ti+n+Noun

(69) Interrogative form of possessive pronouns (Asp53: 101-102)

- aκyul-ad wi-m-mit a-iga?* 'Whose is this ass?'
(alternatively, *wi-m-mit a-iga uκyul-ad?*)

Notes:

- In interrogative forms, possessive pronouns are either *wi-m-mit* or *ti-m-mit* (the medial /n/ assimilates to the following [m]).
- In interrogatives, number is not distinguished and gender agrees with the subject

(70) Pronouns that indicate familiar relationships (Asp53: 71-72)

Singular		Plural	
1st person (2 g.)	a, i, u baba 'my father' illi 'my daughter'	1st person (2 g.)	tneκ baba-tneκ 'our father' illi-tneκ 'our daughter'
2nd person m	k baba-k 'your father' illi-k 'your daughter' (of a man)	2nd person m	tun baba-tun 'your (mp) father' illi-tun 'your (mp) daughter' (of men)
2nd person f	m baba-m 'your father'	2nd person f	tunt baba-tunt 'your (fp) father'

	illi-m 'your daughter' (of a woman)		illi-tunt 'your (fp) daughter' (of women)
3rd person (2 g.)	s baba-s 'his/her father' illi-s 'his/her daughter' (2 g.)	3rd person m 3rd person f	tsen baba-tsen 'their (mp) father' illi-tsen 'their (mp) daughter' tsent baba-tsent 'their (fp) father' illi-tsent 'their (fp) daughter'

Notes:

- Rule: these pronouns are used after the names of relatives, e.g., *baba* 'my father'; see full list p. 71 and p. 73 for a set of exceptions
- Context: when using a determinative complement and a relationship pronoun, they are used as follows (p. 73): with preposition /n/ and relationship suffix, e.g., *iwi-s n-umkar* 'son-his of-chief'.

(71) Demonstrative particles (adverbials) (Asp53: 92-94)

Particle	Illustrations
{ad / a} 'here'	<i>afrux-ad</i> 'this boy, here' <i>kass-ad</i> 'today (this day, today)'
{nna / enna} 'there'	<i>tafruxt-enna</i> 'that girl, there' <i>aydi-nna</i> 'that dog, there'
ann 'over there'	<i>adrar-ann</i> 'that mountain, over there' <i>idraren-ann</i> 'those mountains, over there'
{lli / elli} 'not visible'	<i>aydi-lli</i> 'that dog (not here)' <i>argaz-elli</i> 'that man (not here)'

Note:

- Particles are attached to nouns or pronouns and are invariable.

7.2 Numerals for expressing quantities and indefiniteness

(72) Expressing indefinites (Asp53: 33)

	Adjective	Illustrations
Masc.	yan (or) ya	<i>yan urgaz</i> 'a man' <i>yan yilef</i> 'a wild boar'
Fem.	yat	<i>yat t^emkat</i> 'a woman' <i>yat tgemmi</i> 'a house'

Notes:

- Indefiniteness is indicated by an indefinite adjective (aka 'numeral adjective') which triggers the construct state in the following noun. Indefinite adjectives agree in gender with the noun that follows.

(73) Cardinal Numbers (Asp53: 252-255)

- Cardinal numbers trigger the construct state in following nouns and agree in gender with those nouns (except numbers 1000+, which have no feminine forms).
- Nouns following numbers 2 to 10 are plural, all other numbers are followed by singular nouns, e.g. *yan urgaz* '1 man' *sin irgazen* '2 men' *mya n-urgaz* '100 men'.

- c. Rules of use ('X' is the number; 'Y' is the noun):
- i. Numbers 1 to 10: X Y
 - ii. Numbers 11+: X n-Y
- d. Cardinal numbers 1 to 19 are Berber and numbers 20+ are Arabic.

(74) Numbers 1 to 10

	Masculine	Feminine	
1	yan (or) ya	yat	<i>yat t^emɛart</i> '1 woman'
2	sin (or) si	snat	<i>snat t^emɛarin</i> '2 women'
3	!krad	!kratt	<i>!krad wag^wmaren</i> '3 horses, m.'
4	!kkuz	!kkust	
5	semmus	semmust	
6	!sdis	!sdist	
7	sa	sat	
8	ttam (or) tam	ttamt (or) tamt	
9	!ttza (or) !tza	!ttzat (or) !tztat	
10	mraw	mrawt	<i>mraw iserdan</i> '10 mules, m.'

(75) Numbers 11 to 20 (Asp53: 250)

	Masculine	Feminine	
11	yan d-mraw	yan d-mrawt	
12	sin d-mraw	sin d-mrawt	
13	!krad d-mraw	!krad d-mrawt	
14	!kkuz d-mraw	!kkuz d-mrawt	
15	semmuz d-mraw	semmuz d-mrawt	<i>semmuz d-mraw n-urgaz (or) uwrgaz</i> '15 men'
16	!sdiz d-mraw	!sdiz d-mraw	
17	sa d-mraw	sa d-mrawt	
18	ttam d-mraw	ttam d-mrawt	<i>ttam d-mrawt n-t^emɛart</i> '18 women'
19	!ttza d-mraw	!ttza d-mrawt	
20	ɛafrin (Arabic)	ɛafrin	

Notes:

- a. Basic Form: X d-ten (where 'X' is a masc. number from 1 to 9). The preposition *d* means 'and', so the direct translation of *yan d-mraw* is 'one and-ten, m.' meaning 'eleven, m.'
- b. In some dialects (i) both ones and tens are in the feminine form (ii) ones are in the feminine form and tens are in the masculine form.

(76) Numbers 21+

	Masculine	Feminine	
21	ɛafrin d-yan	ɛafrint d-yat	
22	ɛafrin d-sin	ɛafrint d-snat	
23	ɛafrin d-!krad	ɛafrint d-!kratt	
24	ɛafrinj d-!kuzz	ɛafrint d-!kkust	
25	ɛafrin d-semmus	ɛafrint d-semmust	
26	ɛafrin d-!sdis	ɛafrint d-!sdist	
27	ɛafrin d-sa	ɛafrint d-sat	

28	εafrin d- ^ə ttam	εafrint d- ^ɛ ttamt	
29	εafrin d-! ^ɛ ttza	εafrint d-! ^ɛ ttzat	
30	εafrin d-mraw tlatin (Arabic)	εafrint d-mrawt	
31	εafrin d-yan d-mraw	εafrint d-yan d-mrawt	
32	εafrin d-sin d-mraw	εafrint d-sin d-mrawt	
40	sin id-εafrin sin id-a ^w -εafrin si-id-εafrin si-id-a ^w -εafrin	sin id-εafrint sin id-a ^w -εafrint si-id-εafrint si-id-a ^w -εafrint	
41	sin id-εafrin d-yan	sin id-εafrint d-yat	
42	sin id-εafrin d-sin	sin id-εafrint d-snat	
50	sin id-εafrin d-mraw	sin id-εafrint d-mrawt	
51	sin id-εafrin d-yan d- mraw	sin id-εafrint d-yan d-mrawt	
52	sin id-εafrin d-sin d- mraw	sin id-εafrint d-sin d-mrawt	
60	!krad id-εafrin	!krad id-εafrint	
70	!krad id-εafrin d-mraw	!krad id-εafrint d-mrawt	
80	!kkuz id-εafrin	!kkuz id-εafrint	
90	!kkuz id-εafrin d-mraw	!kkuz id-εafrint d-mrawt	
100	mya semmus id-εafrin	mya semmus id-εafrint	<i>mya n-urgaz</i> (or) <i>uwrgaz</i> '100 men'
1000	alf	(no feminine form)	<i>alf n-^lm^lart</i> '1000 women'
5000	semmus id-walf	(no feminine form)	

(77) Ordinal Numbers (Asp53: 255-256)

- a. Ordinal numbers agree in gender with the noun that follows.
- b. 'first' and 'last' are adjectives and don't follow the basic form (note: they have singular and plural forms)
- c. Basic Form ('X' is the number):
 - i. Masculine: *wiss-X(m.)*
 - ii. Feminine: *tiss-X(f.)*
- d. Berber numbers are used to 'third', from 'fourth' upward Arabic ordinals are also used (e.g. *wiss-rbea* 'fourth, m', *wiss-χamsa* 'fifth, m', *wiss-setta* 'sixth, m', etc.)
- e. Ordinals are usually followed by the preposition *n* or *κ* followed by the affix that agrees (Aspinion doesn't say specifically which affix; it appears to be the possessive affixes which already contain the preposition *n*).

(78) Illustration: Ordinal numbers

	Masculine	Feminine	
first	amzwaru (sg) imzwura (pl)	tamzwarut (sg) timzwura (pl)	
last	ameggaru (sg)	tameggarut (sg)	

	imeggura (pl)	timeggura (pl)	
second	wiss-sin	tiss-snat	<i>afruχ-ad iga wiss-sin gig-un</i> (or) <i>ennun</i> 'this child is the second (of us)'
third	wiss-!krad	tiss-!kratt	
fourth	wiss-!kkuz	tiss-!kkust	
fifth	wiss-semmus	tiss-semmust	<i>argaz-ad iga wiss-semmus-ennsen</i> (or) <i>gi-sen</i> 'This man is the fifth (of them)'
sixth	wiss-!sdis	tiss-!sdist	<i>tamkart-ad tga tiss-!sdist-ennsent</i> (or) <i>gi-sent</i> 'This woman is the sixth (among them)'
seventh	wiss-sa	tiss-sat	
eighth	wiss-ttam	tiss-ttamt	
ninth	wiss-!ttza	tiss-!ttzat	
tenth	wiss-mraw	tiss-mrawt	

(79) Fractions:

Fraction	Singular	Plural
1/2 'one half'		!nness (or) !mnassa (or) !mnasfa
1/3 'one third'	ttelt	latlat
1/4 'one quarter'	rrba	larbie
1/5 'one fifth'	l ^e χ ^w ms	laχ ^w mas
1/6 'one sixth'	ssudus	lasdas
1/7 'one seventh'	ssubue	lasbae id-ssubue
1/8 'one eighth'	ttumum	latman id-ttumun
1/9 'one ninth'	ttusue	latsae id-ttusue
1/10 'one tenth'	leεfur	leεfur id-leεfur

Notes:

- Fractions consist of modified Arabic terms
- When 'one half' is used in construct form, the final [a] disappears, e.g. *!bdu !mnassa!* 'share half!' versus *!mnass n-wurti* 'half of the garden' and *!mnass n-tgemmi* 'half of the house' (note: the latter two trigger construct state in the following nouns)
- Illustration: *Yan urgaz ifel-d si-iferyan d-!kratt tferχin. !Bdan lku-siyt-ennes f-lasbae. kra-iga-tt afruχ yusi sin lasbae (id-ssubue), kra-iga-tt tafruχt tusi yan ssubue iga !mnass(a) l-lħaqq n-ufruχ.* 'A man left two boys and three girls. One shared their inheritance in sevenths. Each boy took two sevenths and each girl took one seventh, that is to say, half of the portion of a boy.'

8. Adjective formation and the distribution of APs

(80) Adjectives: Introduction (Asp53: 89-90)

- Tashlhiyt has few adjectives, most of which express colours, faults, and infirmities.
- Adjectives agree in number and gender with the nouns they modify.

(81) Illustration: Adjectival agreement (Asp53: 12, 39, 53) (X = an adjective stem)

	SG.	PL.
Masc.	X <i>!aderdur</i> 'deaf, ms'	Xen <i>izagzawen</i> 'blue, green, mp'
Fem.	tXt <i>t-!aderdur-t</i> 'deaf, fs'	tiXin/win/awin/iwin tuXin/iwin <i>tizegzawin</i> 'blue, green, fp'

(82) Formation patterns via modification of state verbs (Asp53: 196)

Verbal Adjective		Predicative Adjective	
Method	Illustrations	Method	Illustrations
The preterite participle of the state verb (variable in number, but not gender)	<i>argaz imeqquren</i> (or) <i>meqquren</i> 'a tall man'	The state verb with the noun as the subject.	<i>afrux-ad imeqqur</i> (or) <i>imeqqur ufrux-ad</i> 'This child is tall.'
The noun followed by the verbal adjective.	<i>afullus umlil</i> 'a white rooster'	The attributive verb <i>eg</i> 'to be' followed or preceded by the verbal adjective.	<i>taydit-ad tga tumlilt</i> (or) <i>tumlilt at-tga</i> 'This dog (f.) is white.'
The noun followed by the participle form of the attributive verb <i>eg</i> 'to be' then the verbal adjective.	<i>afullus igan umlil</i> 'a white rooster'	The attributive verb <i>eg</i> 'to be' followed by the demonstrative (agreeing in gender and number) and the state verb in the participle form.	<i>tga tad ifulkin</i> 'She is beautiful.'

Notes:

- gar* is an invariable word that is used to express the adjective 'bad'. It is placed before the noun it modifies and does not trigger the construct state, e.g. *ɣwa-d iga gar argaz* 'This one here is a bad man.'
- In some dialects there is a feminine plural form in the preterite participle method, and also the initial *i* of the singular preterite participle disappears.
- There is no state verb to express 'to be new'. Instead the verbal adjective *lezdid* 'new' is used with the attributive verb *eg*, e.g. *tigemmi-y-ad tga lezdid* (or) *ti-l-lezdid* 'This house is new.'
- There is a list of the most used modifiers, including the state verb form and the adjectival forms (modifier, predicative, verbal adjective) on p. 201-203 as well as a list of state verbs on p. 152-153.

(83) Types of comparison constructions (Asp53: 246-251)

Type	Method	Form	Illustrations
Superior Quality	verb: <i>af</i> (type <i>!amz</i> transitive, preterite stem: <i>uf</i>) 'to be better, best, to surpass'	X VERB Y 'X is better than Y'	<i>ayyis-inu <<a-yufen >> wi-nnek</i> '<<It is>> my horse <<that>> is better than yours'
	'state' verb: <i>fulki</i> (type <i>zri</i>); <i>edel</i> (type <i>sker</i>); <i>Ɂlu</i> , <i>rwu</i> , <i>fwu</i> (all type <i>ftu</i>); <i>imim</i> (type <i>imlul</i>) 'be good, well, beautiful' with preposition <i>f</i> . (note: the verbs listed here are used interchangeably)	X VERB <i>f</i> -Y 'X is better than Y'	<i>tifiyi terwa f-Ɂrun</i> (or) <i>tifiyi tehla f-Ɂrum</i> 'the meat is better than the bread'
Superior Quantity	verb: <i>ati</i> (type <i>!amz</i> , transitive, preterite stem: <i>uti</i>) 'to surpass in quantity or in number'	X VERB Y 'X surpasses Y in number'	<i>ulli-nnes utint ti-nu</i> 'his sheep surpass mine in number'
	verb: <i>igut</i> (type: <i>imlul</i> , preterite stem: <i>ggut</i>) 'be numerous' with preposition <i>f</i> .	X VERB <i>f</i> -Y 'X is/are more numerous than Y'	<i>ulli-nnes ggutent f-ti-nu</i> 'his sheep are more numerous than mine'
Superior in Size, Dimension, Age	verb: <i>ag^wr</i> (type <i>!amz</i> , transitive, preterite stem: <i>ug^wr</i>) 'to surpass, exceed in size, dimension or age'	X VERB Y 'X exceeds Y in size, dimension, or age'	<i>nekki ug^wreɁ baba-k</i> 'I am taller than your father'
	verb: <i>imɁur</i> (type <i>imlul</i> , preterite stem: <i>meqqur</i>) 'to be tall, old' with preposition <i>f</i> .	X VERB <i>f</i> -Y 'X is taller/older than Y'	<i>netta imeqqur fell-i</i> 'he is taller (or) older than me'
Equal	adverb <i>aneɁk</i> (or) <i>ɁaneɁk</i> 'as much as... same as ... like...' with preposition <i>n</i> followed by a pronoun or the object of comparison, which is preceded by <i>Ɂ</i> .	X ADVERB- <i>n</i> Y (<i>Ɂ-Z</i>) 'X is the same as Y (about Z)'	<i>Ɂyul-ad ɁaneɁk-n Ɂwa-a Ɂ-tiddi</i> 'this ass is the same as that one about size'
	state verb with adverb <i>zund</i> 'like'.	X VERB ADVERB Y 'X is STATE like Y'	<i>ayyis-ad ifulki zund wi-nu</i> 'this horse is beautiful like mine'

Note:

- Inferior quality, quantity, and size, dimension, or age are expressed by reversing the superior comparisons, i.e. 'my horse is inferior to yours' is equivalent to 'your horse is superior to my horse.'

(84) Superlatives (Asp53: 251)

Superlative Type	Method	Illustration
Superlative	adverb: <i>bahra</i> (or) <i>bezzaf</i> 'a lot'	<i>netta imeqqur bahra</i> (or) <i>bezzaf</i> 'he is very tall'
Relative Superlative	state verb with the preposition <i>ɤ</i> or <i>f</i> .	<i>kiyyi !tmessiyt gi-sen</i> 'you are the smallest of them'

9. Prepositional phrases

(85) Prepositions, with illustrations

Preposition	Gloss	Illustration
i	at (dative), at the, for	i-baba 'for my father, in the case of my father' i-wag ^w mar 'for a horse (m)'
ɤ (χ)	in, at (situation, localization, where one is)	ɤ-tagant 'in the forest'
s	toward, to (movement, where one goes, tendencies): to go towards the market	s-tfasit 'to the right' s-tgmami 'toward the house'
s	with (instrument, manner): to hit with a stick, with force	s-wuzzal 'with iron' s-tj!hit 'in Berber'
d	with (company): he left with his son	d-umkar 'with the chief'
f	on	f-walim 'on the straw'
n	of (material, expletive): the key of the door, a ring of gold	afus n-ufruχ 'the hand of the child'
dar	at (like 'chez' in French)	dar-umzil 'at the blacksmith'
sɤ (sχ) zɤ (zχ) ɤ (χ)	of, from, since (origin, where one came from): he came out of the well	
ingr ngr gr	between, among	
ddu	under	
abla bla	without, except	bla-argaz 'with the man'
ar	until	ar-asif 'until the river'
qbl	before	qbl afruχ 'before the child'
beɛd	after	

Notes:

- All of the above prepositions trigger the construct state, except for *abla*, *ar*, *qbl*, and *beɛd*.
- Conjunctions are expressed with the preposition *d* 'with (accompany)', e.g. *afruχ d-tfruχt* 'the boy and the girl'. In lists with more than two nouns *d* is repeated before each noun, i.e. N *d*-N *d*-N ... etc, e.g. *argaz d-tmkart d-ufruχ* 'the man, the woman, and the child' (word-for-word: 'the man with the woman with the child') (Asp53: 26). When used with indefinite nouns *d* is attached to the indefinite marker, e.g. *yan uɤyul d-yat tsrdunt d-yan wag^wmar* 'an ass, a mule, and a horse'

(Asp53: 33). The preposition *d* is always used in isolation (i.e. not with other prepositions), e.g. *κ-tgmmi d-wurti* (**d-κ-wurti*) 'in the house and (in) the garden' (Asp53: 26).

- c. Determinative complements are expressed with the preposition *n* 'of', e.g. *aydi n-urgaz* 'the dog of the man'. *u*: 'son of, originating from', *ult*: 'daughter of, originating from', *bu*: 'proprietor, possessor, master (m)', and *mm*: 'proprietor, possessor, master (f)' cannot receive the preposition *n*.
- d. Prepositions can also be used with pronoun suffixes, which results in the elongation of the prefixes, e.g. *d* 'with (accompany)' becomes *did* and *f* 'on, above' becomes *fla* (for a full list of the expansions and their use see Asp53: 74).

(86) Prepositional Phrases with *n* 'of' (Asp53: 31)

Prepositional Phrase	Gloss	Illustration
lg ^w ddam n lguddam n	in front of, ahead of	
mmnid n	right in front of	
tikurdin n !darat n tagara n tigira n	behind	<i>tikurdin n-tizi</i> 'behind the collar' <i>κ-tikurdin n-tizi</i> 'at the back of the collar' <i>s-tikurdin n-tizi</i> 'to the back of the collar'
!tuzzumt n ammas n	in the middle of	<i>κ-wammas n-waman</i> 'in the middle of the water'
brra n	outside of	
tuggagt n	far from	
tama n tasga n !ttrf n	next to	<i>tama n-wasif</i> 'next to the river' <i>κ-tama n-wasif</i> 'at the side of the river' <i>s-tama n-wasif</i> 'to the side of the river' <i>s-!ttrf n-^lmda</i> 'towards the edge of the pond'
afla n afa n iggi n	above	
izeddar n	below	
asa n	at the far end, deep down	
ag ^w ns n	inside of	<i>κ-ug^wns n-tgmmi</i> 'inside of the house'

(87) Prepositions indicating lines of descent (Asp53: 30)

a.	Known father	for a boy: <i>Muħa u Brahim</i> 'Moha son of Brahim' for a girl: <i>!Fadma Brahim</i> 'Fatma daughter of Brahim'
b.	Unknown father, use mother's name with <i>n</i>	for a boy: <i>Muħa n-εifa</i> for a girl: <i>!Fadma n-εifa</i>
c.	Adopted child: adoptive father with <i>n</i> :	for a boy: <i>Muħa n-εali</i> for a girl: <i>!Fadma n-εali</i>

10. Relative clauses

(88) Relative clauses: Introduction (see especially Asp53: 163-177)

- Relative clauses are formed by attaching a relative pronoun to either the noun it modifies or the verb in the relative clause.
- Explanation of types: To Do

(89) Illustration of relative clauses with subject relative pronouns (Asp53: 163-170)

Relative Pronoun	Tense	Example	Gloss
ad-	Past	yan ufruχ a-yutn.	'It is a child (m.) who has hit.'
	Future	timϕarin-ad ar-ra-izdm ϕ-tagant.	'It is these women who will collect wood in the forest.'
-lli	Past	ha argaz-lli ikrzn igr.	'Here he is, the man who has plowed the field.'
	Future	tamϕart-lli ra-yut afruχ rat-trwl.	'The woman who will hit the child will run away.'
-nna	Present (or) Anterior Future	argaz-nna isϕan ulli ϕ-ssuq ra- ifru nnkas.	'Any man who buys (or) will buy sheep at the market will pay tax.'

Notes:

- In relative clauses formed with a subject relative pronoun, all verbs are in participle form.
- The relative pronoun *ad-* attaches to the verb of the relative clause. It is used after personal pronoun subjects, nouns, and demonstrative pronouns, and with the verb *illan* 'to be, to exist' and *mɲfɕ* and *mnnaw* 'how much, how many.' Verbs are always in the masculine singular preterite form, i.e. they do not agree in number, gender, or person, and in future tense the verb is in the invariable future participle form.
- The relative pronoun *-lli* is used for known or determined antecedents. It attaches to the noun (or determinative subject pronoun). The verb of the relative clause is in the preterite participle form, agreeing in number with the noun it modifies.
- The relative pronoun *-nna* attaches to the noun (or determinative subject pronoun) it modifies and is used for unknown or undetermined antecedents. Verbs are in the preterite participle form and agree in number with the noun. The verb tense is interpreted as present or anterior future.
- Gender neutral relative subjects take the form of *mad-* (e.g. !zriϕ ma-illan ϕ-tgm̄mi. 'I have seen what was in the house.'), *ay-lli* (e.g. ssnϕ ay-lli (ϕay-lli) illan. 'I am aware of what there is'), and *ay-nna* (undetermined, e.g. ssnϕ ay-nna (ϕay-nna) illan. 'I know all.') (Asp53: 170).

(90) Relative pronoun complement (Asp53: 171-173)

Relative Pronoun	Example	Gloss
ad-	imikr a-iga!	'It is a thief!'
-lli	ssnϕ argaz-lli !zriϕ.	'I know the man who I saw.'
-nna	ag ^w mar-nna tɣtart ra-ig wi- nnk.	'The horse that you will choose, will belong to you.'
(ϕ)wa-lli, (ϕ)wi-	ssnϕ ϕwa-lli tukrt.	'I know what (m. sg.) you stole.'

lli	!zriɁ Ɂwi-lli utn.	'I saw what (m. pl.) they hit.'
(Ɂ)ta-lli, (Ɂ)ti-lli	!zriɁ Ɂti-lli tsɁam.	'I saw what (f. pl.) you stole.'
mad	!zriɁ ma-yuk ^w r Ɂ-uzɁbir-nnk.	'I saw what he stole in your bag.'
ay-lli, Ɂay-lli	tskrt ay-lli trit (or) tskrt mat-trit.	'You made what you wanted.'
ay-nna, Ɂay-nna	rat-tskrt ay-nna (or) rat-tskrt mat-trit.	'You will make what you want.'
kullu-mad	ssneɁ kullu-mat-tskrt.	'I know all that you did.'
kad	yat tskurt ka-inɁa	'He killed only one partridge.' (One partridge is the only that he killed.)

Note:

- Verbs are conjugated normally for complement or attributive relative clauses.

(91) Relative pronouns with prepositions (Asp53: 173)

Relative Pronoun	Example	Gloss
ad-	dar-urgaz-ann a-s-ifta.	'It is to the home of that man there that he went.'
-lli	ayyis-lli f-issuda	'The horse on which he mounted.'
-nna	ayyis-nna f-ra-issudu.	'Any horse on which he will mount.'
a-mu (mi)	Ɂwa-d a-mu ukrn ulli-nns.	'It is this place to which they stole the sheep.'
-lli mu (mi)	ha argaz-lli mu zznziɁ ayyis-inu.	'Here is the man to whom I sold my horse.'
-nna mu (mi)	Ɂwa-nna-mu ukrn ulli-nns ra-yaɁɁkka Ɂ-lbiru.	'Anyone that has their sheep stolen will complain to the office.'

Note:

- *-lli* and *-nna* can also be used with the prepositions *Ɂ* (location) and *s* ('towards'), e.g. *tigmmi-lli Ɂ-izdɁ* 'the house where he lives' *ssuq-lli s-ifta* 'the market where he went.'

11. Texts and other reference material

(92) Texts

- Boukous (1977): contains nine texts, five of which are under 3 pages, the other four are longer; transcribed in phonetic transcription reflecting regular phonological processes, and book discussions sociolinguistic factors affecting speech; synopsis authors have started analyzing these texts with interlinear glosses
- Roux (1955): quite extensive set of texts (more than 250), relating to an archive of Berber texts from Aix-en-Provence; see Stroomer (2008) for discussion; multiple dialects and types of texts
- Stroomer (2008): three short texts of the Ashtuken region of south east Agadir; phonological transcription with English translation; no interlinear gloss
- Ridouane (2014): appendix contains a short transcription of the North Wind and the Sun, with interlinear glossing and narrow phonetic transcription.

(93) Reference grammars of other Berber languages

Preamble: useful references for examining under-studied aspects of TB; syntax should be very similar

- a. Kossmann (1997): a detailed reference grammar of Figuig Berber, spoken in the Figuig province of central eastern Morocco, close to the border with Algeria; it contains very detailed coverage of the phonology, including dialect and subdialectal differences, detailed phonemics of the tense/lax distinction, and the morpho-phonemics of the language in general.
- b. Heath (2005): detailed reference grammar of Tamashek Tuareg
- c. Prasse (1972): Tuareg, Tahaggart (northern Tamasheq); written in French
- d. Abdel-Massih (1971): Tamazight Berber
- e. Sadiqi (1997): takes a more sociolinguistic approach, investigating nouns and verbs borrowed from Arabic that have been adapted to Berber linguistic structures.
- f. Quitout (1997): (not reviewed) apparently several languages of Morocco and Algeria

Appendix

Abbreviations of grammatical and linguistic categories (mostly following Dell & Elmedlaoui)

aor	aorist
c	construct state
caus	causative
comp	complementizer
dat	dative
dct	deictic
dem	demonstrative
det	determiner
f	feminine
impf	imperfective
interr	interrogative
IP	initial preverb
loc	locative
m	masculine
neg	negative
obj	object
p	plural
pass	passive
pf	perfective
PNG	person-number-gender affix
prt	participial
rec	reciprocal
s	singular
TA	tense/aspect

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