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| RESEARCH ARTICLE

An Optimality-Theoretic Analysis of -akun- Dummy Infixation: A Secret Language in the Kenitra Dialect

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| ABSTRACT
This paper investigates the pattern of -akun- dummy infixation in a secret language of the Kenitra dialect adopting the framework of Optimality Theory. Since previous studies on secret languages in Morocco have focused on the sociolinguistic aspects, this paper attempts to analyze this secret language from a different viewpoint. To our knowledge, this Secret Language has escaped the notice of Moroccan linguists to implement any phonological theory to account for the infixation pattern. Consequently, we show the shortcomings of traditional approaches regarding the location of the infix. Furthermore, we provide evidence that the dummy infix is consistently epenthesized before the vowel of the stem and not after the first or second consonant in the onset position of the stem based on the interaction of constraints. In conclusion, we fill the theoretical gap in the literature on secret languages in Moroccan Arabic.

| KEYWORDS
Secret language, Optimality theory, phonology, infixation, Moroccan Arabic, ludlings, language games, language disguise, concealment.

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1. Introduction

Secret languages have been present in many cultures for centuries. Their use and function differ from one language to another, but their main goal is to disguise meaning and exclude outsiders. Each secret language functions with its own unique rules and structures. This paper aims to examine the secret language in question using a theoretical framework. While the literature on secret languages is extensive in sociolinguistics, this study's originality lies in its focus on a phonological aspect within the constraint-based framework of Optimality Theory (Prince and Smolensky 1993/2004; McCarthy and Prince 1993 a-b). The paper addresses a theoretical gap in the literature on secret languages in Moroccan Arabic, specifically the Kenitra Dialect. This article has the following organization: Section 2 discusses terminological notes and definitions of secret languages. In addition, an overview of worldwide secret languages in addition to Arabic-speaking countries is provided. Then, the differences in definitions from various authors are examined alongside giving background information on secret languages. The most important types of secret languages across different languages are listed. Since secret languages employ different strategies for encoding words, we dedicate a sub-section to the techniques and formulations used in these languages and offer a detailed description of how these secret languages function. Section 3 offers a descriptive generalization of the study and discusses the notions of optimality theory regarding infixation. Moreover, the optimality theory analysis is conducted to display the interaction of constraints posited to account for the placement of the infix under investigation. The paper concludes with additional evidence to support our claim regarding the location of the infix under investigation.

2. Terminological Notes and Definition of Secret Languages

Before we delve into the background of secret languages, let us first define and distinguish the terms related to this phenomenon. Secret languages, language games, jargon, slang, argot, ludlings, and ġaws/hawsijja refer to speech disguise. Each term seems different from the other, yet they all serve the same purpose: distorting meaning to make communication incomprehensible. It is important to clarify that Jargon, Slang, and Argot function differently from secret languages. According to Blake (2010), Jargon is primarily used in workplaces, with terms specific to a job that people outside the workplace cannot understand. For example, doctors use Latin terms like "mane" (in the morning) and "ante cibum" (before meals) when communicating with pharmacists. Slang, on the other hand, represents an individual's choice between formal and informal language in certain situations, such as "How are you" versus "What's up?" Argot is distinct from the other two terms as it is used among groups like outlaws, burglars, and gypsies, who create unclear words to exclude outsiders. While Argot is similar to secret languages in excluding unwanted individuals from understanding the conversation, Halliday (1976) categorizes it as anti-language.

Bagemihl (1995) emphasizes that all these terms share the primary function of distorting word meanings. Despite their identical functions, each term operates differently. This paper adopts Berjaoui's definition of secret languages, which he defines in three parts: a secret is a communication medium that orally modifies a natural language to make it difficult for a third party to decipher. The language under study differs from a genuine one as it involves coding words and lacks native speakers. The term ġawṣ, originating from the Standard Arabic "ġāṡa" (to dive), is used in Morocco to refer to secret languages, serving the same purpose of language disguise (Berjaoui, 2010). Most importantly, the term ludling, coined by (Laycock, 1972, as cited in Sarji, 2022), is used among linguists studying secret languages. Ludling is not a language created from scratch but arises from the pre-existing language through its natural linguistic processes (Yip, 1982).

2.1 Background of Secret Languages

It is challenging to trace the history of secret languages or to track down the first person or a group of people who used them since secret languages do not have native speakers. Nevertheless, the existence of such language remains real, and they rely on the grammar of a natural language. Accordingly, people always need a technique to hide their documents, recordings, works, diaries, discoveries, et cetera. Al Kindi is one of the Arabic scholars who first highlighted the transpositions and substitution when it comes to language ciphering (Al Kindi, 801 873 AD, as cited in Blake, 2010). On the subject of concealing conversations, let us take a look at an ancient dialogue from Nordstrom's book "The Secret Language":

> At the table that night Martha looked across at Victoria and said, "Hey, Vick, maybe we'll have ice cream tonight. That would be Leebossa, wouldn't it?" The other girls looked at Martha in surprise, and then at Victoria. "Wouldn't it? Wouldn't it be Leebossa?" Martha repeated, staring at Victoria. "Yes, I guess so," Victoria said finally. "After singing I'll tell you all about my secret language," Martha said. "but you'll have to promise you'll never tell anyone else!" (Nordstrom, 1960)

The word Leebossa means when something works for you or you like something. There are other secret words from the same dialogue that cannot be explained here since this section aims to provide the historical background of secret languages (see Nordstrom (1960) for further details about the words used for disguise). Using secret languages throughout history has played a vital role in hiding information. An additional case is when soldiers in war employ secret words to pass the information between governments and military officials (Blake, 2010). Secret languages are not just communicating words. Signs and writing can be forms of disguise. Kahn (1966) provides two ways of hiding a written text. Steganography is the concealing of an already existing text by using invisible ink or rearranging letters. The other method is cryptography which makes any message illegible to others. In the following sections, more detail will be discussed regarding how secret languages work.

Although prior studies have primarily concentrated on the sociolinguistics aspect of secret languages, this paper investigates the phonological aspect. On that account, previous research studies used secret languages to confirm or argue for some rules (Bagemihl, 1995). In the same regard, Bagemihl (1995) noted that "Perhaps the best-known example of this type of study is Sherzer (1970), in which ludling data are used to argue for certain syllable structures and other aspects of the non-ludling phonological representations" (p. 4).

Youssi (1977) points out three common types of secret languages: (a) the insertion of the item that makes the meaning concealed (b) the transposition of syllable segments moving sounds or a cluster of sounds, or (c) applying the two types at once. As noted by Sarji (2022) on the common types of secret languages, (Laycock, 1972, as cited in Sarji, 2022); Bagemihl (1989); (Lefkowitz, 1991, as cited in Sarji, 2022), and Botne and Davis (2000) claim the same as Youssi regarding the categories of secret languages. Defining terms and unveiling the purpose of secret languages are essential for any individual interested in wordplay, language manipulation, and speech disguises. Yet, knowing different secret languages intrigues anyone interested in learning them. Thus, the next section provides a typology of secret languages from various languages.

2.2 Types of secret languages from different languages

As far as secret language types are concerned, it is of paramount importance to provide a typology of secret languages (henceforth, SLs). Storch (2017) draws our attention to various previous attempts on the subject of creating a typology of SLs:

> An early attempt to create a typology is Van Gennep's (1908) study, which bases a typology of secret languages on their uses and contexts. More recent typologies concentrate on phonological types of secret codes (Bagemihl 1995), their historical emergences in different functional contexts and modalities (Blake 2010), their Social semiotics and ways of use (Storch 2011), and the different manifestations of taboo through manipulation (Allan & Burridge 2006). (p. 287)

The body of literature regarding SLs is abundant with studies on this topic. The following table lists the major widespread types of SLs:

Table 1

Major types of secret languages worldwide

Secret language names	A short overview
1. **Argots**	It is used by a group of people who are imprisoned or isolated. This SL is created by those individuals using novel words slightly similar to jargon vocabulary.[1]
2. **Pig Latin**	This SL is used among kids for fun. It is mostly used in front of their parents or friends at school. The main purpose of this SL is to exclude outsiders or to make a group of students appear unique. [2]
3. **Back Slang**	This one is different from Pig Latin since criminal kids sometimes use it. They are pickpockets. Those criminals work in pairs to steal money, watches, or gold.[3]
4. **Rhyming Slang**	The users of this SL substitute rhyming phrases for words that rhyme with but have different meanings.[4]
5. **Verlan**	It is widely used by French people, especially the youth individuals in the suburbs of Paris. It has become popular among intellectuals and political figures to appear cool.[5]
6. **Pitjantjatjara (Shortway language)**	Older teenagers use this SL. It is utilized by males and females in the center of Australia. However, women tend to use it more in an exclusive context.[6]
7. **Nyōbō kotoba**	This SL is similar to the Shortway language, and women of the court used it in the Muromachi era in Japan.[7]

[1] Blake (2010, p. 196).
[2] Blake (2010, p. 228)
[3] Case (2002, p. 93)
[4] Blake (2010, p. 221)
[5] Sherzer (2002, p. 28)
[6] Bowern (2023, p. 695)
[7] Blake (2010, p. 232)

Table 1 shows the most widely used SLs worldwide and briefly describes them without detailing their functionality. The structure and functions of these SLs will be explained further in the strategies and formations of the secret Words section. Significantly, In a comprehensive literature review of SLs all over the world, Berjaoui identified the most common ones, as shown by the Table listed below, taken from Berjaoui (2010).

Table 2

Types of secret languages worldwide taken from Berjaoui (2010)

	Types of secret languages	The encoding strategy
1.	French	The French Verlan (syllable inversion): Paskal (pascal) skalpa (plénat, 1955:99).
2.	French Javanais	(insertion of "av"): gros (fat, feminine) gravos (Plénat, 1991, a: 100).
3.	Japanese	The Japanese Zûzya-go (inversion of syllables and lengthening of vowels): hara (stomach) raahaa (Tateishi, 1991: 52).
4.	Zairian	The Zairian Nè-Kóóndi (insertion of "ná" after the first syllable): néíkó (sun) néínákó (Demolin, 1991: 121).
5.	Gulf	Example (insertion of "aity" after the first consonant): waažī (coming) waityaažī (Searjant, 1948: 121).
6.	Qatify	Example (insertion of "ga" after the first vowel): dars (lesson) dagars (Abusahin, 1995: 7).
7.	American Pelf Latin	Example (insertion, after the first consonant of the first syllable, of the vowel "u", followed by "bidz", and a second copy of the same vowel): Su (shoe) Subidzu (Youssi, 1977: 137).
8.	Pig Latin	Example (preposing of the last vowel and consonant "in", and addition, in the final position of the word, of the fragment "ei"): Klin (clean) inklei (Mohanan, 1982: 87).

Note. Adapted from A Detailed Analysis of Moroccan Secret Languages (pp. 34-35), by N. Berjaoui, 2010, www.lincom-europa.com. Copyright 2010 by Lincom.

As far as secret languages in Moroccan Arabic are concerned in this paper, Berjaoui (2010) provides a well-organized overview of known types of Secret Languages in Morocco. The table below illustrates the most famous SLs from different regions in Morocco.

Table 3

Types of Moroccan Arabic secret languages, based on data from Berjaoui (2010)

Types of Moroccan Arabic Secret Languages	The encoding strategy
1. The Moroccan middle Atlas Tamazight Berber "Taɛəžmiyt"	Example (reformulation of the word in terms of the pattern "la-C1C2V1C2ən" after the deletion of all the vowels that it contains): aydi (dog) laydadən (Roux, 1936: 3).
2. The Southern Agadir Tachelhit Berber "Taqəžmiyt"	Example (inversion of C1 and C2): sin (two) nis (Habbaz, 1992: 19).
3. The Casablanca Jewish "lašuniyya"	Example (prefixation of "f" and addition of "i" after C1): ţlek (Let go!) fţilak (Chetrit, 1994: 520).
4. The Rabat "ġawṣ"	Example one: (insertion of "itn" after C1): waš (and what) witnaš (Roux, 1936: 3). Example two: (suffixation of "lub"): waṛđa (a rose) waṛđalub (Pianel, 1950: 460).
5. The Marrakech "ġawṣ"	Example (prefixation of "kau" and suffixation of "n"): ža (He came) kaužan (Youssi, 1977: 138).
6. The Safi "ġawṣ"	Example (formulation of the word in terms of the pattern "t-C1iC2i wiC2i"): tə-mši (You go) t-miši wiši. (Lapanne, 1956: 204).
7. The méknes-Fés "ġawṣ"	Example (inversion of most consonants in the word) kəṛMuşa (a fig) ṛəşMuka (Heath, 1987: 183).
8. The Tafilalet "ġuṣ"	Several families of the MA "ġuṣ" were studied elsewhere (Berjaoui, 2007, a-d; 2008, a-d; and 2009, a-b).

Note. Adapted from A Detailed Analysis of Moroccan Secret Languages (pp. 36-37), by N. Berjaoui, 2010, www.lincom-europa.com. Copyright 2010 by Lincom.

Having discussed the types of SLs acknowledged worldwide and in Arabic-speaking countries including Moroccan Arabic as mentioned in the body of literature, it is necessary to explain how these SLs work. Considerably and based on the data above, Bagemihl (1989, 1995) has observed various methods by which ludlings are formed in different languages. Hence, the next section provides a detailed overview of the strategies and formation of new secret words based on Bagemihl's observation.

2.3 The Strategies and Formation of Secret Words

Building on the previous discussion, it is important to understand that each type of SL has its unique strategy and word encoding; they sometimes employ the same techniques for encoding words. To put it differently, they differ in the elements they add to cipher word meanings but have the same function as Bagemihl (1995) stated below:

> The problem with such categories is that they obscure the formal similarities that are usually shared by these alternate linguistic systems regardless of their function - similarities that distinguish them as a group from other systems with identical functions but vastly different forms. (p. 2)

Examples of such phenomena will be seen throughout this section, where SLs use various techniques for encoding. In this section, the focus will be on SLs that use inserting (infixing/affixing), transposing, substituting (replacing), reversing, truncating, and reduplication strategies. Based on Bagemihl's typology (1989, 1995), he proposed a widely recognized approach as the leading classification system for play languages. He separated them into four main categories: infixing or affixing, templatic, replacement, and reversing language games. Additionally, within the reversing category, Bagemihl identifies specific types such as transposing, interchanging, exchanging, and total reversing word games. These play languages, often called ludlings or backwards languages in other references, are thoroughly categorized in Bagemihl's 1989 work (Storch, 2017). A well-organized example of such categories is provided by Ozburn and Schellenberg (2019) below (the boldfaced letters indicate the changing environment):

(1) **a. Infixing/affixing:**
A nonsense affix is added (can be multiple times) *-gV* affixed to each syllable:
bɨt͡ʃa 'yellow' → bɨ**gɨ**t͡ʃa**ga** (Tigrinya: Bagemihl 1989)

b. Templatic:
Segments transferred onto a template specific to game words Cs transferred to a C-ay-C-ə-C template:
gɯn 'but' → **g**ay**n**ə**n** (Amharic: McCarthy 1985)

c. Reversing:
The order of some subset of segments/syllables in a word is reversed. Complete reversal of segment order:
bayawak 'iguana' → kawayab (Tagalog: Gil 1996)

d. Replacing:
Segments of a certain type are replaced by another segment. All vowels replaced with [i]:
nuka 'name' → n**i**k**i** (Cuna: Sherzer 1982)

e. Transposing:
Syllables moved from one end of the word to the opposite end:
deftere 'book' → tere**def** (Fula)

f. Interchange:
Positions of two adjacent syllables at one edge of the word are exchanged.
i**kumi** 'ten' → i**miku**
(Chasu)

g. Exchange:
Constituents on both ends of a word (or in a phrase) are switched.
balay**nu**n 'domesticated' → **nu**lay**ba**n
(Hanunóo)

h. Total reversal:
Entire form (all segments) reversed.
bayawak 'iguana' → kawayab (Tagalog: Gil 1996)

(Ozburn & Schellenberg 2019, pp. 511-512)

There are other techniques for creating SLs in the literature, independent of Bagemihl's work. Truncation and reduplication are mentioned below since some SLs use them (Borowsky, 2010). The former is taken from (Borowsky, 2010), and the latter is taken from (Frazier & Kirchner, 2011), accordingly.

(2) **a. Truncation:**
e.g. Pitjantjatjara 'shortway language'
puku̲ ari-nyi → ___kularinyi 'happy-INCHO-PRES'

(Langlois, 2006, as cited in Borowsky, 2010, p. 368)

b. Reduplication with simplex-onset roots:

/ɐ -**k**ʾʷ**ul**ʾ/ → **k**ʾʷ-ɐ -**k**ʾʷ**ul**ʾ
REP-make made over and over

(Frazier & Kirchner, 2011, p. 10)

With these strategies in mind, let us now move to an in-depth discussion of how the major SLs in the literature work. Since there are many SLs in the literature, we will only focus on the main types based on the abovementioned strategies. In the following subsection, the data will be sourced from various references. However, our analysis will be based on our interpretation of the data. It is important to note that SLs that create entirely new words from existing ones, such as Argots, Rhyming slang, etc., are not our concern, since our emphasis is on those that modify word structure.

2.4 Formation of Secret Words[8]

2.4.1 Affixing: (prefixing and suffixing)

(3)

a. Lebanese Arabic [Pound 1963]
za- kitáːb 'book' → **zà**-kitáːb

b. Hausa [Alidou 1997]
da- tsíntsíyáa broom' → **dà**-tsín-**dà**-tsíi-**dà**-yáa

c. Malayalam [Mohanan 1982]
pa- kaɲcan 'a name' → **pa**-ka-**pa**-ɲcan

(Botne & Davis, 200, p. 321)

These language games (hereafter, LGs) use different CV sequences as prefixes, the underlined ones, to disguise word meanings. As shown above, the prefixes are (za-, da-, pa-). However, they differ when it comes to the strategy employed. For instance, the language in (3a) prefers to add the prefix at the beginning of words. The two other languages choose to add the prefix after every syllable.

(4)

d. Finnish [Pound 1963]
-kontti mika sinun nimesi on 'What is your name?' → mika-**kontti** sinun-**kontti** nimesi-**kontti** on-**kontti**

e. German [Pound 1963]
-bi knabe 'boy' → kná-**bi**-bé-**bi**

f. Ecuadorian Spanish [Pound 1963]
-pv la casa es bonita 'the house is pretty' → lá-**pa** cá-**pa**-sá-**pa** és-**pe** bó-**po**-ní-**pi**-tá-**pa**

(Botne & Davis, 2000, pp. 321-322)

The same outcome is observed for the prefixing phenomenon. Nonetheless, the sequence is longer in this context (4d). The Finnish language opts for adding -CV(CV) as a suffix at the end of every word. Moreover, the remaining two languages add the suffix after every syllable, except in (4f) where the suffix's vowel copies the preceding syllable's vowel.

2.4.2 Templatic

	Tashlhiyt		Tagnawt	Gloss
(5)				
a.	skr	→	**ajs**sakr**wakr**	do
b.	i-ksudˁ	→	**ajk**kasdˁ**wasdˁ**	he is afraid

[8] Note: the underlines indicate changes occurring at the level of segments, sequences, or syllables. The arrows represent the movement within words during the creation of a secret language or a language game.

c.	n-sˤbr	→	**ajs**sˤabr**wabr**	we wait, endure
d.	wwarg	→	**ajw**warg**warg**	dream
e.	mdˤuru	→	**ajm**madˤr**wadˤr**	feel better
f.	sawl	→	**ajs**sawl**wawl**	speak

(Ségéral & Lahrouchi, 2010, p. 3)

To better understand the data above, let us refer to what Ségéral and Lahrouchi (2010) observed while forming this SL. Below are the operations that the language applies to generate the secret words:

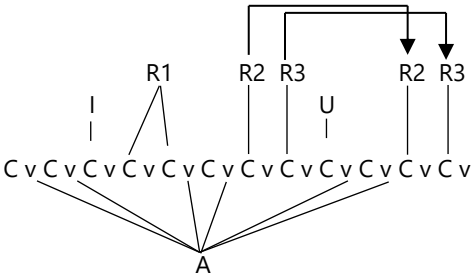
(6)

i. aj- is prefixed and -wa- inserted immediately to the right of R3;
ii. R1 is geminated;
iii. R2 and R3 are reduplicated to the right of the infixed -wa-;
iv. the form is uniformly vocalized in a.

(Ségéral & Lahrouchi, 2010, p. 3)

To enhance clarity, the prefix, gemination, and reduplication in (5) are underlined to facilitate understanding for the reader. Note that the vowels in (5b, e) changed to /a/, which occurs throughout the entire dataset (see Ségéral and Lahrouchi (2010) for further details about the vowel alternation). Interestingly, this SL follows a template provided by the same authors in their work. The template is as follows:

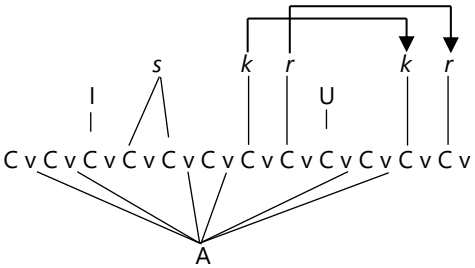
(7)



(Ségéral & Lahrouchi, 2010, p. 4)

Note that the vowels in the template are the only full ones in the Tashlhiyt Berber inventory system plus one central vowel [ə] (Ségéral & Lahrouchi, 2010). Let us use the word skr "do" in the proposed template to test it.

(8) Skr → ajssakrwakr



For the moment, we will accept this template as it is, since the main goal of this subsection is to examine language games or SLs that use templates for creating secret words. It has been observed from (8) that the template is filled with segments from the SL. We follow the operations the language applies as seen in (6).

2.4.3 Reversing

(9) **Back slang**

a.	fish	→	shif
b.	look	→	cool
c.	market	→	tekram

d. no good → on doog

e. yes → say

(Blake, 2010, p. 218)

The reversing strategy seems easy to anyone who wants to learn it. The reversing occurs between the first and the last consonants of the word. However, the entire last syllable in (9c) is reversed. This shows that the SL gives priority to reversing the edge consonants. Another language game called Verlan employs the same strategy but differs from the one regarding edge consonants. An example of this language game is provided below.

(10)

	Standard French Form		**Verlanized form**	**English Gloss**
fou	[fu]	→	[uf]	'crazy'
vu	[vy]	→	[yv]	'seen'
froid	[frwa]	→	[wafr]	'cold'
chatte	[šat(Ø)]	→	[tØša]	'cat (female)'
bouffon	[bufõ]	→	[fõbu]	'clown'

(Friesner, 2005, p. 3)

This language game reveals a different approach regarding the edge consonants. By comparing (9c) and (10e), we can observe that the former prioritizes the right and left edges consonants of the word when it comes to reversing technique. Nevertheless, the latter reverses the entire syllable (transposition)[9].

2.4.4 Replacing

(11)

a. ***m****arħaba* → ***j****arħaba bi-l-****m****īm* hello

b. ***k****īfik* → ***j****īfik bi-l-****k****āf* how are you? (FSG)

c. ***n****iħki* → ***j****iħki bi-n-****n****ūn* we speak

d. ***ʕ****asfūri* → ***j****asfūri bi-l-****ʕ****ēn* Bird language

e. ***ʃ****ifto* → ***j****ifto bi-f-****ʃ****īn* I saw him

(Wolfer, 2007, p. 34)

The rule in this SL is simple. We take the first consonant of each word and replace it with /j/. Then, we add the syllable *bil-* after the encoded word followed by how the letter is pronounced in that language. By way of illustration, let us take some English and Arabic alphabets as examples.

(12)

English	**Arabic**
[a] → /ay/	[ن] → /nun/
[b] → /bee/	[ك] → /kaf/
[c] → /see/	[م] → /mim/
[d] → /dee/	[ع] → /ʃin, ʕajn/

With these remarks in mind, let us take *marħaba* and encode it step by step for illustrative purposes.

[9] the reasons behind these changes are not relevant to this article and will therefore not be further addresses. For further details, see Blake (2010), and Friesner (2005).

(13)

1. ***m***ar~~h~~aba → _ar~~h~~aba → ***j***arhaba
2. ***j***ar~~h~~aba → ***j***ar~~h~~aba ***bi-l***
3. ***j***ar~~h~~aba ***bi-l*** → ***j***ar~~h~~aba ***bi***-***l***-***mim***

Remarkably, the consonant in the coda of the *bi-l* syllable assimilates with the first onset of the pronounced alphabet as seen in (11c, e). This shows that not only natural languages undergo phonological processes, but also SLs.

2.4.5 Transposing

(14)

	Base		Game	Gloss
a.	ismal	→	**mal**is	'hair'
b.	tʸalok	→	**lok**tʸa	'to try, to test'
c.	sulul	→	**lul**su	'mud'
d.	mukuy	→	**kuy**mu	'dove'

(Borowsky, 2010, p. 372)

This LG is similar to Verlan; they both follow the same strategy of transposing the last syllable to the place of the first one. Still, Borowsky (2010) classifies various patterns of three-syllable structures in her analysis. Besides, she concludes that monosyllabic words use a different strategy since they cannot transpose around themselves, they reverse the segments as seen below.

(15)

	Base		Game	Gloss
a.	uu**q**	→	**q**uu	'skirt'
b.	**m**aa**k**	→	**k**aa**m**	'fault, sin'
c.	**m**ee**š**	→	**š**ee**m**	'table'

(Borowsky, 2010, pp. 372-373)

Interestingly, from what we have seen so far, some SLs and LGs are easier to encode and learn than others.

2.4.6 Interchange

(16)

a.	Chasu:	i**kumi**	→	i**miku**	'ten'
b.	Luchasi:	yamu**kwenu**	→	yamu**nukwe**	no gloss provided
c.	Zande:	**mira**se	→	**rami**se	'tongue'
d.	Saramacca:	**baka**la	→	**kaba**la	'westerner'

(Borowsky & Avery, 2009, p. 170)

This LG employs a different rule compared to the transposing and reversing ones. The ultimate syllable interchanges with the penultimate. However, the first syllable in (16c, d) interchanges with the penultimate. There might be a rule that governs this interchange. Our concern is to discover how this GL works, and as mentioned earlier, the last syllable exchanges with the one before it, which are underlined[10].

[10] See (Borowsky & Avery, 2009).

2.4.7 Exchange

		NL[11]		Ludling	Gloss
(17)	a. Segment Exchange: Javanese				
		sa**t**us	→	**t**a**s**us	'one hundred'
	b. Sequence Exchange: Hanunoo				
		balay**nu**n	→	**nu**lay**ba**n	'domesticated'

(Bagemihl, 1989, p.482)

As the data above reveal, there are two types of exchange: Segment exchange and Sequence exchange—the segments [s] and [t] exchange without dragging any vowels with them. Nonetheless, the sequence CV in (17b) exchanges. We can deduce that this type of SL or LG consistently targets the word edges[12].

2.4.8 Total Reversal

(18)

	NL		Ludling	Gloss
a. Syllables				
Zande	(Evans-Pritchard 1954)			
	tikpo	→	kpo**ti**	'salt'
	vuse	→	se**vu**	'belly'
Tagalog	(Conklin 1956)			
	kapa**tid**	→	**tid**pa**ka**	'sibling'
	paŋit	→	ŋit**pa**	'ugly'
Saramaccan	(Price and Price 1976)			
	vali**si**	→	**si**li**va**	'valise'
	gadu	→	du**ga**	'god'
Chaga	(Raum 1937)			
	kapfo	→	pfo**ka**	'welcome'
	ihenda	→	**nda**hei	no gloss provided

(19)

b. Segments				
Javanese	(Sadtano 1971) [tj = č]			
	dolanan	→	nanalod	'play around'
	botjah	→	hatjob	'boy'
English	(Cowan, Leavitt, Massaro and Kent 1982; Cowan, Braine and Leavitt 1985; Cowan and Leavitt 1982)			
	gəraʒ	→	ʒarəg	'garage
	ðo	→	oð	'though'
Tagalog	(Conklin 1956)			
	salamat	→	tamalas	'thanks'
New Guinea Pidgin	(Aufinger 1948)			
	toktok	→	kotkot	'say'
	mumut	→	tumum	'opposum'

[11] Non-ludling form Bagemihl (1989).

[12] The motives for these changes are not the focus of this section since we exclusively discuss how these SLs and GLs work. Indeed, our analysis concentrates on how SLs in MA operate, which is the central theme of Chapter 3. For further details regarding the changes in (16), refer to Bagemihl (1989).

(Bagemihl, 1989, pp. 484-485)

The total reversal strategy's rules apply to syllables similarly to the interchange and exchange ones. We either take the first syllable and reverse it with the last one or vice versa. However, the total segment reversal works differently. You read the word backward. For instance, the word *ʔaħmd* 'Ahmed' is read as *dmħaʔ*.

2.4.9 Truncation

(20)

a. **ku**tjara	→	__ tjara	'two'
b. **ra**pita	→	__ pita	'rabbit'
c. **a**latjiri-nyi	→	__ latjirinyi	'behave like this-PRES'
d. **pu**kuḻa-ri-nyi	→	__ kuḻarinyi	'happy-INCHO-PRES'

(Langlois, 2006, p. 186)

The rule of this short-way language is to remove the first syllable of each word as shown in the data above. In other words, the left edge of the word is truncated to create a disguise.

2.4.10 Reduplication

(21)

	Natural Lg		**Play Lg 1**	**Play Lg 2**	
a.	s'ħäifu	→	s'ä**gä**ħi**gi**fu**gu**	s'ä**gä**ħi**gi**fu**gu**	'he wrote'
b.	bïč'a	→	bï**gï**č'a**ga**	bï**gï**č'a**ga**	'yellow'
c.	ʔintay	→	ʔi**gï**nta**ga**y	ʔi**gï**nï**gï**ta**ga**yï**gï**	'what'
d.	k'arma	→	k'a**ga**rma**ga**	k'a**ga**rï**gï**ma**ga**	'gnat'

(Bagemihl, 1988, as cited in Yu, 2007, p. 203)

This play language inserts gV after every vowel of the word. The reduplicated vowel takes the form of the radical vowel root that it copies. Many secret languages and language games in the literature use similar strategies of segment copying from the root.

2.5 Infixation in Moroccan Arabic

According to Boudlal (1995)Infixation in Moroccan Arabic (henceforth, MA) mainly derives deverbal nouns and forms abstract nouns. Since the infix in question regarding the secret language under the study is semantically null, the role and function of infixation in MA is not the concern of this article. First, infixation in MA has been widely researched, and the literature is comprehensive. As a result, further discussion might be unnecessary. Second, as we will see later, the infix being considered in this article is coined by a group of people in Kenitra. However, see Boudlal (2001) for further details concerning infixation in MA. The data to be presented below illustrate the use of infixation in MA:

(22)

a. **Derivation of Deverbal nouns (-i-, infix)**

	vb. root		***devb. Noun***	***gloss***
1.	Drb	→	Dr**i**b	'hitting'
2.	Žbd	→	Žb**i**d	'puling'

b. **Formation of Abstract Nouns (-gemination-, infix)**

	base		**noun of profession**		**abstract noun of profession**	**base gloss**
1.	fleH	→	fel**l**aH	→	tafel**l**aHt	'to plough'
2.	šfer	→	šef**f**ar	→	tašef**f**art	'to steal'

(Boudlal, 1995, pp. 24-28)

Mindful of this necessity, Noamane (2018) states that infixation has a significant role in forming causative verbs in MA. In the same line with Boudlal (1995), the medial gemination creates an infix. Therefore, providing concrete examples will support this observation. Consider the following data.

(23)

	Base form		**Causative Form**
a.	ktəb	'to write'	kət**t**əb
b.	ɦṛəb	'to run away'	ɦər**r**əb
c.	ʃṛəb	'to drink'	ʃər**r**əb

(Noamane, 2018, p. 221)

In the data above, [t] is lengthened and creates a geminate. Therefore, the medial geminate is regarded as an infix due to a certain phonological constraint[13]. Besides, gemination is not constantly triggered by lengthening. There are some cases where gemination is motivated by minimal word requirements in certain languages. Moroccan Arabic is one of them (see Rafi (2022) for details)[14].

2.6 infixation in Optimality theory

Kager (2001) draws our attention to Tagalog's infixation pattern within the Optimality theory (OT) framework. He employs the interaction of constraints to derive the infixed optimal output. To account for the optimal output, different constraints at play are needed. Consider the constraints below:

(24)

1. No-Coda

*C]σ ('Syllables are open.')

2. Align-um-L

Align the left edge of -um- with the left edge of the PrWd

(Kager, 2001, p. 121)

The core idea of the theory is that surface forms of a language are not the result of transformations involving phonological, morphological, and syntactic changes. Instead, they reflect the interaction of various constraints on surface well-formedness, which often have conflicting requirements. The optimal candidate is already determined in OT, and the constraints are ranked based on that harmonic output. The winning candidate is marked by the symbol (☞). The constraints that a certain candidate violates are shown with an asterisk (*). The latter is also used for other candidates depending on how many constraints they violate. A fatal violation is marked by an exclamation mark (!) given to candidates that violate a higher-ranked constraint. Losing candidates either violate many higher-ranked constraints or have fatal violations. A broken line indicates no interaction between constraints while a solid line shows interaction with a higher-ranked constraint dominating a lower one. If candidates are in a tie (they incur the same number of violations) indicated by an inverted pointing hand (☜), the winner is not decided. By way of illustration, the tableau to be presented below taken from Kager (2001) exemplifies the interaction of the constraints above to derive the optimal candidate.

(25)

Tagalog prefixal infixation (Kager, 2001, p. 123)

Input: {um, gradwet}	No-Coda	Align-um-L
a. **um**.grad.wet	***!	
b. g**um**.rad.wet	***!	g
c. ☞ gr**u.m**ad.wet	**	gr
d. gra.**um**.dwet	**	gra!
e. gra.d**um**.wet	**	gra!d
f. grad.w**u.m**et	**	gra!dw
g. grad.we.**um**t	**	gra!dwe
h. grad.we.t**um**	**	gra!dwet

[13] See Noamane (2018) for details.

[14] Rafi (2022) presents arguments for the motivation behind initial gemination in the Kenitra dialect.

The optimal candidate is (25c) since it incurs minimal violations of the higher-ranked constraint *No-Coda*. This means that Tagalog does not tolerate several consonants in the coda. The violations of the lower-ranked constraint *Align-um-L* are measured by the segments between the left word edge and the affix -um- (Kager, 2001)[15]. In fact, Tableau (25) demonstrates the basic assumption of how constraints interact to derive optimal outputs containing affixes. These constraints are fundamental since the specific ones related to infixation in secret languages will be presented throughout the analysis in this article.

2.7 Secret Languages and OT

Among the numerous studies conducted on Secret Languages (SLs) worldwide and in Moroccan MA, only a few have applied OT to the former. However, to the best of my knowledge, no one has analyzed SLs in MA using the OT framework. To lay the groundwork for the next section on the Secret Language under study within OT, it is necessary to provide recent optimality-theoretic analyses. Some of these analyses focus on language games such as verlan (Friesner, 2005), reversing and truncation (Borowsky, 2010), and the reversal game (Ozburn & Schellenberg, 2018). In this context, this subsection briefly discusses a similar case of the SL in this paper, which is a foreign secret language within the framework of constraint interaction.

(26) *Past/Perfective verbs in Takibakha Bunun – Regular type I*

	Base		**Affixed Form (PST/PFV)**	**Gloss**
a.	to'un	→	t-**in**-o'un	'be opened'
b.	mudan	→	m-**in**-udan	'left'
c.	musbai	→	m-**in**-usbai	'escaped'
d.	simul	→	s-**in**-imul	'borrowed'
e.	ma'un	→	m-**in**-a'un	'ate'

(Jiang, 2019, p. 20)

(27) **The proposed constraints (Jiang, 2019, p. 23)**

a. **NoCoda**
Syllables must be open.

b. **Onset**
Syllables must have onsets.

c. **Align ([in]$_{AF}$, L, STEM) (*Align-in*)**
The left edge of the affix -in- must coincide with the left edge of some stem.

The interaction between the constraints above is exemplified in the tableau below.

(28)

NoCoda, Onset >> Align-in, in Takibakha Bunun

Input: /in, ma'un/	NoCoda	Onset	A_{LIGN}-*in*
a. in-ma'un	**!	*	
b. ☞ m-in-a'un	*		m
c. ma'-in-un	*		ma'!

It is evident from the tableau above that this language does not accept codas. That is the reason why Nocoda is higher-ranked. A_{LIGN}-*in* is lower-ranked because this language inserts the infix causing misalignment within the stem. In actuality, whenever a language tolerates epenthesis between segments or syllables, the alignment constraint is violated. Also, syllables without onsets are not allowed in this language. Indeed, OT allows us to figure out what a language favors or does not favor based solely on the violated constraints. In contrast, the rules of previous approaches must be inviolable. Candidate (28b) emerges as a winner since it violates the higher-ranked constraint once, but it is similar to candidate (28c) regarding violating the higher-ranked constraint. In this case, the number of violations is decisive given that candidate (28c) violates A_{LIGN}-*in* twice. An explanation for A_{LIGN}-*in* is necessary to ensure its functioning is clearly understood. The affix <*in*> in candidate (28a) is aligned with the one in the input. Therefore, there is no violation as seen in the tableau. The rationale for having (m) in the second column under the lowest constraint

[15] See Kager (2001) for details regarding the gradient constraint.

is that Candidate (28b) violates this constraint since the phoneme /m/ is not aligned with The affix <*in*> in the input. The same holds for candidate (28c).

3. The Dummy Infixation -akun-

Before delving into the details of this phenomenon in this section, let us first provide a brief overview of the infixation in question. To begin with, the term dummy comes from any element that does not carry any semantic meaning. For instance, the dummy subject "it" in English only satisfies the grammatical requirement for having a subject in a sentence, which is obligatory (Van Gelderen, 2010). Moreover, it does not contribute to any meaning of the sentence. In our case, the dummy infixation (hereafter, DI) -**akun-** has the same function as the English subject "it", which is semantically null. Nonetheless, -akun- plays a vital role in disguising meaning. A more elaborate discussion of this phenomenon will be discussed in this section.

3.1 Data and Analysis

The secret language under investigation, known as *"hawsijja"* is spoken by a small group of people in Kenitra, Morocco[16]. Participants were given a handout containing various words, phrases, and sentences. They read the words and therefore translate them into the secret language. As for the uneducated participants, we read the words for them out loud, then they encode them to hawsijja. Interestingly, even though those participants cannot read the words, they encode them accurately. This is fascinating how the human mind works. This subsection has the following organization: We start by giving a descriptive generalization of the collected data. Next, we provide an optimality-theoretic analysis of the data showing constraints interaction. Finally, we conclude the paper. The data below show the pattern found in this SL.

(29)

	Kenitra Dialect (KD)		**Hawsijja**	**Gloss**
a.	bir	→	b**-akun-**ir	"well"
b.	bab	→	b**-akun-**ab	"door"
c.	ħiṭ	→	ħ**-akun-**it	"wall"
d.	χiṭ	→	χ**-akun-**it	"thread"
e.	nif	→	n**-akun-**if	"nose"
f.	ṣak	→	ṣ**-akun-**ak	"bag"
g.	taʒ	→	t**-akun-**aʒ	"crown"
h.	kis	→	k**-akun-**as	"bath loofah"
i.	bit	→	b**-akun-**it	"room"
j.	ḍaṛ	→	ḍ**-akun-**ar	"house"

As the data shown above, the DI consistently appears between the onset and the nucleus of the syllable (stem). One might ask: Is the vowel /a/, such as in *bab, ṣak, taʒ*, and *ḍaṛ* part of the root or the DI? To answer this question, let us consider these instances *bir, ħit, χit, nif,* and *kis*. Note that the DI is inserted directly after the first consonant of the root b**-akun-**ir, ħ**-akun-**it, χ**-akun-**it, n**-akun-**if, k**-akun-**is, and b**-akun-**it. Thus, the vowel /a/ after the first consonant is part of the DI. We have seen in the data above that the DI is added after the first consonant. Now, let us examine the behavior of the ID in the context of a cluster of two consonants in the onset position.

(30)

	KD		**Hawsijja**	**Gloss**
a.	ḍḥar	→	ḍḥ**-akun-**ar	"back"
b.	sdər	→	sd**-akun-**ər	"chest
c.	rjəl	→	rj**-akun-**əl	"foot"
d.	ktaf	→	kt**-akun-**af	"shoulders"
e.	snan	→	sn**-akun-**an	"teeth"
f.	rʒal	→	rʒ**-akun-**al	"men"
g.	klab	→	kl**-akun-**ab	"dogs"
h.	bɣəl	→	bɣ**-akun-**əl	"mule"
i.	ktab	→	kt**-akun-**ab	"book"
j.	ɣṛab	→	ɣṛ**-akun-**ab	"crow"

The data above exhibit a different pattern than the previous structure. In (29), the DI is inserted after the syllable's onset. However, in (30) the DI is added after the second consonant. It is an unexpected outcome since the DI should be epenthesized following the

[16] One of the participants expressed, "You took us back 20 years". I consider myself fortunate because I belong to that generation and still speak the same secret language.

first consonant. This means that the first consonant is either branched from something else rather than the onset of the syllable, in which the DI cannot be attached or the DI is added before the first vowel of the stem. Previous studies of Moroccan secret languages have not dealt with this phenomenon. Those studies have not fully explained why the ID is added after the second consonant. They have given just descriptions of what occurred in words. In this regard, OT provides an explanatory adequate account of why such epenthesis occurs in a constraint-based fashion. Since MA does not allow complex onset, the DI occurs after the second consonant since the first consonant is not part of the syllable. According to Boudlal (2006), complex onsets are prohibited in MA. Therefore, he claims that the first consonant in the CCVC structure is considered a minor syllable /C.CVC/. below is further data that demonstrates a different behavior of the DI.

(31)

	KD		**Hawsijja**	**Gloss**
a.	ka-j-jakul	→	ka-j-j**-akun-**akul	"he is eating"
b.	ka-j-tfarəʒ	→	ka-j-tf**-akun-**arəʒ	"he is watching"
c.	ka-t-χdəm	→	ka-t-χd**-akun-**əm	"she is working"
d.	ka-j-ṣəḷḷi	→	ka-j-ṣ-**akun-**əḷḷi	"he is praying"
e.	ka-j-ləʃbu	→	ka-j-l**-AKUN-**əʃbu	"they are playing"
f.	ka-j-dabzu	→	ka-j-d**-akun-**abzu	"they are fighting"
g.	ka-j-ṛəsmu	→	ka-j-ṛ**-akun-**əsmu	"they are drawing"
h.	ka-t-rṣəm	→	ka-t-rṣ**-akun-**əm	"she is drawing"
i.	ka-t-ɣsəl	→	ka-t-ɣs**-akun-**əl	"she is washing"
j.	ka-j-qṛaw	→	ka-j-qṛ**-akun-**aw	"they are reading"

The prefix {ka-} marks the imperfect in MA. Besides, the morpheme {j} marks both the third-person singular masculine and the second-person plural. Moreover, the morpheme {t} marks the feminine. Notice that the DI in this word is inserted after the first or second consonant of the stem and not next to the consonant in the prefix {ka-}. This indicates that the infix aims for the stem of the word. All participants follow the same pattern when it comes to words that have prefixes. We cannot find a word that is encoded as *k**-AKUN-**a-j-akul*. This is because the concealment of the word does not work in that way, or some higher-ranked constraints provide such an output. In the data above, the DI is inserted before the vowel of the stem in all the outputs and not after the stem's first or second consonant. Illustratively, if the DI is epenthesized after the first or second consonant of the stem, we should derive these forms as presented below.

(32)

a. ka-j-j**-akun-**akul → k**-akun-**a-j-jakul* or ka-j**-akun-**jakul*

b. ka-j-tf**-akun-**arəʒ → k**-akun-**a-j-tfarəʒ* or ka-j**-akun-**tfarəʒ* or ka-j-t**-akun-**farəʒ*

The DI fails to be inserted after the stem's first or second consonant. Therefore, it is safe to say that the DI is added before the vowel of the stem as shown above. Since the datasets in (29), (30), and (31) are attested in this regard, the following tableaux provide an optimality account for these outputs, respectively.

(33) *b**-akun-**ir* "well"

Input / b**-akun-**ir/	*VV
a. ☞ b**-akun-**ir	
b. bi**-akun-**r	*!

MA does not allow a cluster of two vowels. That is the reason *VV is higher-ranked. The optimal output is (33a) because it does not incur any violation. However, (33b) fatally violates a higher-ranked constraint.

(34) **Hiatus:** (*vv)

The placement of the DI is crucial in our analysis. We rely on a theoretical framework to support our claim that DI is inserted after the first vowel of the stem. In this case, OT is best suited for this task. The tableau to be presented below shows a potential optimal encoded candidate, which competes with the winner.

(35)

Input / b-**akun**-ir/	*VV
a. ☞ b-**akun**-ir	
b. bi-**akun**-r	*!
c. ☜ **akun**-bir	

Universally, all languages put some restrictions on word or syllable edges. MA forbids any word or syllable that starts with a vowel (onsetless syllable). Consequently, the constraint that bans such output is higher ranked.

(36) **Onset** (ONS): (Prince & Smolensky, 1993/2004):
Every syllable must have onsets

(37)

Input / b-**akun**-ir/	*VV	ONS
a. ☞ b-**akun**-ir		
b. bi-**akun**-r	*!	
c. **akun**-bir		*!

From the tableau above, we can conclude that MA disallows any output that starts with two vowels or an onsetless syllable. Nevertheless, a sub-optimal candidate satisfies these higher-ranked constraints, which might emerge as a harmonic output. Therefore, The tableau below represents a tie. In other words, two candidates surface as optimal.

(38)

Input / b-**akun**-ir/	*VV	ONS
a. ☞ b-**akun**-ir		
b. bi-**akun**-r	*!	
c. **akun**-bir		*!
d. ☜ bir-**akun**		

Although candidates (38b, c) are irrelevant since they are regarded as prefixes and suffixes, it is crucial to generate them. They reveal the active constraints in deriving the optimal candidate while in the encoding process. Another constraint that bans candidate (38d) is shown below.

(39) **Align-R**: (McCarthy & Prince, 1993a)

The right edge of a Grammatical Word coincides with the right edge of a syllable.

(40)

Input / b**-akun-**ir/	ONS	*VV	Align-R
a. ☞ b**-akun-**ir			
b. bi**-akun-**r		*!	
c. **akun-**bir	*!		
d. bir**-akun**			*!

As expected, (40a) emerges as the optimal candidate because it does not incur any violation of a higher-ranked constraint. Note that Align-R is always violated by the winner since the infix or any epenthetic segment causes misalignment. This constraint is lower-ranked and does not change the outcome. The current ranking that favors the optimal candidate is shown below; however, this ranking is not permanent.

(41) **ONS, VV*, Align-R**

Since the main purpose of this paper is to investigate the placement of the DI and the constraints governing this phenomenon, we will follow McCarthy and Prince's (1993b, p. 79) analysis regarding infixation in Tagalog. The inputs in the following tableaux will be separated into an affix and a root for better analysis. Consider the tableau below for an illustration.

(42) ḍḥ**-akun-**ar "back"

Input /akun, ḍḥar/	ONS	*VV	Align-R
a. ☞ ḍḥ**-akun-**ar			
b. ☜ ḍ**-akun-**ḥar			
c. **akun-**ḍḥar	*!		
d. ḍḥar**-akun-**			*!
e. ḍḥa**-akun-**r		*!	

Interestingly, tableaux (40) and (42) have the same outcome despite the division of the affix and the root in the input. MA disallows onsetless syllables; therefore, any candidate that starts with a vowel, which is the case of DI **-akun-** will be ruled out. The assumption behind the affix and root separation is that the phonology treats the DI as an epenthetic fragment. This ranking is not enough to yield the optimal candidate for the reason that it selects the wrong winner. We claim that the DI should be before the stem's first vowel and not after the first or the second consonant. The reason previous studies fail to account for such a candidate (42b) is that they analyze this SL through the rewrite rules approach. They merely describe what happens within words without taking into account a potential candidate as such. In this regard, two constraints are in conflict. The first CON favors the winner, which demands that the DI should be inserted directly before the stem's first vowel. The second CON militates against the harmonic candidate since it requires that segments should be adjacent.

(43)

a. **Affix to First Vowel** (Yu, 2007):
   Align (R, **akun**; L, First Root Vowel)
b. **Contiguity:** CONTIG-IO (Kager, 2001)

No medial epenthesis or deletion of segments (demands that input-output mappings involve contiguous substrings

(44)

Input /akun, ḍḥar/	ONS	*VV	Affix to First V	CONTIG-IO	Align-R
a. ☞ ḍḥ-**akun-**ar				*	
b. ḍ-**akun-**ḥar			*!	*	
c. **akun-**ḍḥar	*!				
d. ḍḥar-**akun-**			*!		*
e. ḍḥa-**akun-**r		*!	*	*	

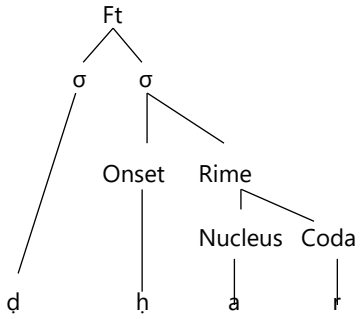
This ranking supports our claim. Affix to First V dominates CONTIG-IO because the former forces the DI to be added directly before the stem vowel, on the other hand, the latter demands that segments should be contiguous. The DI separates segments within the stem. In light of this, CONTIG-IO is violated at the expense of satisfying Affix to First V to provide us with the expected optimal candidate (44a). After identifying the ranking responsible for the DI pattern in this SL and demonstrating that OT analysis provides such proof, let us apply this ranking to all data. The tableau presented below includes inputs from data (29), (30), and (31) accordingly.

(45) The final attested constraint ranking for *hawsijja*: ONS, *VV, Affix to first V>>CONTIG-IO, Align-R

Input /akun, bir/	ONS	*VV	Affix to First V	CONTIG-IO	Align-R
a. ☞ b-**akun-**ir				*	
b. bi-**akun-**ir		*!		*	
c. **akun-**bir	*!		*		
d. bir-**akun**			*!		*
Input /akun, kajjakul/					
a. K-**akun-**ajjakul			*!	*	
b. ☞ Kajj-**akun-**akul				*	
c. Kaj-**akun-**jakul			*!	*	
d. **akun-**kajjakul	*!				
e. kajjakul-**akun**			*!		*
Input /akun, ḍḥar/					
a. ☞ ḍḥ-**akun-**ar				*	
b. ḍ-**akun-**ḥar			*!	*	
c. **akun-**ḍḥar	*!		*		
d. ḍḥar-**akun-**			*!		*
e. ḍḥa-**akun-**r		*!	*	*	

The summary of constraint ranking in tableaux (45) above provides us with the anticipated attested optimal candidates in this SL *hawsijja*. The DI is consistently inserted before the first vowel of the stem. The number of consonants before the stem vowel does not matter as long as the constraint enforces the DI to be inserted before the stem's first vowel. As we have seen in this dialect, although the prefixes contain several consonants, the DI targets the first vowel of the stem. Another piece of evidence that supports our claim is provided by Boudlal (2001). The insertion of DI cannot be attached directly after the first consonant when there is a consonant cluster in the onset because the first consonant is considered a minor syllable; therefore, it is not part of the syllable. Remarkably, the example of *hawsijja* confirms this claim since the DI targets the root of a major syllable and not something outside the syllable boundary. The representation below shows the branching of the minor syllable.

(46) ḍḥar 'back'



Since the first consonant is regarded as a minor syllable and there is no full vowel, the DI cannot be attached to a single consonant. Some unattested outputs cannot merge as optimal as a consequence of either violating a higher-ranked constraint or are irrelevant in this paper. For instance, ḍḥ**-ak-**ar**-un** might emerge as a harmonic candidate. However, it is banned by the crossing constraint, which is for a different type of secret language. Thus, any similar generated output will be irrelevant because of unattested candidates in *hawsijja*.

4. Conclusion

This paper has presented An Optimality-Theoretic Analysis of -akun- Dummy Infixation. The first and second sections clarified the terms used for language disguise, provided a historical background on secret languages, and presented a typology of different secret languages. Major types of secret languages worldwide and in Arabic-speaking countries were also discussed. The strategies for forming secret words were illustrated in detail as well. We showed that in Moroccan Arabic, infixation serves different purposes when it comes to deriving words. Nevertheless, the infix in question (dummy infix) is semantically null and does not serve any purpose independently. We started the analysis by outlining OT as the theoretical framework, demonstrating how constraints interact in terms of infixation. The third section introduced the study and the collected data providing a descriptive overview of the data and presenting patterns of the dummy infix. Weaknesses of previous studies were identified by accurately locating the placement of the dummy infix. Comparative analysis between attested and slightly different unattested forms helped to determine constraints that differentiate candidates. The study concluded by asserting that the insertion of DI occurred consistently before the stem's first vowel. We argued that the dummy infix cannot be attached to a single consonant without a vowel, as seen in cases of minor syllables. Additional research is still needed regarding other secret languages, particularly when considering various strategies and constraints that come into play.

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