The Grammar of Prepositions in Berber (Taqbaylit)

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Abstract

The aim of this article is to determine how the phonological properties of certain prepositions are related to their syntactic behavior. In a case study of Berber prepositions (Taqbaylit of Chemini), we offer an account of the morpho-phonology of nominal states, the status of prepositions in the extended projection of the noun, and the external syntax of prepositional phrases. Building on Guerssel and Lowenstamm (1990), we argue that structured templates establish the link between phonological and syntactic representations, and that the presence vs. absence of a templatic position is the only syntactically significant phonological property of any given marker.

1   Introduction

This article discusses data from *Chemini Berber*, a dialect of *Taqbaylit*. Taqbaylit belongs to the Northern branch of Berber.[1] It is spoken in the *Kabylie* region of Northern Algeria. There is a difference between two major variants of Taqbaylit. One of them is spoken in the *Grande Kabylie*, the other one in the *Petite Kabylie*. Chemini is a village located to the south west of Bejaïa, in the *Petite Kabylie* region. The data discussed in this article are from a bilingual Berber-French informant.

In (1), we give the distribution of prepositions in Chemini Berber.[2] Chemini Berber has two classes of prepositions: class A governs a noun in the *Construct State* (CS), class B governs a noun in the *Free State* (FS). Class A is divided into two subclasses: subclass A1 governs exclusively the CS, subclass A2 allows both CS and genitive. Notice that the genitive is itself a preposition of class A1. It governs a noun in the CS.

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[1] Other groups are Tamazight (Middle and High Atlas), Tarifit (Rif), Tashlḥit (Anti Atlas and Souss Valley) and Tuareg (Sahara).

[2] We use the following abbreviations in glosses: AOR = aorist, CS = construct state, COMP = complementizer, DAT = dative, DEM = demonstrative, DIR = directional particle, DO = direct object, F = feminine, FS = free state, GEN = genitive, IMP = imperative, INT = intensive, IO = indirect object, M = masculine, NEG = negation, PF = perfective, PFNEG = negative perfective, P = plural, POSS = possessive, S = singular, TNS = tense.

(1) Classes of prepositions in Chemini Berber (Taqbaylit - Petite Kabylie)

A. + Construct State (CS)	**A1. exclusively CS**	i. *light*	n	*genitive*
			f	*on*
			s	*with (instr.)*
			đ	*with (com.)*
			i	*dative*
			g	*in*
		ii. *heavy*	ar	*to/at*
			am	*as/like*
			γər	*between*
	A2. CS or Genitive		(s)ddaw	*under*
			nniγ	*above/over*
			zzaθ	*in front of*
			đəffir	*behind*
			arif	*beside*
			ar θama	*at the side of*
			sufəlla	*on*
			ßərṛa	*outside of*
			zđaxəl	*inside of*
			qəl	*less than*
			xiṛ	*better than*
B. + Free State			uqßəl	*before*
			mbla (= mbʁir)	*without*
			siwa (= ħaʃa)	*except*

Prepositional state government correlates with phonological weight. We find the implicational relation in (2), where *light* means *one segment*.

(2) **<u>Weight Correlation</u>**
    a.   If a preposition is light, it governs exclusively the Construct State.
    b.   If a preposition governs the Free State or the Genitive, it is heavy.

The two clauses of (2) are logically equivalent. They are stated in this way in order to illustrate the two possible approaches to the problem. (2a) suggests that the phonological weight of a marker determines some of its morpho-syntactic features. (2b) suggests that the morpho-syntactic context of a marker determines its phonological shape. Both statements are problematic in the sense that they presuppose specific assumptions about the interface between phonology and morpho-syntax. In this article, we will first isolate purely phonological from purely syntactic facts involved in the Weight Correlation, and then defend a theory of the phonology-syntax interface that derives the correlation, while it maintains a strictly modular theory of grammar.

      Notice before we proceed that prepositional state government is not affected by the local/directional distinction. First, a preposition of class A1 governs the CS in both directional and local contexts, as illustrated in (3) with *f* 'on'. Second, the choice between CS and genitive in class A2 has no semantic import. We illustrate this observation with *arif*

'beside' in (4)-(5). (4) gives a directional context, (5) a local one. In both contexts, both forms are equally appropriate.[3]

(3) a. i-   -sərs- -it^s f-   -θk^{w}ərsit^s
         3MS   put.PF DO:3FS   on   small chair.CS
         "He put it on the small chair."

     b. i-   -qqim   f-   -θk^{w}ərsit^s
         3MS   sit.PF   on   small chair.CS
         "He was sitting on the small chair."

(4) a. ruħ   arif   wəxxam
         go.IMP.2S   beside   house.CS

=   b. ruħ   arif   n-   -wəxxam
         go.IMP.2S   beside GEN   house.CS
         "Go beside the house!"

(5) a. i-   -qqim   arif   wəxxam
         3MS   sit.PF   beside   house.CS

=   b. i-   -qqim   arif   n-   -wəxxam
         3MS   sit.PF   beside GEN   house.CS
         "He was sitting beside the house."

The article is structured as follows. Section 2 gives the phonological background that is necessary for the definition of templates. We assume that syllable structure universally reduces to a strict alternation of C- and V-positions, and defend this position with data from Chemini Berber. Then, we consider the vocalic system of Chemini Berber and argue that its peripheral vowels are phonologically long. This particular property will be crucial in our analysis of nominal states in section 5. Finally, we define a *template* as a sequence of CV positions that have a morpho-syntactic interpretation. Section 3 first examines the phonology of light prepositions and argues that they are floating segments. Their phonological realization is contingent on the presence of a host position. In spite of their phonological deficiency, though, Chemini Berber light prepositions cannot be analyzed as syntactic clitics. To show this, we discuss the distribution of light prepositions vs. pronominal clitics in various varieties of Berber. Section 4 starts with an investigation of the phonology of nominal states and observes that the initial CV unit of a noun must not be segmentally identified in the Construct State. We then establish a relation between this phonological fact and Guerssel's (Guerssel 1987, 1992b) claim that a noun in the Construct State lacks a functional head K (*case*), which is present in the Free State. Guerssel argues that his theory of states extends to light prepositions on the assumption that they are K morphemes. At the end of section 4, we argue against the analysis of light prepositions as case markers. Section 5 proposes a templatic analysis of Berber prepositions. We disentangle the phonological and syntactic conditions involved in the State government of light prepositions, and apply these conditions to derive the State government of heavy prepositions. Finally, we extend the analysis to prepositions in the domain of complementizers, including preposition-doubling in long *wh*-dependencies, and to the apparently erratic distribution of the genitive preposition *n*. Section 6 concludes the article.

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[3] The transcriptions that we give in examples represent phonological, but not necessarily phonetic detail. For example, the genitival preposition *n* in (4b) is subject to assimilation processes that we discuss in section 3. If a glide precedes schwa, the glide is pronounced as a vowel.

2 Phonological Background

In this section, we state our assumptions with respect to phonological theory, and develop an analysis of Chemini Berber syllable structure and vocalic length. This analysis will not only sharpen the observation stated in (2): it will also be crucial for the definition of the notion *template,* which is at the core of our theory of the phonology-syntax interface.
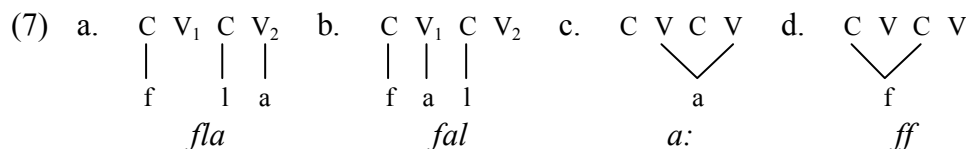
2.1 Syllable structure

Lowenstamm (1996) argues that the primitive of syllabic structure is a light open syllable: a non-branching onset (C) followed by a non-branching nucleus (V). The syllabic structures we observe in natural languages can be derived from this primitive under conditions to which we turn immediately below.

(6) <u>CV as the only syllable type:</u>
     Syllable structure universally [...] reduces to CV. Lowenstamm (1996):419

In this framework, a branching onset is represented as a sequence of two light open syllables, where the first V-position is phonetically unrealized, as in (7a) below. A closed syllable is represented as in (7b), where the final V-position remains silent. (7c) and (7d) illustrate the representation of long segments (Larsen 1998, Lowenstamm 1999, Scheer 1998, Szigetvári 1999).

(7) a. C V_1 C V_2 b. C V_1 C V_2 c. C V C V   d. C V C V
         | | | | | | | | \ /   \ /
         f   l a   f   a l   a   f
           fla   *fal*   *a:*   *ff*

While it is a well-known fact that phonological structure cannot always be identical with phonetic observation (Anderson 1981, Dell 1973, Dinnsen 1980, Kenstowicz and Kisseberth 1979, Lightner 1981, Schane 1968, 1974, Selkirk and Vergnaud 1973), phonetically empty constituents, in particular empty V-positions, cannot be posited freely. They must be licensed under well-defined conditions (Kaye et al. 1990, Lowenstamm 1996, 1999, Scheer 1998, 2004, Szigetvári 2000). We assume that the distribution and interpretation of empty V-positions is determined by *Proper Government* and the phonological *Empty Category Principle*[4] as stated in (8).

(8) a. <u>Proper Governement</u> (PG)
         Given two vocalic positions V_1 and V_2 such that V_1 precedes V_2:
         V_2 properly governs V_1 if
         a. V_2 is phonetically interpreted
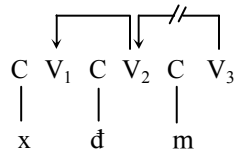   b. no V-position separates V_2 from V_1

     b. <u>Empty Category Principle</u> (ECP)
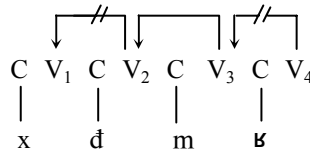   An empty V-position remains phonetically silent, if it is properly governed.

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[4] Cf. Kaye et al. (1990):219 for the original definitions involving segmental conditions on government.

As an illustration of the mechanics of the system, consider the following forms of the verb *xđəm* 'work/do' from Chemini Berber.

(9) a. xđəm "work!"   b. xəđməʁ "I worked"

$$
\begin{array}{cccccc}
C & V_1 & C & V_2 & C & V_3 \\
| & & | & & | & \\
x & & đ & & m &
\end{array}
\qquad
\begin{array}{cccccccc}
C & V_1 & C & V_2 & C & V_3 & C & V_4 \\
| & & | & & | & & | & \\
x & & đ & & m & & ʁ &
\end{array}
$$

The form in (9b) differs from the form in (9a) by the presence of the agreement suffix -ʁ. In both forms, the final empty nucleus is licensed and thus remains silent.[5] Since there is no lexical vowel, the phonetic realization of all V-positions is automatic. It follows from PG and the phonological ECP. In (9a), V_3 is silent, and therefore fails to govern V_2. Being ungoverned, V_2 is realized as *schwa*, and governs V_1. V_1 remains silent. In (9b), V_4 is the final empty nucleus. Being silent, it does not govern V_3. V_3 remains ungoverned and must be realized as *schwa*. Since V_3 is phonetically interpreted, it governs V_2, and V_2 remains silent. As a silent V-position, V_2 does not govern, and V_1 must be realized as *schwa*.

2.2 Chemini Berber syllable structure

The surface syllable structure of Berber is subject to substantial cross-dialectal variation (Dell and Elmedlaoui 2002):163. For Tamazight, Guerssel defends a CV analysis (Guerssel 1990, 1992a, Idrissi 2000a, b): "The canonical syllable structure of [Tamazight] is CV, where neither the onset nor the coda branches. In addition, nuclei may be underlyingly empty." (Guerssel 1990):3. Taqbaylit behaves like Tamazight (Bendjaballah 1999, 2001).[6] Guerssel defends his analysis among other things by the patterns of word-initial CC clusters and the distribution of *schwa*. Below, we adapt Guerssel's argument to Chemini Berber.

2.2.1 Clusters of the branching onset type

In motivating a branching onset-constituent, one might want to refer to the sonority conditions on word-initial consonant clusters. In English for example, a stop can be followed by a liquid, but not the other way around. If word-initial consonant clusters instantiate branching onsets, then we expect them to display similar constraints universally. However, such constraints are language specific. In particular, they do not hold for Berber.

Guerssel (1990) observes that nearly any CC sequence is grammatical in an initial cluster. (10) gives 2sg imperative forms from Chemini Berber. We find initial geminates (10a), sequences that would typically be classified as branching onsets (10b), their mirror-images (*i.e.*, typical coda-onset sequences) in (10c), and finally sequences that are not prototypical instances of either type (10d).

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[5] The final V-position of a given domain is subject to parametric licensing (Kaye 1990). In Berber, final empty V-positions are licensed.

[6] On Tashlħit, cf. Dell and Elmedlaoui (2002), on Tarifit Dell and Tangi (1992).

(10)   IMP.2SG   gloss

a.   **qqǝn**   "tie"
      kkǝs   "take off"
      ffǝʁ   "go out"

b.   **frǝq**   "share"
      frǝs   "prune"
      flǝs   "be ruined, ruin"

c.   **rkǝm**   "boil"
      rgǝm   "insult"
      rfǝđ   "lift"

d.   **xđǝm**   "work"
      çʃǝm   "enter"
      θlǝf   "expell"

Guerssel (1990) concludes that "[s]uch an absence of restriction casts doubt on the assumption that Berber has genuine branching onsets." The initial clusters from Chemini Berber in (10), in particular the ones in (10b), are sequences of two onsets.

A possible alternative would be to analyze the first consonant of rogue initial clusters as extrasyllabic. Such an analysis would find support in the observation that the initial clusters in (10) can optionally be preceded by a *schwa*. However, extrasyllabicity would not account for the behaviour of internal clusters, to which we turn next.

Consider the clusters *fr* and *fl* in (11a). These clusters look like typical branching onsets. However, if they are genuine branching onsets, *i.e.*, single constituents, they should remain stable across the paradigm of the respective verb. This is not the case. In other forms of the respective paradigms, like those given in (11b), *schwa* obligatorily separates the two consonants of the apparent clusters.

(11) a.   a-d   i-   **-frǝq**   "he will share"
            TNS-DIR   3MS   share.AOR

            a-θ   i-   **-flǝs**   "he will ruin him"
            TNS-DO:3MS   3MS   ruin.AOR

      b.   i-   **-fǝrq-**   -ǝd   *ifrǝqd   "he shared"
            3MS   share.PF   DIR

            i-   **-fǝls-**   -iθ   *iflǝsiθ   "he ruined him"
            3MS   ruin.PF   DO:3MS

The appearance of *schwa* in the forms of (11) follows without further stipulation from PG and the phonological ECP, once we adopt a CV analysis. We illustrate the government configurations for the root *frq* 'share' in (12), where we abstract away from prefixal subject agreement *i-* '3MS'.

(12) a.   b.   c.

      C V C V C V   C V_1 C V_2 C V_3 C V_1 C V_2 C V_3 C V_4
      | | | | | | | | | |
      f   r   q   f   r   q   f   r   q   d
      (underlying)   *frǝq*   *fǝrqǝd*

We conclude that the apparent clusters cannot be branching onsets. They are sequences of two onsets, separated by an empty V-position.

2.2.2 Clusters of the coda-onset type

The distributional argument above applies to clusters of the coda-onset type too. Such clusters are illustrated in (13a) below. For every apparent consonant cluster, there is a corresponding form in which the two consonants are separated by a *schwa*, as exemplified in (13b):

(13) a.   i-qəlß-iθ   "he turned him"
           i-θəlf-iθ   "he expelled him"
           3MS-stem-DO:3MS

      b.   a-θ   i-qləß   "he will turn him"
           a-θ   i-θləf   "he will expell him"
           PRT-DO:3MS   3MS-stem

As above, the distribution of *schwa* follows without further stipulation from PG and the phonological ECP, once we adopt a CV analysis.

2.3 Length and quality of Chemini Berber vowels

In this section we turn to the representation of Chemini Berber vowels. We argue that the three peripheral vowels of the vocalic system, *i, a, u*, are phonologically long, and that the central vowel *schwa* is short.

2.3.1 Peripheral vowels are long

The vocalic system of Chemini Berber is given in (14). It consists of three peripheral vowels and a *schwa*.

(14) i   u
         ə
         a

Since there is no perceivable phonetic opposition between short and long vowels, it might appear natural to assume that all vowels are phonologically short. We argue that this assumption is premature and that the vocalic system of Berber encodes a length opposition as follows:

(15)   Peripheral vowels are phonologically long, *schwa* is phonologically short.

The representation of peripheral vowels is given in (16a) below. The representations in (16b) are ill formed. When a vocalic element has access to only one V-position, as in (16c), it cannot be linked to the skeleton. The phonetic interpretation of the corresponding V-position as zero or schwa is determined exclusively by PG and the phonological ECP.

(16) a.

```
     C V C V   C V C V   C V C V
        \ /       \ /       \ /
         I         U         A
        [i]       [u]       [a]
```

b.

```
    * C  V     * C  V     * C  V
        |          |          |
        I          U          A
```

c.

```
     C V       C V       C V       C V
      |         |         |         |
      I         A         U
    [ə] / Ø   [ə] / Ø   [ə] / Ø   [ə] / Ø
```
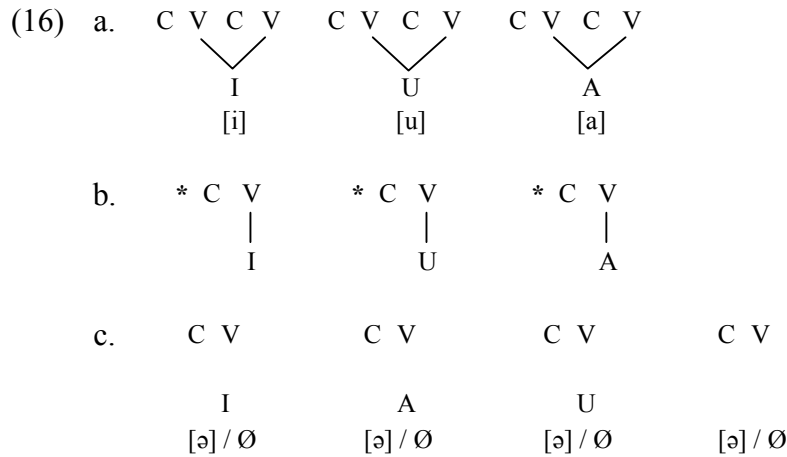
We will now present additional evidence for this analysis.

2.3.2   Correspondences between Chemini Berber and Classical Arabic

There is a significant number of roots shared by Berber and Classical Arabic. In this section we investigate these roots, applying an argument that has been made for Maghreb Arabic and the Semitic languages of Ethiopia in Lowenstamm (1991).

The Classical Arabic verbal system consists of several forms that are characterized by specific arrangements of root-consonants and vocalic melody, so-called templates. In Classical Arabic, perfective forms are basic, and imperfective forms are derived (Guerssel and Lowenstamm 1990). In Berber, the aorist is the basic form (Basset 1929). Therefore, we have to compare Classical Arabic perfective forms with Chemini Berber aorist forms in Berber verbs borrowed from Arabic.[7]

For the present discussion, Classical Arabic forms I, II and III are relevant. Form I is the basic form, form II is the causative, or intensive. It is characterised by the gemination of the medial root consonant (17a). Form III is the reciprocal. It is characterised by a lengthening of the first stem vowel (18a). Now consider the following correspondences:[8]

(17) a. Classical Arabic, form II, pf, 3ms   b. Chemini Berber, aorist
          "sink so/sthg "   ʁarraq-a   ʁəṛṛəq   "make vanish"
          "salt"   mallaħ-a   məlləħ   "salt"
          "make oneself up"   barraq-a   ßərrəq   "shine"
          "go to the market"   sawwaq-a   səwwəq   "go to the market"
          "lend"   sallaf-a   səlləf   "lend"

(18) a. Classical Arabic, form III, pf, 3ms b. Chemini Berber, aorist
          "leave (trans.)"   fa:raq-a   farəq   "leave (trans.)"
          "answer"   ʒa:wab-a   dʒawəß   "give an answer"
          "follow, chase"   la:ħaq-a   lahəq   "reach, hit"
          "be close a friend"   wa:laf-a   waləf   "get used to"
          "fight"   ʒa:haḍ-a   ʒahəḍ   "fight"

---

[7] One may ask whether the loans are based on Classical Arabic or a later dialect. We leave this question open, because it does not affect the force of the present argument. As argued by Lowenstamm (1991), Maghreb Arabic has adopted the same condition on vocalic representation that we find in Berber.

[8] The final a in the Classical Arabic examples is an agreement suffix for 3ms.

Classical Arabic short and long consonants are conserved in Chemini Berber: Classical Arabic geminates correspond to geminates in Chemini Berber. The situation with vowels is more complex:

- The long vowels of Classical Arabic verbs retain their quality, but they correspond to phonetically short vowels in Chemini Berber. This is exemplified for Classical Arabic long *a:* in (18). The corresponding vowel in Chemini Berber is (phonetically) short [a].
- Classical Arabic short *a* corresponds to a *schwa* in the Chemini Berber forms: (17) and (18).

(19) summarizes these correspondences: while consonantal length oppositions are preserved as such, vocalic length contrasts correspond to a quality opposition.

(19)

	Consonants			Vowels		
Classical Arabic:	C_iC_i	C	*quantity opp.*	a:	a	*quantity opp.*
	|	|	|	|	|	|
Chemini Berber:	[C_iC_i]	[C]	*quantity opp.*	[a]	[ə]	*quality opp.*

These correspondences receive a systematic explanation on the assumption that vocalic elements can only be realized in Chemini Berber if they have access to two V-positions, *i.e.*, (16). On this assumption, consonants as well as vowels have the same phonological length in the common roots of Classical Arabic and Modern Chemini Berber:

(20)

Classical Arabic:	ff	f	a:	a
	|	|	|	|
Chemini Berber:	[ff]	[f]	[a]	[ə]
Skeletal representations:	CVCV	CV	CVCV	CV

If this analysis is correct, we predict that Classical Arabic short *a* corresponds to Berber schwa if the respective V-position is not properly governed, and to *zero* if it is properly governed. Classical Arabic form I, corresponding to the Chemini Berber aorist, gives us the context to test this prediction.

(21) a. Classical Arabic, form I, pf, 3ms b. Chemini Berber, aorist

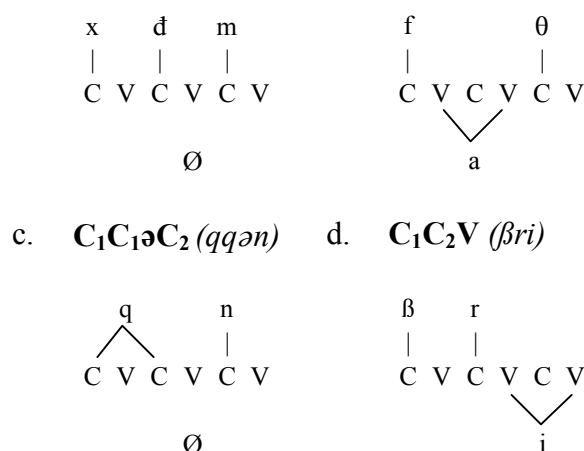| "inquire"	baħat-a	ßħəθ	"questionner"
"separate"	faraq-a	frəq	"share"
"reach"	laħaq-a	lħəq	"reach"
"ruin"	falas-a	fləs	"ruin, be ruined"
"authorize"	samaħ -a	sməħ	"forgive"

In all loan verbs of the type exemplified in (21), the second stem-vowel of the Classical Arabic verbs is paired with a Berber *schwa*, and the first one with *zero*. The present analysis predicts this distribution without further stipulation. The distribution of *schwa* and *zero* follows from PG and the phonological ECP, as illustrated for the first example pair *baħat-ßħəθ* above:

(22) a. <u>Classical Arabic, form I, pf:</u> b. Chemini Berber, aorist:

```
                                              ┌──┐ ┌─//─┐
                                              │  └─┐  │  │
                                              ↓    ↓  ↓  │
    C  V  C  V  C  V                        C  V  C  V  C  V
    |  |  |  |  |  |                        |     |     |
    b  a  ħ  a  t                           ß     ħ     θ
    bahat                                   ßħəθ
```

2.3.3 Chemini Berber verbal templates

In this section we show that the major verb types of Chemini Berber can be accounted for with a single template, if we assume that peripheral vowels are long. Without this assumption, we would not be able to establish such a generalization.

    The major verb types of Taqbaylit are given in (23). The data are taken from Dallet (1953) (cf. also Basset 1929). This sample can be taken to be representative. The productive class of Taqbaylit is (23a). Classes (23b,c) have just been dealt with. They comprise mainly Arabic loans, which have conserved their original template. We exclude them from the present discussion.

(23)

	verb type	number	% of the sample	example	
a.	$C_1C_2əC_3$	682	41	xđəm	"work"
b.	$C_1əC_2C_2əC_3$	659	39,7	məlləħ	"salt"
c.	$C_1VC_2əC_3$	108	6,5	farəq	"leave s.o."
d.	C_1VC_2	107	6,5	faθ	"miss"
e.	$C_1C_1əC_2$	60	3,6	qqən	"tie"
f.	C_1C_2i	45	2,7	ßri	"crush"
		1661	100		

    If Berber peripheral vowels are long, then the representation of classes (23a,d,e,f) is as follows:

(24) a. **$C_1C_2əC_3$** *(xđəm)* b. **C_1VC_2** *(faθ)*

```
    x     đ     m                         f           θ
    |     |     |                         |           |
    C  V  C  V  C  V                   C  V  C  V  C  V
                                             \  /
          Ø                                   a
```

c. **$C_1C_1əC_2$** *(qqən)* d. **C_1C_2V** *(ßri)*

```
      q        n                        ß     r
     / \       |                        |     |
    C  V  C  V  C  V                  C  V  C  V  C  V
                                                 \  /
          Ø                                        i
```

We can observe in (24) that all classes share a single template: CVCVCV. The only difference between the classes in (24) is with respect to their segmental material and the way the segments are linked to the positions of the template.

If we were to assume that peripheral vowels are short, we would have to count two templates: CVCV for *faθ* and *ßri* (24b,d), and CVCVCV for *xđəm* and *qqən* (24a,c). Without CV syllable structure, we would not be able to proceed beyond the observational level, where we find three different types: CCVC, CVC, and CCV.

2.3.4   The intensive stem

Stem II of Chemini Berber verbs, the so-called "intensive", is marked by gemination of the second root-consonant, or by prefixation of t^s-. The choice between these two strategies is determined by the morpho-phonological structure of the radical. Table (25) gives the intensive forms of the four major verb classes. Types *xđəm* and *ßri* form the intensive by means of gemination of the second root-consonant, types *faθ* and *qqən* mark it with a prefix.[9]

(25)	*stem II formation*	*stem I*	*stem II, 3ms*	*gloss*	
a.	gemination of C_2	xđəm	i-xəddəm	"work"	(24a)
		ßri	i-ßərri	"crush"	(24d)
b.	prefixation	faθ	i-t^s-faθ	"miss"	(24b)
		qqən	i-t^s-qqən	"tie"	(24c)

The representations in (24) define exactly these classes: in (24b) and (24c), the first two CV units are identified by a branching segment, long *a* in *faθ*, geminated *q* in *qqən*. In the other two classes (*xđəm* and *ßri*) this is not the case. The formation of stem II by gemination involves the insertion of an additional unit between the first two CV units. A branching segment blocks this process, and stem II of types (24b,c) must be marked by a prefix.

If we were to assume that peripheral vowels are short, but maintain CV syllable structure, we would derive one class of verbs with a CVCV template (*faθ, ßri*), and another one with a CVCVCV template (*xđəm, qqən*). None of these classes has any independent morphological significance.

We conclude that Chemini Berber peripheral vowels are long, and that syllable structure is CV.
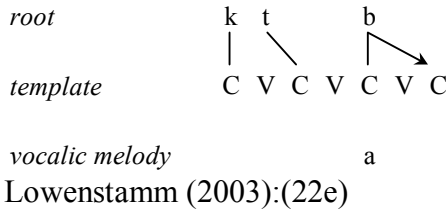
2.4   Templatic Structure

The morphological value of certain phonological configurations is formalized in McCarthy (1981) and subsequent work in terms of a separation of phonological tiers. In this theory, every tier corresponds to a morpheme. The association of phonological elements with C- and V-positions in a template is fully determined by the principles of autosegmental phonology (Goldsmith 1979, Leben 1978).

Guerssel and Lowenstamm (1990), Lowenstamm (2003) show that the association of elements with skeletal positions cannot be reduced to purely phonological conditions. As an example, they discuss the formation of the causative/intensive (form II) by medial gemination in Classical Arabic (*kattab* 'make write' from the root *ktb* 'write'). Since elements are associated with skeletal positions one by one, from left to right, there should only be final, not medial gemination, as in the ungrammatical form (26). The fact that the medial root consonant in *kattab* 'make write' is associated with two skeletal positions must be determined by extra-phonological, viz. morphological conditions. In (27), the position marked as *DS* acts as the morphological head of the template. This position is segmentally identified after consonants and vowels have been associated with root positions. In form II, DS is identified
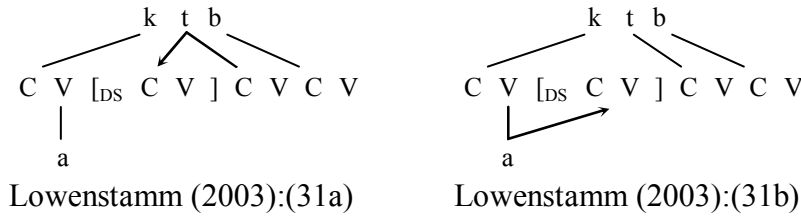
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[9] Notice that the prefix *i-* in the examples is a 3MS agreement marker.

by spreading of the consonant *t* (27a). In form III (27b), it is identified by spreading of the vowel *a*.[10]
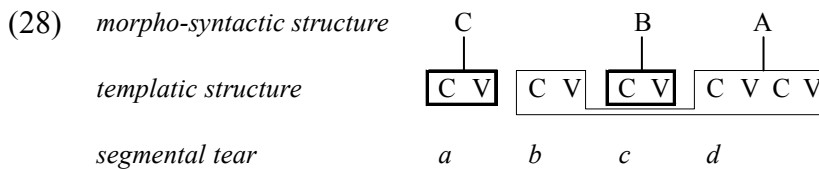
(26) **katbab*

```
root              k   t       b
                  |    \      ↗→
template          C  V  C  V  C  V  C

vocalic melody                a
```
Lowenstamm (2003):(22e)

(27) a. form II: *kattab* 'make write'   b. form III: *kātab* 'correspond'

```
            k  t  b                              k  t  b
          ⟋   ↙  ⟍                            ⟋    ⟍
     C  V [DS C  V ] C  V  C  V           C  V [DS C  V ] C  V  C  V
     |                                    |
     a                                    a
```
Lowenstamm (2003):(31a)   Lowenstamm (2003):(31b)

Generalizing this reasoning, Guerssel and Lowenstamm (1990), Lowenstamm (2003) propose that skeletal positions, rather than phonological tiers act as markers in templatic morphology. We adopt this position and speak of a *template* in the technical sense of a sequence of CV units with designated morphological roles.

Our assumptions are schematically illustrated in (28). First, the segmental tier is separated from morpho-syntactic structure by a level of *templatic structure*. A given phonological segment can only have an interpretation as a morphological marker, if it is associated to a C- or V-position that is designated for such an interpretation. In (28), there are three designated templatic sites. The positions under B and C are affixal, those under A are root positions.

(28) *morpho-syntactic structure*   C   B   A
                                          | | |
      templatic structure   [C V] [C V [C V] C V C V]

      segmental tear   a   b   c   d

Since the phonological claims defended above are crucial for the following discussion, we summarize them as follows:

(29) a. The skeleton is composed of strictly alternating C- and V-positions.
      b. A template is a sequence of CV units with designated morphological roles.
      c. Chemini Berber peripheral vowels are phonologically long, *schwa* is phonologically short.

3   Phonology of light prepositions

In this section we argue that the light prepositions of Chemini Berber constitute a single phonological domain together with the following noun or complementizer. Heavy prepositions always constitute an independent phonological domain.

---

[10] (26), (27) give perfective active forms, abstracting away from agreement affixes.

3.1 Light Preposition + Noun

Various assimilation processes indicate that a light preposition and its N-complement constitute a single phonological domain. We consider the realization of the light prepositions *n* 'of', *g* 'in' and *f* 'on', and the assimilations given in (30).

(30) a. *n* 'genitive':[11] (i) $/n + \theta/$ → [tt] optional
  (ii) $/n + w/$ → [pp^w] obligatory
  (iii) $/n + j/$ → [kk] obligatory

  b. *g* 'in': $/g + j/$ → [gg] obligatory

  c. *f* 'on': $/f + wV/$ → [ffV] where V ∈ {i, a, u} obligatory

  d. *đ* 'with': $/đ + \theta/$ → [tt^s] obligatory

The preposition *n* is realized as [n], if the initial segment of the following noun is a non-glide consonant (31).

(31) a. lʒar "neighbor" (FS=CS)
  b. axxam n- -lʒar → [axxam nəlʒar] "the house of the neighbor"
    house.FS of neighbor.CS

When the first segment of the noun following the preposition *n* is *θ*, the segment *n* may be dropped, and the stem-initial *θ* geminates as [tt] (rule (30a.i)).

(32) a. **θ**əqʃiʃθ "girl" (CS)
  b. axxam **n-** -**θ**əqʃiʃθ → [axxam **tt**əqʃiʃθ] "the house of the girl"
    house.FS of girl.CS

Typically, rule (30a.i) applies word-internally in Chemini Berber. For instance, we find the same assimilation between the stem and the feminine marker $/\theta \_ \theta/$ (33b), in verbal agreement (34b), and in pronominal clitics (35b).

(33) a. aqʃiʃ "boy" θ-aqʃiʃ-θ → [θaqʃiʃ**θ**] "girl"
  b. uʃʃən "jackal" θ-uʃʃən-θ → [θuʃʃə**tt**] "female jackal"

(34) a. xədm- -n → [xədmən] "they (m) worked"
  b. xədm- -**n-** -**θ** → [xədmə**tt**] "they (f) worked"
    work 3MP F

(35) a. jiđ- -sən → [jiđsən] "with them (m)"
  b. jiđ- -sən- -**θ** → [jiđsə**tt**] "with them (f)"
    with 3MP F

If the preposition *n* is followed by a glide, the assimilations in (30a.ii, iii) take place. They are illustrated in (36) and (37), respectively.

---

[11] In Tamazight (Guerssel 1983b), and in Tashlhiyt, the preposition *n* is assimilated to all sonorants (Dell and Elmedlaoui 2002:46). This is not the case in Chemini.

(36) a. wərgaz   "man" (CS)
       b. axxam **n-** **-wərgaz** → [axxam **pp**^{w}**ərgaz**] "the house of the man"
          house.FS   of   man.CS

(37) a. jərgazən   "men" (FS=CS)
       b. axxam **n-** **-jərgazən** → [axxam **kkərgazən**] "the house of the men"
          house.FS   of   man.P.CS

In Chemini Berber, *θ* geminates as [tt], *w* as [pp^w], and *j* as [kk]. The assimilations between the preposition *n* and the following noun must therefore be represented as gemination of the noun-initial consonant:

(38) a. n + θməṭṭuθ → [ttməṭṭuθ]

```
      C V C V C V C V C V C V C V
       \_|   |    \_/   \_/   |
       n   θ   m    ṭ    u    θ
```

       b. n + wərgaz → [pp^{w}ərgaz]

```
      C V C V C V C V C V
       \_|   |   |   \_/ |
       n   U   r   g   a   z
```

       c. n + jərgazən → [kkərgazən]

```
      C V C V C V C V C V C V
       \_|   |   |   \_/ |   |
       n   I   r   g   a   z   n
```

The prepositions *g* 'in', *f* 'on' and *d* 'with' trigger the assimilations in (30b), (30c) and (30d), respectively. These assimilations are illustrated in (39), (40) and (41).

(39) a. jəxxamən   "houses" (FS=CS)
       b. g- -jəxxamən → [**gg**əxxamən], * [**gj**əxxamən] "in the houses"
          in   house.P.CS

(40) a. waman   "water" (CS)
       b. f- -waman → [**ff**aman], * [**fw**aman] "on the water"
          on   water.CS

(41) a. θməṭṭuθ   "woman" (CS)
       b. đ- -θməṭṭuθ → [**tt**^{s}**məṭṭuθ**], * [**đəθməṭṭuθ**] "with the woman"
          with   woman.CS

The phonological representations of these assimilations are given in (42): the segmental material of the preposition spreads into the position occupied by the noun-initial glide, which is de-linked.

(42) a. g + jɔxxamən   → [ggəxxamən]

```
        C V C V C V C V C V C V
        |__⟍    ⟍⟋   ⟍⟋   |   |
        g  I     x    a    m   n
```

b. f + waman   →   [ffaman]

```
        C V C V C V C V C V
        |__⟍   ⟍⟋   |   ⟍⟋   |
        f  U    a    m    a    n
```
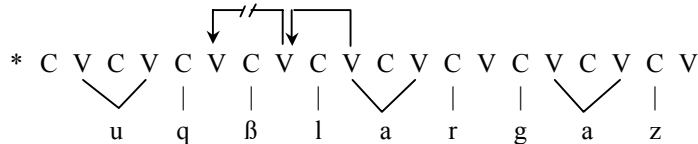
Notice the asymmetry in the direction of spreading between the genitive on the one hand, and other light prepositions on the other hand. In the case of the genitive, assimilation is regressive, with the other light prepositions, it is progressive.
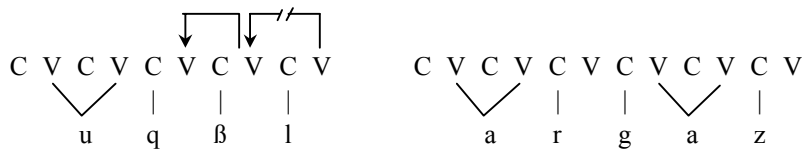
3.2 Heavy Preposition + Noun

Heavy prepositions constitute an independent phonological domain. This is particularly evident in the distribution of *schwa* in example (43). If *uqßəl* 'before' and the following noun *argaz* 'the man' were a single phonological word, we would expect the government scenario depicted in (43a). [ə] should show up between [q] and [ß], yielding *[uqəßlargaz]. This form is ungrammatical. The grammatical form is [uqßəlargaz]. This is exactly what we expect, if *uqßəl* 'before' is an independent phonological word, with the government structure depicted in (43b).

(43) uqßəl   argaz
      before   man.FS

a. * [uqə̲ßlargaz]

```
    * C V C V C V C V C V C V C V C V C V C V
        ⟍⟋   |   |   |   ⟍⟋   |   |   ⟍⟋   |
        u    q   ß   l   a    r   g   a    z
```

b. [uqß ə̲largaz]

```
    C V C V C V C V C V          C V C V C V C V C V
    ⟍⟋   |   |   |              ⟍⟋   |   |   ⟍⟋   |
    u    q   ß   l              a    r   g   a    z
```

Notice that the ungrammaticality of (43a) is not due to a lexically stable *schwa* in the representation of *uqßəl* 'before'. If the preposition is followed by a pronominal clitic instead of a full noun, we find exactly the structure (and vocalization) of (43a): [ə] is pronounced between [q] and [ß]. In contrast to a P+N sequence, a P+clitic sequence is a phonological word.

(44) uqßəl-   -is   → [uqəßlis], * [uqßəlis]
     before   POSS.3S

     "before him/her"

$$\text{C V C V C V C V C V C V}$$
$$\quad\quad\; u\; q\; ß\; l\; i\; s$$
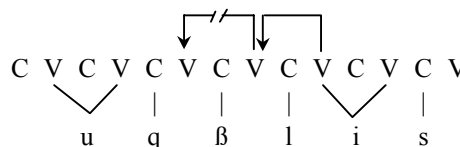
We summarize our findings so far as follows:

(45) <u>PF-constituency of preposition and (full) noun:</u>
      a. A light preposition is part of the phonological domain of the following noun.
      b. A heavy preposition constitutes an independent phonological domain.

3.3 Light Preposition + Complementizer

In the grammar of Berber there are a number of particles that belong to the inflectional and complementizer domain (Ouhalla 1988, 2001, 2005a). The distribution of these particles is subject to dialectal variation. In Chemini Berber, *i*, *ara*, and *u(r)* are used as complementizers. *ara* introduces clauses in the irrealis. *i* introduces clauses headed by a verb in the perfective or intensive. *u(r)* introduces negated clauses.

    It is a special feature of Chemini that the complementizers *i*, *ara*, *ur* attract light prepositions in wh-questions, relative clauses and topicalization/cleft constructions. In this section, we discuss the phonological properties of light preposition + complementizer sequences. Examples involving wh-questions are given in (46)-(48) for each of the complementizers *i, ara* and *u(r)*.[12]

(46) a. anwa   axxam   **g-**   -i-   -t^s ruʒa-   -n
          which.M   house.FS   in   COMP   DO:3FS   wait.PF 3MP
          "In which house did they wait for her?"

      b. anta   θaqənḍurθ   **s-**   -i-   -t^s i-   -ẓra
          which.F   shirt.FS   with   COMP   DO:3FS   3MS   see.PF
          "With which shirt has he seen her?"

      c. anwa   ak^{w}ərsi   **f-**   -i   θə-   -qqim
          which.M   chair.FS   on   COMP   3FS   sit.PF
          "On which chair did she sit?"

(47) a. anwa   axxam   **g-**   -ara-   -t^s raʒu-   -n
          which.M   house.FS   in   COMP   DO:3FS   wait.AOR 3MP
          "In which house will they wait for her?"

      b. anta   θaqənḍurθ   **s-**   -ara-   -t^s i-   -ẓər
          which.F   shirt.FS   with   COMP   DO:3FS   3MS   see.AOR
          "With which shirt will he see her?"

      c. anwa   ak^{w}ərsi   **f-**   -ara   θə-   -qqim
          which.M   chair.FS   on   COMP   3FS   sit.AOR
          "On which chair will she sit?"

---

[12] Notice that clause-final *ara* in (48) is a post-verbal marker of negative concord, not a complementizer.

(48) a. anwa   axxam   **g-**   -u-   -t^s ruʒa-   -n   ara
       which.M   house.FS   in   COMP   DO:3FS   wait.PF   3MP   NEG
       "In which house didn't they wait for her?"

     b. anta   θaqənḍurθ   **s-**   -u-   -t^s i-   -ẓra   ara
       which.F   shirt.FS   with   COMP   DO:3FS   3MS   see.PF   NEG
       "With which shirt hasn't he seen her?"

     c. anwa   ak^{w}ərsi   **f-**   -u   θə-   -qqim   ara
       which.M   chair.FS   on   COMP   3FS   sit.PF   NEG
       "On which chair didn't she sit?"

Attraction by the complementizer is a property of light prepositions. Heavy prepositions like *uqßəl* 'before' never move to C. Notice that doubling is equally ungrammatical (49c).

(49) a. **uqßəl**   anwa   argaz   i-   -t^s i-   -ẓra
       before   which.M   man.FS   COMP   DO:3FS   3MS   see.PF
       "Before which man did he see her?"

     b. * anwa   argaz   **uqßəl**   i-   -t^s i-   -ẓra
       which.M   man.FS   before   COMP   DO:3FS   3MS   see.PF

     c. * uqßəl   anwa   argaz   **uqßəl**   i-   -t^s i-   -ẓra
       before   which.M   man.FS   before   COMP   DO:3FS   3MS   see.PF

The behavior of *ar* 'to/at' is particularly interesting. *ar* 'to/at' is a member of class A1.ii: heavy prepositions that govern exclusively the CS (50a). In interrogation, *ar* is attracted to the complementizer, but it cannot be realized in its usual form (50b). Instead, we find its light allomorph , *ʁ-* in (50c).

(50) a. θ-   -ruħ   ar   wasif
       3FS   go.PF   to   river.**CS**
       "She went to the river."

     b. * anwa   asif   **ar-**   -i   θ-   -ruħ
       which.M   river.FS   to   COMP   3FS   go.PF

     c. anwa   asif   **ʁ-**   -i   θ-   -ruħ
       which.M   river.FS   to   COMP   3FS   go.PF
       "To which river did she go?"

A preposition can only appear to the left of the complementizer, if its phonological representation consists of a single consonant. In particular, this segment never geminates. This fact is interesting: consider the representations of the respective complementizers in (51). If the light preposition introduced a skeletal position of its own, as illustrated in (52a), we would expect gemination of the prepositional segment.[13] The fact that the preposition fails to geminate indicates that the prepositional segment is linked to a single C-position, the one provided by the complementizer (52b).

---

[13] Since initial geminates are widespread in Berber (cf. section 2), the absence of gemination in light P + complementizer sequences cannot be attributed to a general ban against initial geminates in the language.

(51) a. *i*   b. *ara*   c. *ur*

```
      C V C V          C V C V C V C V          C V C V C V
         \|/             \|/   |   \|/            \|/   |
          i               a    r    a              u    r
```

(52) a. * [C V] C V C V   b. C V C V

```
     *┌───┐                        
      │C V│ C V C V       C V C V    
      └───┘ \|/            |   \|/   
        \|/   i            g    i    
         g                          
      * [ggi]              [gi]
```

We conclude that generalization (45a) must be strengthened as follows:

(53) <u>Prosodic deficiency of light prepositions:</u>
The overt realization of a light preposition depends entirely on the skeletal space provided by a host template.

3.4 Clitics vs. "clitic" prepositions

The phonological dependence of light prepositions on a host suggests that they are clitics. However, the distribution of light prepositions differs sharply from the distribution of pronominal clitics.

In Chemini Berber, as in other Berber languages, pronominal clitics and directional particles are second position clitics (cf. Dell and Elmedlaoui 1989, 1991, Ouhalla 2000, 2001, 2005a, and for a different view Shlonsky 2004). They appear in two contexts: (i) enclitic to the verb in a verb-initial clause, or (ii) enclitic to the clause-initial particle *u(r), i, ara,* or *a(đ)*, if there is one. Berber clitics never appear in clause-initial position.

(54)   <u>Distribution of clitics:</u>
a.   V - **CL$_{IO}$ - CL$_{DO}$ - CL$_{DIR}$**
    {*u(r), i, ara, a(đ)*} - **CL$_{IO}$ - CL$_{DO}$ - CL$_{DIR}$**   (...) **V**

b.   jə-   -ẓra-   **-θ**   Taqbaylit, Chemini
      3MS   see.PF   **DO:3MS**
      "He saw him."

      mənhu   i-   **-θ**   jə-   -ẓra-   -n   Taqbaylit, Chemini
      who   COMP   **DO:3MS**   PART   see.PF   PART
      "Who saw him?"

By contrast, the light prepositions of Chemini Berber appear to the left, not to the right of the complementizer (55b). They may even occupy a clause-initial position, as in (55c).

(55)   <u>Distribution of light P</u>:
a.   **P - N$_{CS}$**
    P - {*ur, i, ara*}

b.   anta   θak^{w}ərsit^s **f-**   -i   θə-   -ẓra   θaβrat^s Taqbaylit, Chemini
      which.F   small chair.FS   **on**   COMP   3FS   see.PF   letter.FS
      "On which small chair did she see the letter? "

c. **f-** -θkʷərsitˢ- -aki i θə- -ʐra θaßratˢ Taqbaylit, Chemini
   on small chair.CS DEM COMP 3FS see.PF letter.FS

"On this small chair she saw the letter."

Prepositions can themselves take clitics as complements. In Chemini Berber the presence of a pronominal clitic triggers the heavy forms of the prepositions given in (56).

(56) <u>light P</u>   <u>with pronominal clitic</u>
       n   in   *genitive*
       f   fəll   *on*
       s   jis   *with (instr.)*
       đ   jiđ   *with (com.)*
       g   đɣ   *in*

The distribution of P-clitic clusters is subject to considerable variation in the different Berber languages. In Tashlḥit (Dell and Elmedlaoui 1989) and Tarifit (Ouhalla 2000, 2005a), P-clitic sequences are themselves clitics. They appear enclitic to the complementizer in the order given below for Tashlḥit.

(57) CL: datives object deictic adverbs prep.phrases
           1   2   3   4   5
                                            Tashlḥit, Dell and Elmedlaoui (1989):170

(58) ur   a   **di-** **-s** i-   -ʃtta
      NEG AR   with   3S   3S   eat.IPF

"He does not eat with her."   Tashlḥit, Dell and Elmedlaoui (1989):173,#(22)

(59) ur- **-x(f)-** **-s** i-   -qqim   ufrux
      NEG on   it_DAT 3MS   sit.NEG   boy

"The boy did not sit on it."   Tarifit, Ouhalla (2000): #(31b)

In Chemini, a P-clitic sequence behaves like a full PP, and not like a clitic: in particular, it is not attracted by the particles *u(r), i, ara, a(đ)*. The examples in (60a-c) from Chemini Berber illustrate this distribution: PPs like *fəll-as* 'on it', *jiđ-as* 'with him/her' are not attracted to the second position by the clitic hosts *ur* and *ađ*. The same distribution is described in Chaker (1983) for another dialect of Taqbaylit (60d).

(60) a. ur   i-   -qqim   ara   **fəll-** **-as**
          NEG 3MS   sit.PFNEG   NEG   **on**   **IO:3S**

      "He did not sit on it."   Taqbaylit, Chemini

      b. ur   i-   -səttˢa   ara   **jiđ-** **-əs**
          NEG 3MS   eat.INT   NEG   **with** **IO:3S**

      "He does not eat with him/her."   Taqbaylit, Chemini

      c. ađ   i-   -sərs-   -itˢ   **fəll-** **-as**
          TNS 3MS   put.PF   DO:3FS **on**   **IO:3S**

      "He will put it on it."   Taqbaylit, Chemini

d. ađ   i-   -ru   **fəll-**   **-i**
   TNS 3MS cry.AOR   **on**   **IO:1S**

   "He will cry for me."   Taqbaylit, Chaker (1983):140

Chaker (1983):140 notes that only in poetic texts and frozen expressions P-clitic sequences may be attracted to a clitic host. He gives the example in (61) as a poetic variant of (60d).

(61) ađ   **fəll-** **-i**   i-   -ru
      TNS **on**   **IO:1S** 3MS   cry.AOR

      "He will cry for me"   Taqbaylit, Chaker (1983):140

In Chemini, as in the dialect of Taqbaylit described by Chaker, P-clitic sequences may appear in sentence initial position. Pronominal clitics are ungrammatical in this position.

(62) a. **jiđ-** **-əs**   i-   -d   i-   -pp^{w}əđ
          with   DO:3S   COMP   DIR   3MS   come.PF

          "With him he came."   Taqbaylit, Chemini

      b. **fəll-** **-as**   i   θə-   -rna
          on   IO:3S   COMP   3FS   add.PF

          "She was born right after him."   Taqbaylit, Chaker (1983):#501-appendix

      c. **đɣ-** **-əs**   i   zəđʁ-   -ən
          in   IO:3S   COMP   live.PF 3MP

          "They lived there."   Taqbaylit, Chaker (1983):#532-appendix

Neither light prepositions, nor P-clitic sequences obey the rules of clitic placement of Chemini Berber. We conclude that they cannot be clitics in the strict sense:

(63) Chemini Berber "cliticized" prepositions are not clitics.

3.5   Intermediate conclusion

This concludes the first part of this article. Turning back to our initial concern, the Weight Correlation (2), the phonological discussion above allows us to state the facts more precisely as follows:

(64) <u>PF-constituency and State government</u>
      a. If a preposition is part of the phonological domain of the following noun, the noun must be in the Construct State.
      b. If a preposition governs a noun in the Free State or the Genitive, it constitutes an independent phonological domain.

Stated in this way, an explanation begins to take shape. (64a) etablishes a relation between the formation of a complex phonological domain and the appearance of the Construct State. This is indeed a common feature of construct states (Siloni 2001). It is now time to turn to the phonology and syntax of nominal States in Chemini Berber.

4 States, cases, and prepositions

Before we begin the discussion, it is important to compare the Construct State (CS) of Berber with its counterpart in Hebrew.[14] Although there are some similarities, in particular, a phonologically reduced noun is involved, the syntax of the two forms is different. In Hebrew (65a), the noun in the CS is the head of a genitival construction. In Berber (65b), the complement is in the CS.

(65) a.   Hebrew   b.   Berber

        N_CS   N_complement   X_head   N_CS
        beit   mora   g   wəxxam
        house   *teacher*   *in*   *house*
        "the house of the teacher"   "in the house"
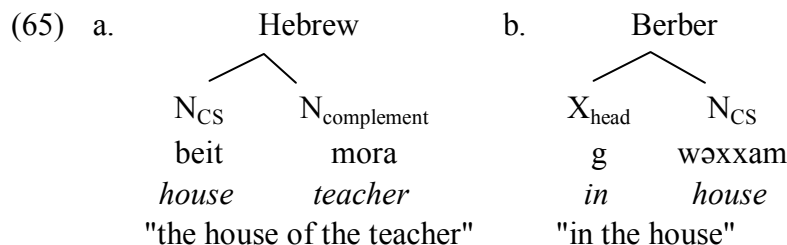
In Berber, a full noun appears in one of two forms, the *Free State (FS)*, or the *Construct State* (CS). The FS is the unmarked citation form. State-markers are prefixal. Table (66) gives the most frequent markers. For an exhaustive discussion, we refer to the literature: Achab (2003), Basset (1932, 1945), Chaker (1983, 1995), Dell and Jebbour (1995), El Moujahid (1993), Guerssel (1983a, 1987, 1992b), Idrissi (2000a, b), Ouhalla (1988, 1996).

(66)

		FS	*CS*			*FS*	*CS*
SINGULAR	*M.*	a-	wə-	*PLURAL*	*M.*	i-	jə-
	F.	θa-	θ(ə)-		*F.*	θi-	θ(ə)-

We observe the following morphemic alternations:

- reduction of the first vowel in the masculine singular, and in the feminine (FS [a]/[i] vs. CS [ə]/zero)
- introduction of a consonant in the masculine singular (FS ø vs. CS [w])

(67) exemplifies the paradigm of *axxam* 'house' and its feminine, *θaxxamt* 'room'.

(67)

		FS	*CS*	*gloss*
SINGULAR.	*M.*	**a**xxam	**w**əxxam	"house"
	F.	θ**a**xxamt	θ**ə**xxamt	"room"
PLURAL	*M.*	**i**xxamən	**j**əxxamən	"houses"
	F.	θ**i**xxamin	θ**ə**xxamin	"rooms"

4.1 The prosodic deficiency of the Construct State

Let us first consider the phonotactic structure of states. Under the assumptions defended in section 2 above, singular nouns are represented as follows. Recall that peripheral vowels must be linked to two V-positions in Berber.
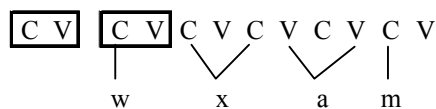
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[14] On Hebrew constructs, cf. Borer (1996, 1999), Siloni (1998, 2000, 2001) and references therein.

(68) Masculine singular:

Free State: *axxam*
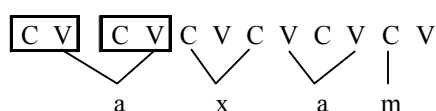
Construct State: *wəxxam*

(69) Feminine singular:

Free State: *θaxxamt*
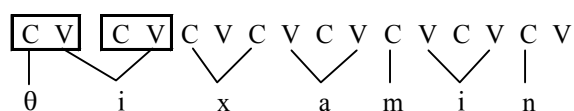

Construct State: *θəxxamt*

The structures in (68)-(69) reveal an immediate generalization: the FS is longer than the CS. The initial CV unit of a noun in the CS is either empty, or it is missing altogether. Notice also that the two states are marked in different positions of the template. The vowel *a* of the FS is linked to the first two V-positions, while the *w* of the CS is linked to the second C-position only.

   In the plural, we observe the same pattern. Consider first the feminine. The vowel *i* marking the FS is linked to the first two V-positions. As in the singular, feminine *θ* is linked to the C-position that immediately precedes the first pronounced vowel. This is the first C-position of the nominal template in the FS, but the second one in the CS.

(70) Feminine plural:

Free State: *θixxamin*

Construct State: *θəxxamin*
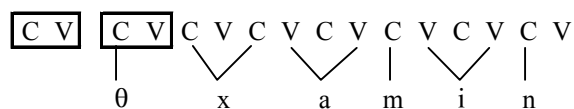
In the masculine plural, FS and CS forms are phonetically identical: e.g., [ixxamən]. However there is phonological evidence that the underlying forms differ:

(71) a. FS   /ixxamən/ [ixxamən]
     b. CS   /jəxxamən/ [ixxamən]

Consider the contrast (72) vs. (73). If the preposition *g* 'in' appears to the left of the complementizer *i*, as in (72), nothing specific happens: the result is a simple concatenation of *g* and *i*, namely [gi]. If the same preposition appears to the left of a noun in the CS as in (73), then the result is different. The preposition geminates and no *i* surfaces.

(72) g 'in': / g + i / →   [**gi**]

anwa   axxam   **g-**   -i-   -t^s ruʒa-   -n
which.M   house.**FS**   in   COMP   DO:3FS   wait.PF   3MP
"In which house did they wait for her?"

(73) g 'in': / g + jəxxamən /   →   [**ggə**xxamən], * [gixxamən]

ruʒa-   -n-   -θən   **gg-**   -xxamn-   -aki
wait.PF   3MP   DO:3FS   in   houses.**CS**   DEM
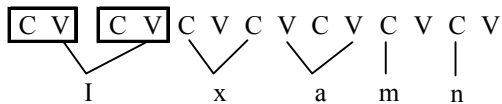"They waited for them (m) in these houses."

In (74a), the *I* element is linked to V-positions. Consequently, it does not interact with the preceding *g*, which is linked to the initial C-position. In (74b), *g* precedes an *I* element that is linked to a C-position. In this configuration, a general rule of the language applies. The *I* element is de-linked, and *g* spreads into its position. We observe geminated [gg].
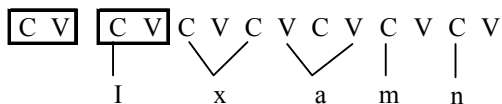
(74) a.   g + i   →   [gi]
                               C V C V
                               | ⋎
                               g   I

      b.   g + jəxxamən   →   [ggəxxamən]
                               C V C V C V C V C V C V C V
                               ⋎   ⋎   ⋎   ⋎ | |
                               g   I   x   a   m   n

We conclude that the underlying representation of masculine plural nouns is as follows:[15]

(75) Masculine plural:

      a.   Free State: *ixxamən*   [C V] [C V] C V C V C V C V C V
                                               | ⋎   ⋎ | |
                                               I   x   a   m   n

      b.   Construct State: *jəxxamən*   [C V] [C V] C V C V C V C V C V
                                                 | ⋎   ⋎ | |
                                                 I   x   a   m   n

In sum, we have now reached the following empirical generalization:

(76) Prosody of states:
      • FS is marked on the first two CV units of the nominal template.
      • In the CS, the first CV unit of the template cannot have segmental content.

---

[15] In a different framework, Guerssel (1983a) reaches the same conclusion.

4.2 The syntactic deficiency of the CS

The syntactic distribution of the CS is apparently heterogeneous (Guerssel 1987, 1992b, Ouhalla 1988, 1996). The State-alternation between subjects and objects in their unmarked position might suggest that States are incarnations of structural case. This is not true, though. Turn first to the subject. In its unmarked post-verbal position, the subject noun is realized in the CS (77a). If the subject appears in a topic/cleft construction to the left of the agreeing verb, it must be in the FS (77b). If the CS were a structural subject-case, it should not change under A'-movement.

(77) a. jə-   -ffʁ-   -əd   **wə**rgaz   g-   -wəxxam
          3MS   exit.PF   DIR   man.**CS**   in   house.CS

      b. **a**rgaz-   -aki   jə-   -ffʁ-   -əd   g-   -wəxxam
          man.**FS**   DEM   3MS   exit.PF   DIR   in   house.CS
          "This man left the house"

Now consider the direct object. In both post- and pre-verbal position, a direct object is realized in the FS (78a,b,c). However, if the object follows a co-referent clitic, then it switches into the CS (78d,e).

(78) a. jə-   -ttʃa   **a**çsum-   -ənni
          3MS   eat.PF   meat.**FS**   DEM

      b. **a**çsum-   -ənni   jə-   -ttʃa-   -θ
          meat.**FS**   DEM   3MS   eat.PF   DO:3MS

      c. *jə-   -ttʃa   wəçsum-   -ənni
          3MS   eat.PF   meat.**CS**   DEM

      d. jə-   -ttʃa-   -θ   **w**əçsum-   -ənni
          3MS   eat.PF   DO:3MS   meat.**CS**   DEM
          "He ate that meat"

      e. *jə-   -ttʃa-   -θ   **a**çsum-   -ənni
          3MS   eat.PF   DO:3MS   meat.**FS**   DEM

In view of these facts, we can establish a correlation between the appearance of the CS and the presence of a preceding pronominal element: subjects are realized in the CS, if they follow the agreeing verb, objects appear in the CS, if they follow a co-referent clitic. More precisely, a noun must be realized in the CS, if it heads an NP in the immediate scope of a coreferent pronominal (either agreement, or a clitic). If the NP moves out of the scope of the pronominal, its head N must be realized in the FS.

Apart from the post-pronominal context, the CS shows up after small numbers. Even for a post-verbal object, which must otherwise be realized in the FS (79b,c), small numbers force the CS (79a).

(79) a. jə-   -ʐra   jiwən   **w**əxxam
          3MS   see.PF   one   house.**CS**
          "He saw one house"

b. * jə- -ẓra **wə**xxam
   3MS   see.PF house.**CS**

c. jə- -ẓra **a**xxam
  3MS   see.PF house.**FS**
  "He saw the/a house"

While small numbers force the CS, the FS is triggered by certain other quantifiers. The universal distributive quantifier *kul* 'each' requires a complement in the FS. A QP headed by *kul* must precede the verb.

(80) a. kul   **a**rgaz   i-   -ßənnu axxam
           each man.**FS** 3MS build.INT house.FS
           "Each man builds a house."

      b. * i-   -ßənnu kul   **wə**rgaz axxam
           3MS build.INT each man.**CS** house.FS

Consider next adjectival modifiers to N. Cross linguistically, determiners and adjectives agree with N. Indeed, Berber adjectives agree with N for gender (81a,c). They do not agree for State, though. Adjectival modifiers of N are realized invariably in the FS (81a,b).

(81) a. jə-   -ttʃa wəmʃiʃ **a**məq^{w}ran
           3MS   eat.PF cat.**CS**   big.**FS**
           "The big cat ate."

      b. * jə-   -ttʃa wəmʃiʃ **wə**mq^{w}ran
           3MS   eat.PF cat.**CS**   big.**CS**

      c. θə-   -ttʃa **θ**əmʃiʃ**θ** **θ**aməq^{w}ran**t**
           3FS   eat.PF cat.F.**CS** big. F.**FS**
           "The big she-cat ate."

We conclude that the CS is not a structural case. Instead, we claim that the CS is the morpho-phonological indication of a structural deficiency. On this assumption, the context of its appearance is a much more natural class, which we summarize in (82). For a detailed discussion of the elements that license the CS, so-called *construct governors,* cf. Ouhalla (1988).

(82) <u>Syntactic deficiency of the CS:</u>
      A noun in the CS requires a locally c-commanding licensor λ,
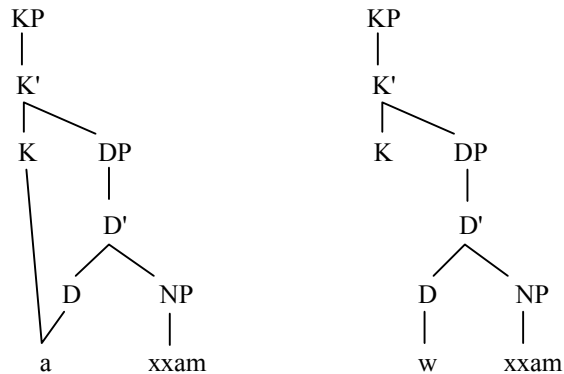   where λ is a pronominal, a small number, or a preposition of class A.

4.3   A non-templatic analysis: Guerssel (1987, 1992b)

The morpho-phonological and syntactic deficiency of the Berber Construct State receives a unified explanation in the seminal work of Guerssel (1987, 1992b) (cf. Idrissi 2000b, Ouhalla 1988, 1996 for discussion).

    In Guerssel's analysis, a maximal extended projection of N includes a functional head K that encodes case-features. He claims that the markers of the FS are "porte-manteau morphemes standing for the conjunction of K and D." Guerssel (1992b):14. The markers of

the CS are determiner morphemes alone. A noun in the CS projects a KP with an empty K-head. We illustrate Guerssel's analysis with lexical material from Chemini Berber:

(83) a. *axxam* "house.FS"   b. *wəxxam* "house.CS"

```
        KP                              KP
        |                               |
        K'                              K'
       /  \                            /  \
      K    DP                         K    DP
      |    |                          |    |
      |    D'                         |    D'
       \  /  \                            /  \
        D    NP                         D    NP
        |    |                          |    |
        a    xxam                       w    xxam
```

Since K is empty in the CS, and empty heads require a licensing context, (83) explains the syntactic deficiency of the CS. Extending Guerssel's reasoning, we can explain our generalization (76) that the CS is phonologically shorter than the FS. The additional CV unit of the FS would be the overt realization of the syntactic head K. In the CS, this head would be empty.

(83) has another immediate advantage. It explains why a certain set of prepositions (i.e., class A) requires the CS. On the assumption that these elements are case-markers, rather than prepositions, then they instantiate the head K, and the only State compatible with them is the CS (84). Notice that this structure represents the spirit of Guerssel's analysis, abstracting away from a few details. We turn to these details immediately below.

(84) *ggʷəxxam* "house.LOCATIVE"

```
        KP
        |
        K'
       /  \
      K    DP
      |    |
      |    D'
      |   /  \
      |  D    NP
      |  |    |
      g  w    xxam
```
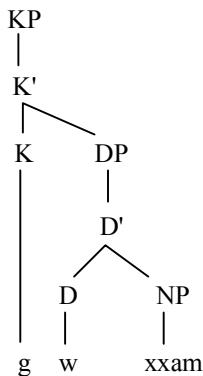
4.4 Adjustments and problems

Taken literally, the analysis in (84) encounters a problem. Recall that the universal quantifier *kul* 'each' combines with a noun in the FS (80). On Guerssel's assumptions, this means that *kul* 'each' subcategorizes for K, as illustrated below:

(85) *kul axxam* "each house"

```
          QP
         /  \
        Q    KP
        |    |
        |    K'
        |   / \
        |  K   DP
        |  |   |
        |  |   D'
        |  |  / \
        |  | D   NP
        |   \|   |
       kul   a  xxam
```
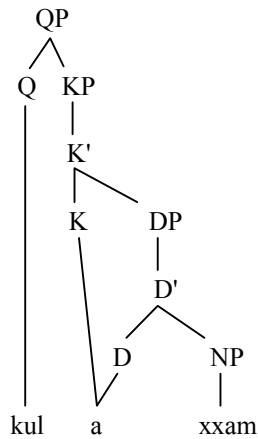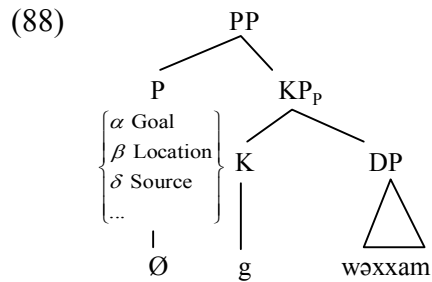
Since prepositions of class A are analyzed as K-heads (84), we predict that these prepositions appear in the complement to *kul* 'each'. This is not the case (86). The most natural way to combine a light preposition and *kul* 'each' is given in (87a): *kul* takes a nominal complement that is doubled enclitic to the preposition. Another possible structure for this sentence is (87b), where the light preposition appears proclitic to the quantifier.

(86) a. * kul   f-   -θk^{w}ərsit^s i-   -dʒəlləß
        each   on   small chair.CS   3MS   jump.PF

     b. * i-   -dʒəlləß   kul   f-   -θk^{w}ərsit^s
        3MS   jump.PF   each   on   small chair.CS

(87) a. kul   θak^{w}ərsit^s i-   -dʒəlləß   fəll-   -as
        each   small chair.FS   3MS   jump.PF   on   IO:3S

     b. i-   -dʒəlləß   f-   -kul   θak^{w}ərsit^s
        3MS   jump.PF   on   each   small chair.FS
        "He jumped on each chair."

As a matter of fact, Guerssel's theory does not have this problem. For independent reasons related to case-assignment, the full configuration postulated by Guerssel for CS-governing prepositions includes a silent head P. This head bears all the semantic features of the preposition, and it assigns case to the KP. P remains phonologically null, because all of its features are alternatively realized on its phrasal sister KP, which is headed by a locational case-marker.[16] (88) replaces (84).

---

[16] Technically, phonological emptiness is attributed to the Invisible Category Principle of Emonds (1987).

(88)

```
              PP
            /    \
          P       KPₚ
    ⎡ α Goal ⎤   /   \
    ⎰ β Location⎱ K   DP
    ⎱ δ Source ⎰  |    △
    ⎣ ...     ⎦   |    
          |       |    
          Ø       g   wəxxam
```

With (88), examples like (86) are immediately excluded. However, there are subsequent problems. At the conceptual level, one is tempted to ask why morpho-phonological features should be systematically separated from syntactic/semantic features for an entire class of lexical items in Berber. More importantly, there is an empirical problem. The explanation of why light prepositions cannot govern the FS has now lost much of its initial force. The facts are as follows.

Since the FS is a default case marker, which is compatible with a wide range of interpretations, it should be grammatical under P, as indeed it is in the following examples from Tamazight and Chemini Berber. Notice that Tamazight *al* 'until' is one of the few true prepositions, and not a case-marker in Guerssel's theory.

(89) a. Y-   -uzzel al   ajdir   Tamazight, Guerssel (1987):167
          3MS   ran   until cliff.FS
          "He ran up to the cliff."

      b. uqßəl   argaz-   -aki   Chemini Berber
          before   man.FS   DEM
          "before this man"

We should therefore expect the existence of (90) along with (88):

(90) *gaxxam "in the house.FS"

```
    *       PP
          /    \
         P      KP
         |      |
         |      K'
         |     /  \
         |    K    DP
         |    |    |
         |    |    D'
         |    |   /  \
         |    |  D    NP
         |    |  |    |
         g    a      xxam
```
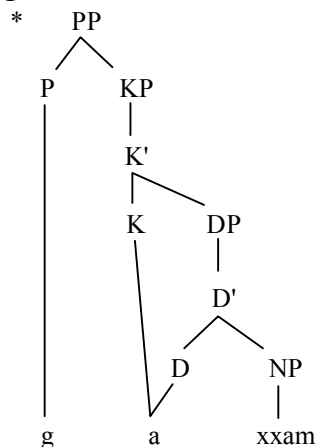
Since the FS is a default case-marker, it cannot *alternatively realize* the features of P, and P should therefore be forced to have phonological content. The analysis now crucially depends on the assumption that elements like *g* 'in' are not prepositions, but K-heads in the immediate domain of a silent P. Furthermore, the modified analysis offers no more account for the fact that phonological lightness implies government of the CS.

5 A templatic analysis of states and prepositions

We will now insert a level of templatic representation at the interface between phonological and syntactic structure. This will allow us to explain the Weight Correlation (2)/(64), and furthermore to account for a number of independent facts related to the behavior of prepositions in the domain of complementizers, including preposition-doubling in long *wh*-dependencies.
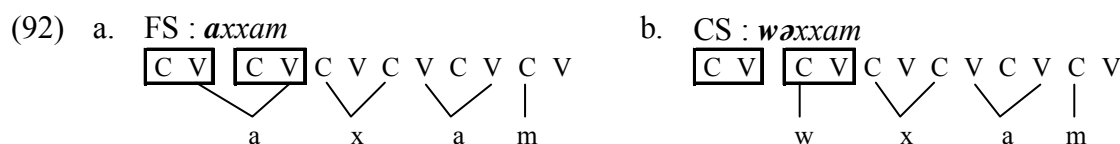
5.1 The nominal template

Recall the phonological generalization (76), repeated in (91).

(91) <u>Prosody of states:</u>
- FS is marked on the first two CV units of the nominal template.
- In the CS, the first CV unit of the nominal template cannot have segmental content.

We find the following pattern, illustrated with the masculine singular:

(92) a. FS : *axxam*   b. CS : *wəxxam*

These configurations are now submitted to a morpho-syntactic interpretation. If the first CV unit of the nominal template is phonologically identified by the vowel *a*, then this position is interpreted as a syntactic head K.

The second CV unit of the template is interpreted as a syntactic head D. D supports semantic features like specificity, but it is formally defective.[17] If the morphological structure of a noun does not support the presence of K, then the noun depends on an external licensing mechanism, i.e., condition (82). (93) illustrates our analysis of the FS and CS, respectively.

(93) a. FS: *axxam*   b. CS: *wəxxam*

---
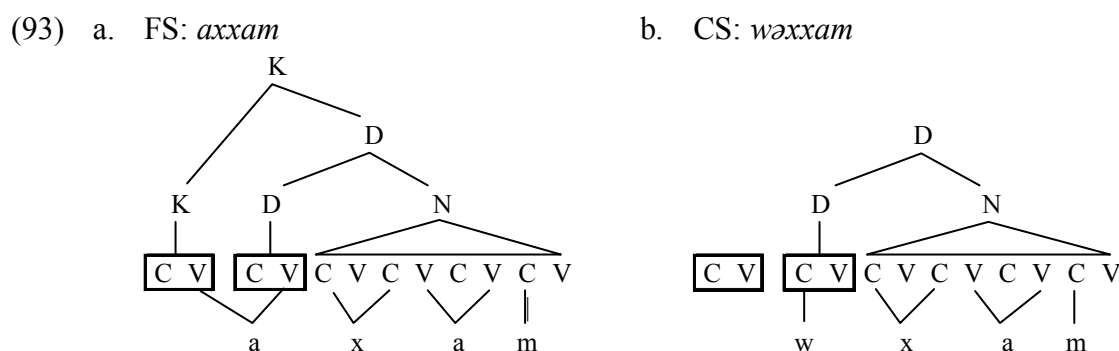
[17] The formal deficiency of D might be related to the absence of a definite article in Berber, cf. Ouhalla (2005b).

5.2 Preposition and noun

5.2.1 <u>Light prepositions and templatic sites: explaining the Weight Correlation</u>

While we maintain Guerssel's analysis of the FS as a marker of K and D, we claim that light prepositions are not K-markers, but true prepositions of category P. Given the templatic analysis of states in (93), we can explain why light prepositions must govern the CS: the empty initial CV unit of the CS serves as a phonological host for light P (94a). If a light P were linked to the initial C-position of a noun in the FS, it would be uninterpretable in syntax, because the initial templatic site of the FS is interpreted as K (94b). Light P and K (i.e., FS) are in syntactic competition for a single templatic site, the initial CV position.

(94)   a.   *ggʷəxxam* "in the house.CS"   b.   *gaxxam "in the house.FS"
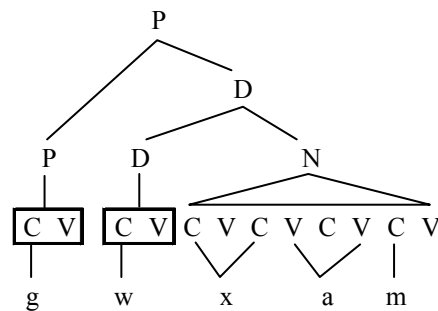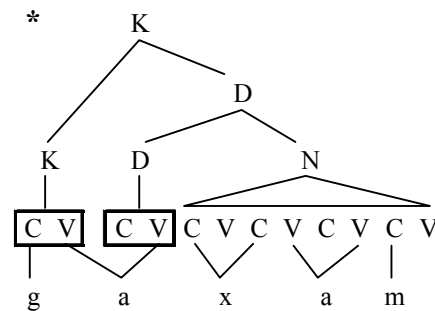
This analysis furthermore explains why light prepositions never govern the genitive case. Since the genitive is itself a light P (95a), it competes with the other light preposition for a single CV position. If this position is occupied by the genitive, there is no more phonological space for another light preposition (95b).

(95)   a.   Gen: *ntəxxamt* 'of the room'
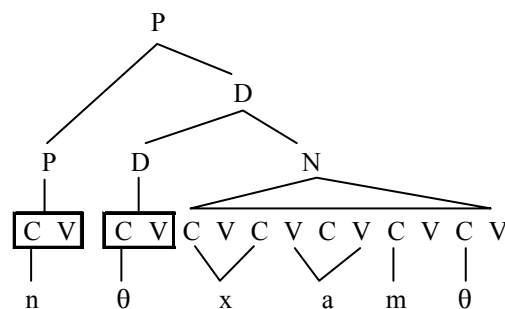
b.   *
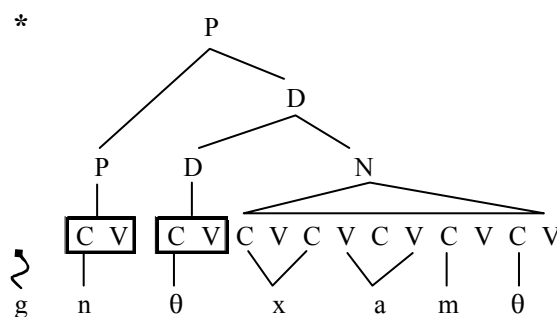
5.2.2 CS government in syntax: N-to-P raising

We apply the following conventions concerning the notation of templatic structure in syntactic trees:

(96) <u>Notational conventions</u>:
- The symbol x represents a designated templatic site under a terminal syntactic node.
- A dotted triangle represents a templatically un-analysed object that corresponds to either terminal or non-terminal syntactic nodes.

Government of the CS is not limited to light prepositions. The heavy prepositions of class A take complements in the CS, too (97). In both cases, we observe a locality condition of the head-movement type. If a head intervenes between P and N, then the noun cannot be realized in the CS (99). It must be in the FS (98). We exemplify this intervention effect with the quantifier *kul* 'each'.

(97) a. g-   -wəxxam   aməq^{w}ran
          in   house.CS   big.FS
          "in the large house"

      b. ar   wəxxam   aməq^{w}ran
          to   house.CS   big.FS
          "to the large house"

      c. arif   wəxxam   aməq^{w}ran
          beside house.CS   big.FS
          "beside the large house"

(98) a. g-   -kul   axxam   aməq^{w}ran
          in   each   house.FS   big.FS
          "in each large house"

      b. ar   kul   axxam   aməq^{w}ran
          to   each   house.FS   big.FS
          "to each large house"

      c. arif   kul   axxam   aməq^{w}ran
          beside each   house.FS   big.FS
          "beside the large house"

(99) a. *g-   -kul   wəxxam   aməq^{w}ran
          in   each   house.CS   big.FS

      b. *ar   kul   wəxxam   aməq^{w}ran
          to   each   house.CS   big.FS

      c. *arif   kul   wəxxam   aməq^{w}ran
          beside each   house.CS   big.FS

These facts suggest that a preposition governs the CS, if and only if it attracts a feature of its nominal complement.

(100)   <u>CS-government in class A</u>
   Prepositions of class A attract a feature of their nominal complement.

The phrasal structure of CS-governing prepositions is illustrated in (101). In (101a,b), the noun raises to P. In (101c), the quantifier *kul* 'each' raises to P. The noun heads an independent KP in the FS, and it raises to K.
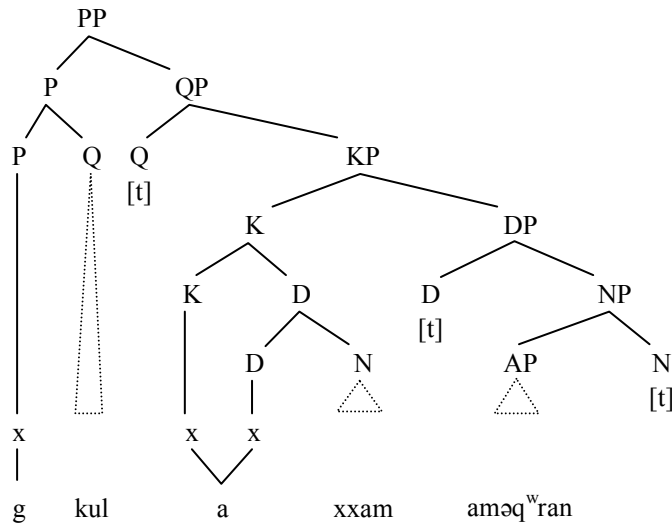
(101)   <u>N-to-P raising</u>

        a.   class A1: *gwəxxam aməq^wran* "in the large house"
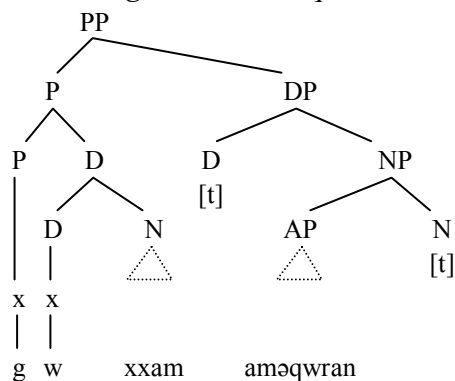
        b.   class A2: *arif wəxxam aməq^wran* "beside the large house"
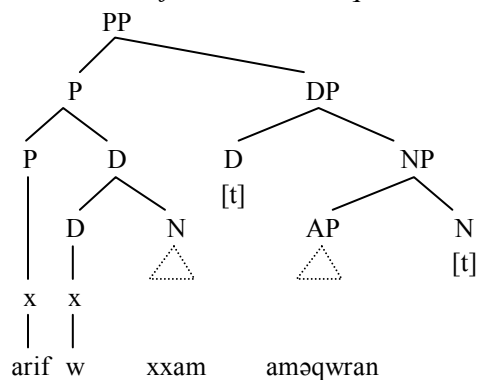
c. intervening Q: *gkul axxam aməq^{w}ran* "in each large house"

```
                    PP
              ┌──────┴─────┐
              P            QP
            ┌─┴─┐       ┌───┴────────┐
            P   Q       Q            KP
            │   ┊       [t]      ┌────┴──────┐
            │   ┊                K           DP
            │   ┊            ┌───┴──┐     ┌──┴────┐
            │   ┊            K      D     D       NP
            │   ┊            │    ┌─┴─┐   [t]   ┌──┴──┐
            │   ┊            │    D   N         AP    N
            │   ┊            │    │   △         △     [t]
            x   ┊            x    x
            │   ┊            └─┬──┘
            g   kul           a   xxam    aməq^wran
```

5.2.3 Genitive under P and silent locational nouns

(100) predicts that the genitive cannot appear as an immediate complement to a preposition that governs the CS. As a prepositional head, the genitive blocks raising of the noun to the higher preposition. Nonetheless, we find the alternation in (102). The heavy prepositions of class A2 take complements in either the CS, or the genitive.

(102) a. arif   wəxxam
           beside   house.CS

       b. arif   pp^{w}əxxam
           beside   house.GEN
           "beside the house"

In order to maintain (100), one could argue that words like *arif* 'beside' are nouns rather than prepositions. The genitive complement in (102b) would then be the unmarked configuration: nouns take genitival complements. On this analysis, the CS in (97c) would have to be analyzed as an exceptional configuration, because the CS is severely restricted under N in Berber. We expect that (97c) exhibits exactly the same distributional restrictions that we find for the CS under genuine nouns (Guerssel 1983b, 1987, Penchoen 1973).

In Chemini Berber, the distribution of the CS under genuine nouns and under elements like *arif* 'beside' is different. Under a genuine noun (103), the appearence of the CS is severely restricted. For example, the CS complement to N cannot be plural (104a). Only the prepositional genitive is grammatical in this context (104b). No such restriction applies under elements like *arif* 'beside' (105). We conclude that (103) and (105) cannot have the same syntactic structure.

(103) θaxxamt   wəqʒun
       house.DIM dog.CS
       "the dog's kennel"

(104) a. *θaxxamt   jəqʷʒan
         house.DIM   dog.PL.CS

     b. θaxxamt   n-   -jəqʷʒan
        house.DIM   GEN   dog.PL.CS
        "the kennel of the dogs"

(105) arif   jəxxamin
      beside   house.PL
      "beside the houses"

Another argument in favor of a nominal analysis of class A2 could be developed as follows. Some members of this class can be overtly prefixed with a light preposition. We illustrate this with *ddaw* 'under' in (106). The initial *s-* in (106b) resembles an independent preposition *s* 'towards' in other Berber languages (Ouhalla 1988:217). One could therefore argue that *sddaw* is a complex object composed of a preposition *s* 'towards' and a noun *ddaw* 'bottom'.

(106) a. aθan   ddaw   θkʷərsijin
      b. aθan s-   -ddaw   θkʷərsijin
         DEM   towards   bottom   small chairPL.CS
         "It is under the small chairs."

Transparent examples of this kind are *ar θama* 'at the side/beside', *ar dəffir* 'at the backside/behind', *gßərra* 'outside'. Consider *ar θama* 'at the side/beside'. As a grammaticalized preposition, *ar θama* precedes *anwa* 'which' (107). *θama* 'side' can follow the interrogative quantifier too. In that case, it is interpreted as a referential noun, and it triggers gender agreement: *anwa* must be in its feminine form *anta* in (108).

(107) a.   ar θama   ppʷənwa   argaz   i   θə-   -qqim
             at side   which.GEN   man.FS   COMP   3FS   sit.PF
      b. * anwa   ar θama   ppʷərgaz   i   θə-   -qqim
             which   at side   man.GEN   COMP   3FS   sit.PF
             "At the side of which man did she sit?"

(108) anta   θama   ppʷərgaz   i   θə-   -qqim
      which.F   side.FS   man.GEN   COMP   3FS   sit.PF
   "At which side of the man did she sit?"

Ouhalla (1988):218 observes a certain degree of "fossilization" in such P-N combinations. In Chemini Berber, at least *sddaw* 'under' is fully grammaticalized as P. First, the preposition *s* 'towards' does not exist as an independent lexical entry any more. Second, a CS under *(s)ddaw* is not subject to the restrictions that apply, if a CS appears under a noun: (104a) vs. (106). Third, the initial *s* is not separable from *ddaw* under interrogation. *sddaw* must precede the interrogative Q as a whole (109a). If *s* were a preposition and *ddaw* a noun, then we would expect (109c) to be grammatical in analogy to (110) below. In fact, (109c) is ungrammatical. Finally, even the transparent P-N combination *ar θama* 'at side' in (107a) precedes the interrogative quantifier as a whole.

(109) a.   (s)ddaw   pp^{w}ənwa   usu   i-   -t^s i-   -ẓra
          under   which.GEN   bed.FS   COMP   DO:3FS   3MS   see.PF
          "Under which bed did he see her/it?"

     b.   *   anwa   (s)ddaw   wusu   i-   -t^s i-   -ẓra
          which.FS   under   bed.CS   COMP   DO:3FS   3MS   see.PF

     c.   *   s-   -wənwa   ddaw   wusu   i-   -t^s i-   -ẓra
          which.CS   under   bed.CS   COMP   DO:3FS   3MS   see.PF

(110)   g-   -wənwa   axxam   i-   -t^s ruʒa-   -n
       in   which.M.CS   house.FS   COMP   DO:3FS   wait.PF   3MP
       "In which house did they wait for her?"

In sum, the distribution of the members of class A2 is clearly prepositional, but they still show signs of the presence of an N in some contexts. In particular, some examples retain a nominal use, and all of them may take complements in the genitive.

     Building on Kayne (2003), we interpret this state of affairs as evidence for the optional presence of a silent locational noun N$_{loc}$. If N$_{loc}$ is absent, the grammaticalized prepositions of class A2 project the structure given in (101b) above. If N$_{loc}$ is present, the full noun raises to the genitive preposition, and silent N$_{loc}$ moves to the full preposition (111).

(111)   <u>A2 with genitive</u>: *arif pp^{w}əxxam*
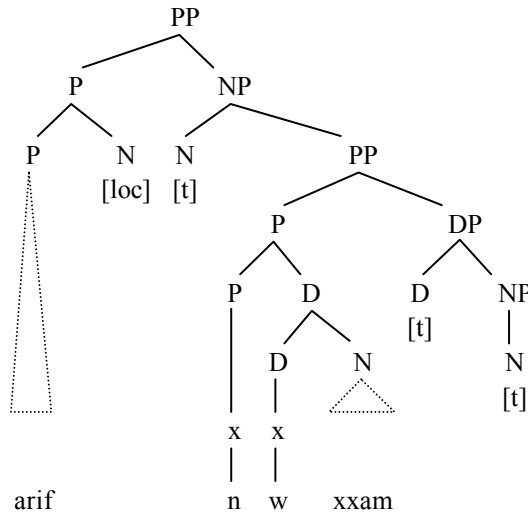
The analysis now holds that a preposition of class A cannot take a complement in the genitive, if it does not license silent N$_{loc}$. The unavailability of silent N$_{loc}$ should be observable in an independent context, and indeed it is. There is a set of heavy prepositions in class A that does not take complements in the genitive (A1.ii in (1)). This set happens to be co-extensive with the set that requires an overt complement. The examples in (112) are ungrammatical, because (i) the prepositions of class A attract a feature of their nominal complement, and (ii) they do not license silent N$_{loc}$. All members of class A2 can be used without an overt complement (113): they allow silent N$_{loc}$.

(112) a. *i- -ruħ ar
        3MS go.PF to

      b. *i- -ruħ ɣər
        3MS go.PF between

(113) a. i- -qqim zɗaxəl
        3MS sit.PF inside
        "He stayed inside."

      b. i- -qqim arif
        3MS sit.PF beside
        "He stayed at the side."

      c. i- -qqim nniɣ
        3MS sit.PF above
        "He stayed above."

We conclude that all prepositions that govern the CS (class A) obey condition (100): they attract a feature of their nominal complement. The members of class A2 allow a genitive, because they license a silent locational noun.

5.2.4 Where condition (100) does not apply: class B

Prepositions that do not fall under condition (100) do not govern the CS. In the complement to prepositions of class B we find a full KP (i.e., the FS), and no N-to-P raising.

(114) class B with FS: *uqßəl argaz* 'before the man'
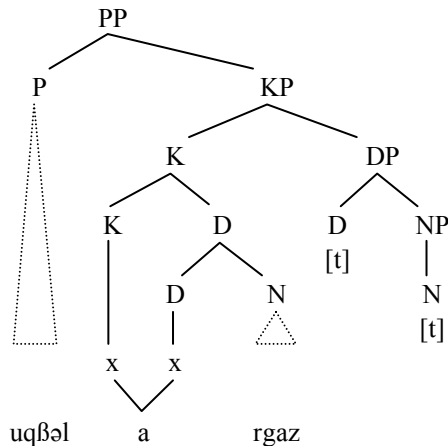
Since class B does not attract a nominal feature, its members should allow non-nominal complements. This is the case. All members of class B (and only those) can be used as complementizers in Chemini Berber.

(115) θə- -ppʷɗ- -əd uqßəl aɗ j- -əttʃ
        3FS arrive.PF DIR before TNS 3MS eat.AOR
        "She arrived, before he ate"

5.3   PC clusters

Prepositions of class A cannot be used as independent complementizers, but they can appear to the right of their nominal complement, left-adjacent to an overt complementizer. Furthermore, the noun then appears in the FS (116a). Given condition (100), this should be impossible. We argue that (116) is grammatical, because a light preposition to the left of the complementizer does not project an independent syntactic head.

(116) a. anwa   axxam   g-   -i-   -t^s ruʒa-   -n
           which.M.FS   house.FS   in   COMP   DO:3FS   wait.PF   3MP
       b. g-   -wənwa   axxam   g-   -i   -t^s ruʒa-   -n
           in   which.M.CS   house.FS   in   COMP   DO:3FS   wait.PF   3MP
           "In which house did they wait for her?"

5.3.1   The complementizer template, PC clusters, and lexicalization

Recall from section 3.3 that complementizers offer just a single C-position for the realization of a light preposition. This position is followed by a V-position, to which the segmental material of the complementizer is linked (117). There is no evidence for an independent templatic site for the preposition.

(117)   C V C V
        | \ /
        g   i
       [gi]

The theory defended so far predicts that the light preposition is syntactically invisible in this configuration. We claim that this specific case is grammatical, because the features of a light preposition can be reanalysed as features of the host under categorial identity. With Emonds (1985), we assume that the category of complementizers is P. Therefore, the full structure of (117) must be (118).

(118)   C$_{[loc]}$
              |
         [C V C V]
           | \ /
           g   i
          [gi]

Since the light P and the complementizer constitute a single syntactic head, we expect a tendency towards lexicalization. Indeed, Chaker (1983):398 observes that the stability and frequence of these clusters in certain varieties shows that there is a tendency towards the constitution of specific [complementizer] paradigms.[18] For Chemini, the existence of specific P-allomorphs in P-C clusters constitutes an additional argument. An example is the element ʁ, which replaces *ar* 'to' in (119). Another example is *m*, which replaces dative *i* in (120b).

---

[18] "Par leur stabilité et leur fréquence dans certains parlers, ces complexes sont certainement l'indice d'une tendance à la constitution d'un paradigme de supports spécifiques." Chaker (1983a):398.

(119) a. θ- -ruħ   ar   wəxxam
　　　　　3FS go.PF to   house.CS
　　　　　"She went to the house."

　　　b. anwa   axxam   ʁ- -i   θ- -ruħ
　　　　　which.M house.FS to COMP 3FS go.PF
　　　　　"To which house did she go?"

　　　c. * θ- -ruħ   ʁ- -wəxxam
　　　　　　3FS go.PF to house.FS

(120) a. j- -uçr- -iθ   i-   -wəqʒun
　　　　　3MS steel.PF DO:3MS DAT dog.CS
　　　　　"He stole it from the dog."

　　　b. anwa   aqʒun   m-   -i-   -θ   j- -uçər
　　　　　which.M dog.FS DAT COMP DO:3MS 3MS steel.PF
　　　　　"Which dog did he steel it from?"

　　　c. * j- -uçər- -θ   m-   -wəqʒun
　　　　　　3MS steel.PF DO:3MS   dog.CS

The analysis in (118) has advantageous consequences for the analysis of P-doubling under A'-movement. If (118) is the correct representation of a light preposition with C, then the preposition does not support the projection of an independent syntactic head P. It is reanalyzed as a feature of the host complementizer. We thus predict that it can be doubled on a fronted PP, as indeed it can. Doubling is an option in both wh-questions and topicalization/cleft constructions.[19]
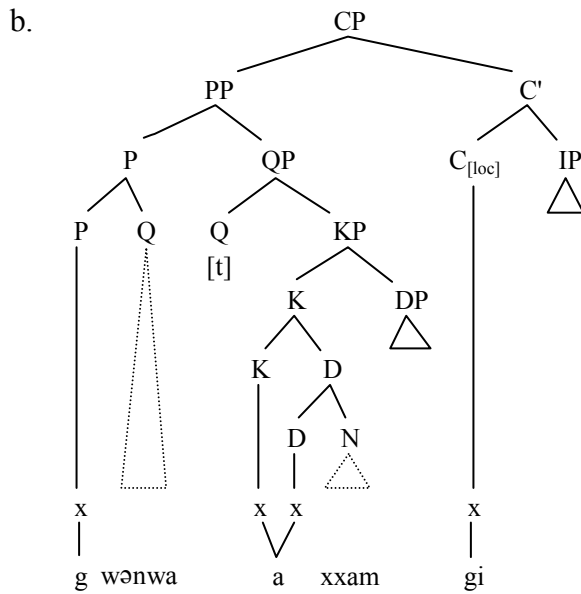
　　　We illustrate the doubled structure with an interrogative PP in (121).[20] Notice that the interrogative quantifier *anwa* 'which' is realized in the CS, while the full noun appears in the FS. Like *kul* 'each' in (98) above, the quantifier raises to P, and its nominal complement projects a full KP.

(121) a. gwənwa   axxam   git^s   ruʒa-   -n
　　　　　in.which.M.CS house.FS in.COMP. DO:3FS wait.PF 3MP
　　　　　"In which house did they wait for her?"

---

[19] There are even cases of partial agreement between a heavy preposition in [spec, C] and a P-C cluster. We illustrate this with *uqßəl* 'before', a member of class B.
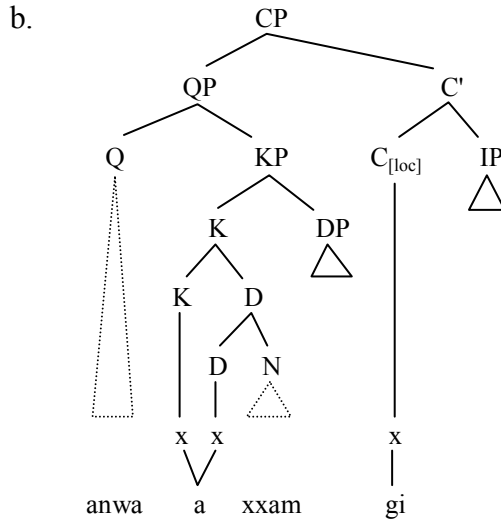
(i)　uqßəl   anta   θamaʃahuts g- -i   θ- -ruħ
　　　before which.F.FS tale.FS   in COMP 3FS go.PF
　　　"Before which tale has she left?"

[20] We abstract away from the structure of IP, and from the presence of clitics in C.

b.

```
                          CP
                 _____/  _____
               PP                    C'
          ____/  \____           ___/  \___
         P            QP        C[loc]      IP
       _/ \_        _/  \_        |          △
      P     Q      Q     KP       |
      |    ⋮       [t]  _/ \_      |
      |    ⋮          K    DP      |
      |    ⋮        _/ \_   △      |
      |    ⋮       K     D         |
      |    ⋮       |    _/ \_      |
      |    ⋮       |   D     N     |
      |    ⋮       |   |    △·     |
      x           x   x           x
      |    \      |  \ /          |
      g   wənwa   a  xxam         gi
```

(122) gives the structure of a bare interrogative KP in the specifier of a PC cluster. Since a light P in a PC cluster is not an independent syntactic object, it does not trigger raising of N. The interrogative quantifier is therefore realized in the FS, projecting a full KP.

(122) a. **a**nwa   **g**it^s   ru3a-   -n
           axxam
           which.M.FS   house.FS   in.COMP. DO:3FS   wait.PF   3MP
           "In which house did they wait for her?"

b.

```
                        CP
                 _____/  _____
               QP                 C'
          ____/  \____        ___/  \___
         Q            KP     C[loc]      IP
         ⋮          _/  \_     |         △
         ⋮         K     DP    |
         ⋮       _/ \_   △     |
         ⋮      K     D        |
         ⋮      |    _/ \_     |
         ⋮      |   D     N    |
         ⋮      |   |    △·    |
         ⋮      x   x          x
         ⋮      |  \ /         |
        anwa    a  xxam        gi
```

PC clusters can be observed in long A'-dependencies too. To begin with, consider the following example without doubling.[21]

---

[21] Notice that the verb *ini-jas* 'think' (intensive: *qqar* in (123)) selects a dative clitic *-jas/-s* in Chemini Berber. In (123), we find it enclitic to the complementizer *i*. The complementizer-clitic sequence *i-s* in (123) must be distinguished from the simple complementizer *is* in other Berber languages. *-s* in (123) is a clitic, because it moves. If the complementizer is absent, as in (i), it attaches to the verb:

(123)

g-	-wənwa	axxam	i-	-s	θə-	-qqar	nə-	-tˢraʒu-	-tˢ
in	which.M.CS	house.FS	COMP	IO:3S	3FS	say.INT	1P	wait.INT	DO:3FS

"In which house does she think that we are waiting for her?"

(124) exhibits the basic structure that we can find with all types of preposition: An overt preposition heads the fronted PP, and C does not agree. The traces in (124) indicate the path of the dependency without committment to a specific analysis of long A'-movement in Berber; cf. Ouhalla (1993) on this issue.

(124) [$_{CP}$ [gwənwa axxam]$_i$ is θəqqar [$_{CP}$ [t$_i$] nət^{s}raʒut^s [t$_i$]]]

Notice that doubling is ungrammatical, if PC clusters appear in two successive C positions. Although the issue cannot be elaborated here, notice the similarity with the anti-agreement effect that holds for subject extraction in Berber (Ouhalla 1993, 2005b).

(125) a. ***g**wənwa axxam **g**is θəqqar [[t] **g**it^s nət^{s}raʒu [t]]

     b. *anwa axxam **g**is θəqqar [[t] **g**it^s nət^{s}raʒu [t]]

In addition to (124), all of the following sentences are grammatical.

(126) a. anwa axxam **g**is θəqqar [[t] it^s nət^{s}raʒu [t]]

     b. anwa axxam is θəqqar [[t] **g**it^s nət^{s}raʒu [t]]

     c. **g**wənwa axxam **g**is θəqqar [[t] it^s nət^{s}raʒu [t]]

     d. **g**wənwa axxam is θəqqar [[t] **g**it^s nət^{s}raʒu [t]]

Consider first (126c, d). On the present assumptions, these examples are derived by extracting an interrogative PP to/across an agreeing PC cluster. If we were to derive them in terms of P-stranding in C, then additional assumptions regarding the spell-out of two copies of P would be necessary.

(126a, b) do not involve doubling. On present assumptions, they are analyzed in terms of extraction of an interrogative KP to/across a PC cluster. On an alternative analysis in terms of P-stranding, these configurations are highly problematic, because stranding of P in intermediate landing sites is ungrammatical in languages like English (Merchant 2002, Postal 1972). Consider Merchant's example (30):

(127) *Who$_1$ do you think [$_{CP}$ [$_{PP}$ for t$_1$]$_2$ [$_{IP}$ she bought it t$_2$]]?

(126b) has exactly this configuration, unless we assume that *g* 'in' is not a stranded preposition, but part of a complex complementizer. We conclude that our analysis in terms of PC clusters, motivated independently by the templatic structure of prepositions and complementizers, is correct.

(i)

θ-	-qqar-	**-as**	nə-	-tˢraʒu-	-tˢ	g-	-wəxxam-	-aki
3FS	say.INT	**IO:3S**	1P	wait.INT	DO:3FS	in	house.FS	DEM

"She thinks that we are waiting for her in this house."

6   Conclusion

Starting with the observation of an interaction between phonological weight and state government, this article attempted to delimit the phonological and syntactic properties of prepositions and nouns in Berber (Taqbaylit). It argued that the assumption of structured templates in the sense of Guerssel and Lowenstamm (1990), Lowenstamm (2003) makes it possible to account for the observed interaction in a principled way, while at the same time maintaining a strictly modular theory of grammar.

We have defined templates as sequences of CV units, where each CV position may host one morpho-syntactic head. On the basis of this assumption, we have developed a compositional analysis of state markers, and extended this analysis to derive the state government of prepositions. Finally, we tested the predictions of our analysis with some as yet unknown data concerning the distribution of light prepositions in the context of long A'-dependencies.

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