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## **A Morphological Doubling Approach to Full Reduplication in Persian**

### **Abstract**

The present study focuses on three types of full reduplication in Persian: pure, medial, and final full reduplication. It explores the syntactic and semantic properties of the above processes within the framework of Morphological Doubling Theory (MDT) (Inkelas & Zoll 2005). The question addressed here is: do the existing patterns of Persian full reduplication distinguish between phonological copying and morphological doubling, and if so, is the MDT approach to reduplication adequate in accommodating the data? The answer, as revealed by the study, is that the phenomena are clearly morphological in nature, and MDT accommodates them as long as the semantics of constructions is concerned. Among the most important findings of this study, the following are worth mentioning: patterns of Persian full reduplication are not limited to the morpheme or word level but, rather, they cover a range of linguistic expressions from a single word to an entire syntactic construction; the semantic feature bundle of the output of Persian full reduplication may vary on a relative continuum ranging from iconic to totally idiomatic/metaphorical meanings and, in some cases, it is affected by contextual parameters; and finally, patterns of Persian full reduplication are sometimes of stylistic significance and are subject to certain register restrictions.

### **1. Introduction**

Reduplication is normally thought of as a morphological word-formation process in which all or some parts of a word are doubled (Inkelas 2006: 417). The label “reduplication” seems to be inappropriate from both descriptive and classificatory points of view. Moravcsik (1978: 300) has pointed out:

The terms ‘reduplication’ and ‘reduplicative’ construction are of course infelicitous, since they make vague reference to there being only two copies of the same thing in the construction in question.

In line with Moravcsik, based on results from linguistic intuition tests, Tkaczyk (2005) coined the more neutral term “cloning” and suggested that a linguistic item can “clone” itself or “can be cloned”. However, from a terminological point of view, other specific terms such as duplication, doubling, and repetition which have alternatively been used to denote the process in question are either too general or represent a different reproducing system in language (Tkaczyk 2005).

Generally speaking, the process of reduplication is divided into two main categories: total and partial. Total or full reduplication doubles the entire word or the stem (Inkelas 2006: 417) as in Indonesian Malay verb inflection (e.g., *lalat* ‘fly’, *lalatlalat* ‘flies’ (Jensen 1990: 69)). Partial reduplication, on the other hand, doubles some phonologically characterized subpart of the word or the stem as in the noun pluralization process in Ilocano, a language of the Philippines (e.g., *tálon* ‘field’, *taltálon* ‘fields’ (Jensen 1990: 70)).

The present study deals with patterns of full reduplication in Persian within two distinct subcategories: pure full reduplication and superadded full reduplication (as classified by Shaghghi 2000). The study addresses the following questions: do the existing patterns of Persian full reduplication distinguish between phonological copying and morphological doubling, and if so, does the Morphological Doubling Theory (MDT) approach to reduplication, as proposed by Inkelas and Zoll (2005), suffice to accommodate the data?

## 2. Review of literature

The mechanism of reduplication and the manner in which copies can differ from each other have been of fundamental concern in theoretical and descriptive linguistics over the past twenty-five years (Inkelas & Zoll 2005: 2). There have been two general approaches to reduplication in the existing literature: phonological copying and morpho-semantic (MS) feature duplication. Phonological copying is essentially a phonological process that duplicates features, segments, or metrical constituents, while under MS feature duplication, two identical sets of abstract syntactic/semantic features are to be accounted for (Inkelas & Zoll 2005: 2). The conception that reduplication must have something to do with phonology seems to go back to Bloomfield’s (1933) analysis of reduplication in Tagalog (Singh

2005: 278), while the morpho-semantic feature duplication may be traced back to the proposal made by Singh (1982: 345–351) according to which reduplication is a construction that has two semantically identical daughters whose phonological representations need not be identical and one of which may be truncated (see also Singh 2005: 272; Inkelas 2008: 353).

Despite the existence of these two different mechanisms for duplication, no attention has been given in the reduplication literature to arguing for one over the other (Inkelas & Zoll 2005: 3). Under phonological copying approaches (e.g., Marantz 1982; McCarthy & Prince 1993/2001), all reduplications, whether partial or total, are the affixation of a phonologically skeletal morpheme. In other words, the reduplicant is supposed to be an affix onto which features or segments of the base are copied. In contrast, under MDT, which is the typical representative of MS feature duplication approach, reduplication involves semantic rather than phonological identity and as such, this analytical approach allows the morphologists to account for several more patterns of reduplication.

Nevertheless, with reference to the Persian reduplication and in spite of the fact that it is a quite productive and frequently occurring word-formation process, few linguistic analyses have been reported until recent years. Shaghghi (2000, 2002) was the first to examine the issue. She developed a classification of different types of Persian reduplication based on the data gathered from both written and colloquial spoken Persian and proposed a general rule for each reduplication category (Shaghghi 2000: 519–533). Her work informed the present study though it has not been based upon any theoretical frameworks.

Ghaniabadi (2008) uses Optimality Theory to analyze the process of echo-reduplication in Persian. Echo-reduplication is a morphological process in which a base word is duplicated and a fixed element is specified in the repeated element such that the presence of the fixed part brings about a minimal non-identity between the base and the reduplicant (Ghaniabadi 2008: 57). In his study, Ghaniabadi accounts for a more frequent pattern of Persian echo-reduplication where the two segments /m/ and /p/ can overwrite the position of  $C_2$  in the pattern  $(C_1)VX\sim C_2VX$ :

- (1) a. *mive~pive* ‘fruit and so on’  
 b. *ketab~metab* ‘book and the stuff’

In another work, Ghaniabadi et al. (2006) take three distinct patterns of reduplication in Persian and argue that together they can provide strong support for MDT. The patterns consist of echo-reduplication, intensive reduplication, and indifference reduplication, the latter being previously analyzed in depth by Sadat-Tehrani (2003):

(2) a. Intensive reduplication

*sefid* ‘white’ → *sefid-e sefid* ‘completely/pure white’

b. Indifference reduplication

Speaker 1:

*be-hešun næ-dad pul-o*  
 to-them NEG-gave.3SG money-ACC  
 ‘S/he didn’t give them the money.’

Speaker 2:

*næ-dad pul-o ke næ-dad*  
 NEG-gave.3SG money-ACC that NEG-gave.3SG  
 ‘I don’t care that s/he didn’t give them the money.’

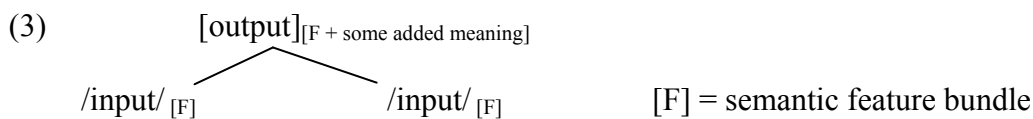
Apart from the adopted theoretical framework, MDT, the present work resembles the work by Ghaniabadi et al. (2006) in two ways: 1) both put emphasis on daughters’ semantic identity instead of phonological identity, and 2) both have adopted an analytical approach to morphological reduplication which does not confine itself to the word level but, rather, goes beyond to cover some more complex linguistic forms.

### 3. Theoretical background: MDT

Inkelas and Zoll (2005) argue that the deriving force in reduplication is identity at the morpho-semantic, not the phonological, level and present a new model that derives a broader range of reduplication patterns. While other theories of reduplication have focused on the duplication mechanism of phonological copying, the central thesis of the alternative MDT is that both the phonological and morpho-semantic mechanisms are needed and that their empirical domains of application are nearly complementary

(Inkelas & Zoll 2005: 2). The essential claim of MDT is that reduplication results when the morphology calls twice for a constituent of a given semantic description, with possible phonological modification of either or both the two constituents (Inkelas & Zoll 2005: 6).

MDT assumes the basic structure in pattern (3) below for morphological reduplication. A reduplication construction, as given below, has two daughters that are semantically identical, i.e., they share the same semantic features (Inkelas & Zoll 2005: 7).



By the two semantically identical sisters, MDT makes a prediction which sets it apart from all phonological copying theories: some kinds of deviation, whether morphotactic or phonological, between the two copies are expected to be possible (Inkelas & Zoll 2005: 7). Inkelas and Zoll support their thesis by providing a large quantity of evidence from more than one hundred different languages. They have referred to some 120 languages worldwide (see Inkelas & Zoll 2005: xiii–xxi) and revealed some so-called missing data that supported their hypothesis: reduplication does not necessarily involve phonological identity.

The primary motivation for MDT comes from the cases in which phonological copying cannot explain different morphotactics of the two copies or their complexity. The question is whether or not there is still a role for phonological copying. Inkelas and Zoll do not claim that morpho-semantic feature duplication can replace phonological copying altogether, but that the scope of phonological copying is limited to a narrow set of contexts (Inkelas & Zoll 2005: 20). They have mentioned four criteria for classifying a given duplication phenomenon as morphological, in which MS feature doubling is the correct analysis, or as phonological, in which phonological copying is called for (Inkelas & Zoll 2005: 22, 197; see also Inkelas 2008).

The first criterion is that phonological copying serves a phonological purpose, while morphological reduplication serves a morphological purpose, either by being a word-formation process itself or by enabling another word-formation process to take place. The second criterion is

proximity. Phonological duplication is proximal, that is, it targets the closest eligible element,<sup>1</sup> while this is not necessarily true of morphological reduplication. The third criterion is that the unit of analysis in phonological copying approaches is the phonological segment, while in morphological reduplication methodology, it is to be the morphological constituent. Finally, the last criterion is that, unlike in phonological copying approaches which are motivated by phonological identity, in morphological reduplication approach, the origin of identity is the morphological (semantic) component of the linguistic item.

**Table 1.** Phonological copying vs. morphological reduplication

	<b>Phonological copying</b>	<b>Morphological reduplication</b>
1	Serves a phonological purpose.	Serves a morphological purpose.
2	Is phonologically proximal.	Is not necessarily phonologically proximal.
3	Involves single phonological segments.	Involves morphological constituents.
4	Is motivated by phonological identity.	Is motivated by semantic identity.

#### **4. Patterns of full reduplication in Persian**

Reduplication is a very productive word-formation process in Persian. It consists of a variety of different patterns. It usually adds such concepts as emphasis, severity, addition, continuity, succession, density, and semantic extension to the base. Further it may change the grammatical category of the input (Shaghghi 2000: 525) as well. Persian full reduplication has already been classified into two main groups: pure full reduplication and superadded full reduplication (Shaghghi 2000: 525–526).

##### **4.1 Pure full reduplication**

Pure full reduplication is traditionally considered as the unmarked reduplication pattern which entails the total phonological identity of the

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<sup>1</sup> Yu (2005) argues against the claim that phonological copying, which he labels as compensatory reduplication, is all the time proximal.

two daughters. What is interesting about Persian pure full reduplication is that it is not limited to the morpheme level but, rather, covers a full range of linguistic elements from a single word (patterns 4a, 5a, 6a, and 7a below) to an entire syntactic construction (such as a phrase<sup>2</sup> or even a complete sentence; see patterns 8a, 9a, and 10a below). Therefore, the mainstream phonological copying approach may not be an appropriate tool for analyzing Persian pure full reduplication patterns since, as discussed earlier (see the third criterion mentioned above), phonological approaches are applicable only to cases where single phonological segments are involved.

An important property of Persian pure full reduplication (also observed in other Persian reduplication patterns) is that the meaning of the output is not always iconic so that it can be derived from the meanings of the inputs involved. Rather, it is in many cases idiomatic and/or metaphorical. That is why Ghaniabadi et al. (2006) have applied Jackendoff's (1997, 2002) view of lexical entries to reduplication process in Persian where, in many cases, the meaning of the output is not compositional.<sup>3</sup> This property provides a further support for MDT which adopts the view that the semantics of reduplication output varies from iconic to the potentially idiomatic meanings (Inkelas & Zoll 2005: 13).

According to the extracts taken from the existing Persian morphological works (e.g., Kalbasi 1992; Shaghghi 2000), patterns of pure full reduplication in terms of MDT constructional schemas in Persian are presented below.

$$(4) \quad a. \quad V + V \rightarrow N$$

$$\begin{array}{c} [N]_{[F + \text{repetition}]} \\ \swarrow \quad \searrow \\ /N/_{[F]} \quad \quad /N/_{[F]} \end{array}$$

Examples:

*bezæn~bezæn* 'hit' + 'hit' = 'act of hitting repeatedly', *bepær~bepær* 'jump' + 'jump' = 'act of jumping repeatedly', *beškæn~beškæn* 'break' + 'break' = 'breaking things one after another', *boxor~boxor* 'eat' + 'eat' = 'eat too much', *begir~begir* 'arrest' + 'arrest' = 'act of arresting people one after another', *bodow~bodow* 'run' + 'run' = 'act of

<sup>2</sup> For further information about phrasal reduplication, see Cole (1994).

<sup>3</sup> Jackendoff proposes that idioms, like words, should be treated as lexical entries. Idioms may involve more than a word and have non-compositional semantic functions.

running’, *bekoš~bekoš* ‘kill’ + ‘kill’ = ‘killing a large number of people or animals one after another’

Sentence example:

- b. *æli væ hæscæn yek sa'æt bezæn~bezæn kærdænd*  
 Ali and Hassan an hour hit-hit do.PST.3PL  
 ‘Ali and Hassan were hitting each other for an hour (a long time).’

The inputs of this pattern are limited to the imperative and singular forms of the verb.

- (5) a. N/ADJ + N/ADJ → ADJ [ADJ] [F + having several Xs / having several X parts]
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Examples:

*tekke~tekke* ‘piece’ + ‘piece’ = ‘cut into pieces’, *rah~rah* ‘stripe’ + ‘stripe’ = ‘striped’, *xal~xal* ‘spot’ + ‘spot’ = ‘spotted’, *surax~surax* ‘hole’ + ‘hole’ = ‘having several holes’, *pare~pare* ‘torn’ + ‘torn’ = ‘torn into pieces’, ‘scrappy’, *pær~pær* ‘feather’ + ‘feather’ = (of a flower) ‘striped of its petals’; (fig.) ‘destroyed in its prime’, ‘ravaged’

- b. *surax* + *surax* → *surax~surax*  
 ‘hole’ + ‘hole’ → ‘having several holes’

*diver-e surax~surax* ‘the wall with several holes in it’

- c. *pare* + *pare* → *pareh~pareh*  
 ‘torn’ + ‘torn’ → ‘torn into pieces’, ‘scrappy’

*ketab-e pare~pare* ‘a severely damaged book’

A remarkable characteristic of this pattern is that the semantics of the output may change from an absolutely iconic to a quite metaphorical or figurative meaning depending on the context in which it is used. In other words, the same output may have two (or potentially more) different meanings which are determined by contextual constraints. For example, when somebody says *qælbæm pare~pare šode* ‘my heart has got torn’, s/he may actually mean the metaphorical meaning ‘I feel strong sympathy with someone’.



- (6) a.  $N/ADJ/ADV + N/ADJ/ADV \rightarrow ADV$  [ADV] [in a state of F]  
 $/N/ADJ/ADV/_{[F]}$  /N/ADJ/ADV/\_{[F]}

Examples:

*zærre~zærre* ‘piece’ + ‘piece’ = ‘little by little’, ‘gradually’, *aheste~aheste* ‘slow’ + ‘slow’ = ‘slowly’, *larzan~larzan* ‘trembling’ + ‘trembling’ = ‘in a trembling state’, *javide~javide* ‘chewed’ + ‘chewed’ = ‘in a state of chewing slowly’, *kæm~kæm* ‘little’ + ‘little’ = ‘little by little’, *næm~næm* ‘moist’ + ‘moist’ = (of rain) ‘in very fine drops’; (fig. of an act) ‘little by little’, *zar~zar* ‘bitter’ + ‘bitter’ = (of crying) ‘bitterly’, ‘mournfully’, *fowj~fowj* ‘group’ + ‘group’ = ‘in groups’, *goruh~goruh* ‘group’ + ‘group’ = ‘in large groups’

Sentence examples:

- b. *æmir zærre~zærre puldar šod*  
 Amir little-little rich become.PST.3SG  
 ‘Amir gradually became rich.’
- c. *pirmærd larzan~larzan æz kenare ma gozæšt*  
 old.man trembling-trembling by us pass.PST.3SG  
 ‘The old man passed us in a trembling state.’

- (7) a.  $I + I \rightarrow N$  [N] [F + repetition] I = interjection  
 $/I/_{[F]}$  /I/\_{[F]}

Examples:

*vay~vay*, *hay~hay* ‘sound of loud crying’ + ‘sound of loud crying’ = ‘weeping’, *bæh~bæh* ‘interjection of exclamation for praising’ + ‘interjection of exclamation for praising’ = ‘act of saying bravo’, *ax~ax* ‘ow’ + ‘ow’ = ‘ouch’, *čæh~čæh* ‘sound of bird’s singing’ + ‘sound of bird’s singing’ = (of a bird) ‘warbling’, ‘twittering’

- b. *vay + vay* → *vay~vay*  
 ‘ah’ + ‘ah’ → ‘alas’, ‘repeated woes’

*vay~vay-e æzadaran* ‘the mowing of a family or a group of people who has lost somebody’

- (8) a.  $VP + VP \rightarrow ADV$  [ADV] [in a state of F]  
 $/VP/_{[F]}$  /VP/\_{[F]}

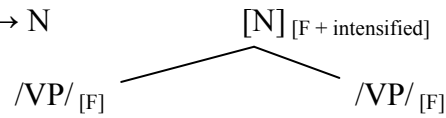
Example:

*paværčîn~paværčîn* ‘step on (your) foot’ + ‘step on (your) foot’ → ‘(be) on (one’s) tip-toe’

Sentence example:

- b. *dozd paværčîn~paværčîn miræft*  
 thief on.(his).tip-toe move.PST.PROG.3SG  
 ‘The thief tiptoed away.’

(9) a. VP + VP → N



Example:

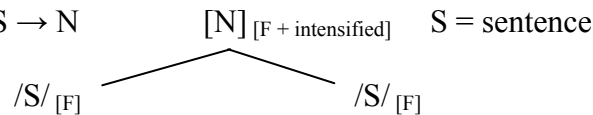
*če konæm~če konæm* ‘what shall I do’ + ‘what shall I do’ → ‘state of finding no way out of a problem’

Sentence example:

- b. *væq’ææn be če konæm če konæm oftadæm*  
 really into what do.PRS.1SG what do.PRS.1SG get.PRS.PRF.1SG  
 ‘I’ve really got into the problem of what to do.’, ‘I really don’t know what to do.’

Since in Persian, as a pro-drop language, it is possible to omit the subject (whether a noun or a pronoun), a verb phrase can also have the function of a full sentence and as such, the sample phrase *če konæm* ‘what shall I do’ may also be considered as the shortened form of the full sentence *Mæn če konæm?* ‘What shall I do?’. Therefore, the next pattern (10a) referring to Persian sentence reduplication seems to be similar to the above examples. One characteristic of the above example (9b) is that the interrogative mood of the input VP has been totally lost in the reduplicated word included in the sample sentence.

(10) a. S + S → N



Sentence example:

- b. *mæn nemiyam mæn nemiyam-et ro bezar kenar*  
 I NEG.come.1SG I NEG.come.1SG-POSS.2SG ACC put aside  
 ‘Don’t insist on not coming.’

An important characteristic of patterns 8a, 9a, and 10a is that they all represent a phenomenon whereby linguistic elements of higher ranks (larger units) inputted to the reduplication process are rank-shifted in the output so that they function as elements of lower ranks (such smaller units as single nouns, adverbials, etc.). In other words, these complex reduplicated expressions play the syntactic roles which are normally expected of smaller linguistic elements. In 10b above, as an instance, the sentence *Mæn nemiyam* ‘I’m not going to come’ has undergone a full reduplication process resulting in the form *Mæn nemiyam~mæn nemiyam* which has been rank-shifted to function as a nominal element carrying the bound possessive morpheme *-et* ‘your’ and the free accusative case marker *-ro*.

## 4.2 Superadded full reduplication

Another group of Persian full reduplication involves the addition of some free or bound grammatical morphemes (whether derivational morphemes or clitics) to the base elements. In most cases, the output of such a reduplication process has a quite different semantics; the resulting meaning is less compositional (iconic) and more idiomatic or metaphorical. The patterns are divided into two subcategories: medial full reduplication and final full reduplication. If the superadded morpheme is located between the base and the reduplicant, the process involved is called medial full reduplication. However, when the reduplicant appears right after the base element and the output ends in a derivational morpheme, the process is called final full reduplication (Shaghghi 2000: 527).

### 4.2.1 Medial full reduplication

Medial full reduplication involves locating a free or a bound morpheme between the two daughter elements. In terms of the criterion of proximity, medial full reduplication may appropriately be subject to MDT methodology since the two sisters are not proximally adjacent. As discussed above, Ghaniabadi et al. (2006) have already introduced two patterns of medial full reduplication in Persian, namely intensive

reduplication and indifference reduplication in support of MDT.<sup>4</sup> However, some patterns of this subcategory may have specific semantic implications for the whole model. We observed earlier in this paper that the output semantics of different Persian reduplication patterns may move on a relative continuum ranging from totally iconic to completely metaphorical meanings. Nevertheless, there may be another possibility. In some Persian medial full reduplication patterns (such as patterns 14a and 16a below), the output is not semantically related to the input semantic feature bundle and hence it may be regarded as an exception to the MDT model. It will, therefore, be essential to modify the whole model, at least in its semantic component, to make it capable of handling structures such as the following.

$$(11) \text{ a. } N + P \text{ } be + N \rightarrow \text{ADV}^5$$

$$\begin{array}{ccc} & [\text{ADV}]_{[\text{F after F / from F to F / F to F / F + succession}]} & \\ & \swarrow \quad \searrow & \\ /N/_{[\text{F}]} & & be + /N/_{[\text{F}]} \end{array}$$

Examples:

*šæhr~be~šæhr* ‘city after city’, *ruz~be~ruz* ‘day after day’, *sal~be~sal* ‘year after year’, *čehre~be~čehre* ‘face to face’, *sine~be~sine* ‘breast to breast’, ‘from one generation to

<sup>4</sup> These two patterns are not analyzed in the present paper. However, in this footnote, we bring the constructional schemas of such patterns only (as extracted from Ghaniabadi et al. 2006: 9, 14). The related examples have already been presented in the previous sections of the paper (see patterns 2a–b above). In the pattern B below, TP indicates complete clauses:

A) Intensive Echo-RED:  $[\text{ADJ}]_{[\text{F} + \text{intensified}]}$

$$\begin{array}{ccc} & [\text{ADJ}]_{[\text{F} + \text{intensified}]} & \\ & \swarrow \quad \searrow & \\ [\text{ADJ}]_{[\text{F}]} + \text{Ezafè} & & [\text{ADJ}]_{[\text{F}]} \end{array}$$

B) Indifference RED:  $[\text{TP.2}]_{[\text{Indifference towards proposition expressed in TP.1}]}$

$$\begin{array}{ccc} & [\text{TP.2}]_{[\text{Indifference towards proposition expressed in TP.1}]} & \\ & \swarrow \quad \searrow & \\ [\text{TP1}] \dots [\text{V}]_{[\text{F}]} \dots + ke & & [\text{V}]_{[\text{F}]} \end{array}$$

<sup>5</sup> In order to add the intervening element to one of the two daughters, we need some theoretical explanation. In patterns 11a–15a, the linking element is a preposition and it can be added to the reduplicant. If it were added to the first sister, it could no longer be considered as a preposition but, rather, it would function as a postposition. However, as for the pattern 16a, the suffix *-a* is added to the first sister due to the fact that it phonologically contributes to the syllabic structure of the base element (e.g., in the word *gerd~a~gerd* /ger.da-gerd/ ‘all around’).

another', *šane~be~šane* 'shoulder to shoulder', *dæst~be~dæst* 'hand in hand', *do~be~do* 'two for two', *dær~be~dær* 'door to door', 'from this door for that'; (fig.) 'miserable', *xane~be~xane* 'house after house', *dæm~be~dæm* 'every moment', 'incessantly', *læb~be~læb* 'edge to edge', 'full to the brim'

- b. *šæhr + be + šæhr* → *šæhr~be~šæhr*  
 'city' + 'to' + 'city' → 'city after city'

Sentence example:

- c. *polis šæhr~be~šæhr be donbal-e qatel bud*  
 police city-to-city in search-of murderer be.PST.3SG  
 'The police was in search of the murderer city after city.'

- (12) a. N + P *ta* + N → ADV [ADV] [from F to F / sth other than F]

Examples:

*sær~ta~sær* 'head' + 'to' + 'head' = 'all over', 'from beginning to end', *guš~ta~guš* 'ear', 'corner' + 'to' + 'ear', 'corner' = 'all around', *dowr~ta~dowr* 'round' + 'to' + 'round' = 'all around', *bix~ta~bix* 'bottom' + 'to' + 'bottom' = (of a place) 'from beginning to end'

Sentence examples:

- b. *sær~ta~sær-e baq ra bærġ sefid kærde bud*  
 head-to-head-EZ<sup>6</sup> garden ACC snow white do.PTCP be.PST.3SG  
 'The garden was covered by snow entirely.'
- c. *tuy-e værzešgah guš~ta~guš tæmašagæra nešæste budænd*  
 in stadium ear-to-ear spectators sit.PTCP be.PST.3PL  
 'All around the stadium, the spectators had sat.'

<sup>6</sup> One of the peculiar features of Persian syntax which has a significant role in the phrase structure of this language is what has been traditionally called the "Ezafe Construction". The term *Ezafe* literally means 'addition' and refers to the unstressed morpheme *-e* (*-ye* after vowels) which appears between the head of a phrase and certain modifiers and complements following the head (Moinzadeh 2006: 45). According to Kahnemuyipour (2000: 173–174), *Ezafe* morpheme mostly appears on i) a noun before another noun (attributive), ii) a noun before an adjective, iii) a noun before a possessor (noun or pronoun), iv) an adjective before another adjective, v) some prepositions before nouns, vi) a pronoun before an adjective, vii) first names before last names, and viii) a combination of the above.

In this pattern again, the output semantics ranges from iconicity to idiomaticity. It seems that we deal with the phenomenon of polysemy and are required to be familiar with all the relevant meanings to recognize the iconic from idiomatic meanings. If we consider the primary meaning of the base, we will expect idiomaticity in the output. In *guš~ta~guš*, for instance, if the base *guš* is assumed to have the primary meaning ‘ear’ or ‘corner’, then the output meaning ‘all around’ cannot be broken down into its semantic components and as such, it should be classified as an idiomatic expression. However, if it is regarded diachronically as the shortened form of *gušeh* ‘corner’, then the semantic output can be interpreted as iconic ‘from corner to corner’, ‘all around’. In the latter case, the semantic output may be said to have been resulted from a semantic extension process. In the absence of such diachronic analyses, however, the above pattern seems to challenge the MDT approach since in such samples as *sær~ta~sær* (see 12b), the input semantic bundle seems to be totally lost in the output (note that in the MDT approach, the output meaning is assumed to consist of the input semantic features plus some additional meaning).

- (13) a. N + P *dær* + N → ADJ/ADV
- $$\begin{array}{c}
 \text{[ADJ/ADV]} \text{ [F + continuity/succession]} \\
 \swarrow \quad \searrow \\
 /N/ \text{ [F]} \quad \quad \quad dær + /N/ \text{ [F]}
 \end{array}$$

Examples:

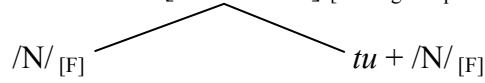
*pič~dær~pič* ‘turn’, ‘curve’ + ‘in’ + ‘turn’, ‘curve’ = ‘twisting and turning’, ‘maze-like’,  
*pošt~dær~pošt* ‘back’ + ‘to’ + ‘back’ = ‘successively one after another’, ‘one generation after another’,  
*tu~dær~tu* ‘inside’ + ‘in’ + ‘inside’ = ‘labyrinthine’, ‘having a complicated series of paths’,  
*pey~dær~pey* ‘after’ + ‘in’ + ‘after’ = ‘successive(ly)’, ‘one after another’

Sentence example:

- b. *qar-e ælisædr saxtar-i tu~dær~tu daræd*  
 cave-EZ Alisadr structure-INDF inside-in-inside have.PRS.3SG  
 ‘The Alisadr cave has a labyrinthine structure.’

All patterns we have analyzed so far involve only one grammatical category in their outputs. However, in pattern (13a) above, the output may be either an adjective or an adverb depending on the context in which it appears. This property is called input-output diversity.

(14) a. N + P *tu* + N → ADV/ADJ [ADV/ADJ] [F being in a particular state / sth rather than F]



Examples:

*češm~tu~češm* ‘eye’ + ‘in’ + ‘eye’ = ‘face-to-face’, *xær~tu~xær* ‘donkey’ + ‘in’ + ‘donkey’ = ‘in total confusion or cock-up’, *šir~tu~šir* ‘lion’ + ‘in’ + ‘lion’ = ‘in total confusion’, ‘higgledy-piggledy’, *šax~tu~šax* ‘horn’ + ‘in’ + ‘horn’ = (of two animals) ‘the state of having their horns entangled’; (of two cars) ‘the state of being crashed’

Sentence examples:

b. *do koštigir češm~tu~češm moraqeb-e hærxæt-e hæm*  
 two wrestlers face-to-face careful-EZ movements-EZ each.other  
*budænd*

be.PST.3PL

‘The two wrestlers were, face to face, careful of each other’s movements.’

c. *tuye šæhr hæme či xær~tu~xær bud*  
 in city everything donkey-in-donkey be.PST.3SG

‘In the city, everything was in total confusion.’

The preposition *tu* ‘in/inside’ is sometimes replaced by the equivalent *dær* which is typically used in formal writing and, therefore, may be replaced by the archaic, literary variant *ændær* (see pattern 15a below). This is to suggest that the intervening element in Persian medial full reduplication may be of some stylistic significance, i.e., in different contexts, different intervening elements may appear. However, the stylistic dimension of a Persian reduplication process is by no means limited to the intervening elements only. Other components may also be stylistically marked. Not only a whole pattern may have stylistic uses,<sup>7</sup> but also different outputs of the same pattern may be specific to different stylistic contexts. For instance, among the examples presented for pattern 14a above, both *xær~tu~xær* and *šir~tu~šir* have the same idiomatic meanings (i.e., ‘higgledy-piggledy’), yet the latter is more polite<sup>8</sup> and is therefore preferred on formal occasions.

<sup>7</sup> Echo-reduplication, for example, is only used in colloquial Persian (see Ghaniabadi 2008: 57).

<sup>8</sup> *xær* ‘donkey’ has a negative symbolism in the Persian culture indicating idiocy or stupidity, while *šir* ‘lion’ has positive connotations of power, respect, and braveness.

- (15) a. N + P *dær/ændær* + N → ADV [ADV] [from F to F/a subsequence of F/F + succession]  
 /N/ [F] ———— *dær/ændær* + /N/ [F]

Examples:

*xæm~dær~xæm* / *xæm~ændær~xæm* ‘curve’ + ‘in’ + ‘curve’ = (of going or travelling through a road) ‘one curve after another’, *næsl~dær~næsl* / *næsl~ændær~næsl* ‘generation’ + ‘in’ + ‘generation’ = ‘generation after generation’, *pošt~dær~pošt* / *pošt~ændær~pošt* ‘back’, ‘generation’ + ‘in’ + ‘back’, ‘generation’ = ‘from generation to generation’, *šæb~ændær~šæb* ‘night’ + ‘in’ + ‘night’ = ‘night after night’, *pey~dær~pey* / *pey~ændær~pey* ‘after’, ‘track’ + ‘in’ + ‘after’, ‘track’ = ‘rapidly following one another’, ‘successive’, ‘consecutive’

Sentence example:

- b. *ma næsl~ændær~næsl bæraye hoquq-eman jængide'im*  
 we generation-in-generation for rights-1PL.POSS fight.PRS.PRF.1PL  
 ‘We have fought for our rights from generation to generation.’

It is worth mentioning here that in this pattern, the meaning of the intervening element *dær/ændær* in the output is not the same as in the input. The input *dær/ændær* literally means ‘in’ or ‘within’ but in the output, it seems to have the meaning of consequence or succession. The semantic shift occurring in this relation is assumed to be a factor involved in creating the final output idiomatic meaning.

Pattern 16a below, which may no longer be a single integrated pattern, is capable of showing the fact that in Persian, some patterns of reduplication involve the property of input-output (I-O) diversity.

- (16) a. N/ADJ/V/P + -a + N/ADJ/V/P → ADV/N/ADJ/P  
 [ADV/N/ADJ/P] [F + intensification/ F + equivalence/ sth not related to F]  
 /N/ADJ/V/P/ [F] + -a ———— /N/ADJ/V/P [F]

Examples:

*gerd~a~gerd* ‘circle’, ‘round’ + -a + ‘circle’, ‘round’ = ‘all around’, *tæng~a~tæng* ‘close’ + -a + ‘close’ = ‘very close’, ‘close-set’, *dæm~a~dæm* ‘moment’ + -a + ‘moment’ = ‘incessant(ly)’, *sær~a~sær* ‘head’ + -a + ‘head’ = ‘all over’, *læb~a~læb* ‘edge’ + -a + ‘edge’ = ‘edge to edge’, ‘full to the brim’, ‘completely full’, *bær~a~bær* ‘side’ + -a + ‘side’ = ‘on the same level’, ‘on a par’, ‘equal’, *keš~a~keš* ‘the act of stretching’ + -a + ‘the act of stretching’ = ‘a to-and-fro struggle’, ‘rat race’, *pay~a~pay* ‘foot’ + -a + ‘foot’ = ‘this for that’, ‘exchange’, *beyn~a~beyn* ‘between’ + -a +



‘between’ = ‘in the middle’, in between’, *gærm~a~gærm* ‘warm’ + *-a* + ‘warm’ = ‘while’, ‘in the midst of (work, battle, etc.)’ *pey~a~pey* ‘after’, ‘track’ + *-a* + ‘after’, ‘track’ = ‘rapidly following one another’, ‘successive’, ‘consecutive’

By I-O diversity we mean that in some particular patterns, the grammatical categories which undergo the process (the inputs) are not limited to just one single category. Further, I-O diversity indicates that the output is not always grammatically predictable. Moreover, the input-output semantic relationships, as it was stated above, are not always clear and predictable. This grammatical and semantic diversity may lead to some challenges in applying the MDT approach to reduplication in Persian. On one hand, if a trivial exceptional case is taken as a separate independent pattern, we are deviated from the principle of economy of analysis and, on the other hand, if they all are ascribed to the phenomenon of idiosyncrasy, the number of idiosyncratic items may tend to be close to cases of regularity. Thus, the very concept of regularity, as one of the most fundamental goals of descriptive linguistics, may become deviated.

In addition, if the meaning of the output is not related to the input semantic feature bundle (as in the case of *gærm~a~gærm* ‘warm’ + *-a* + ‘warm’ = ‘while’ or *xær~tu~xær* ‘donkey’ + ‘in’ + ‘donkey’ = ‘in total confusion’, see examples 14b–c above and 16d below), then the general structure governing the reduplication process (as presented in pattern 3 above) would be challenged. The reason for this is that from the MDT point of view, the semantics generally attributed to the output is assumed to consist of the input meaning plus some additional meaning (F + some additional meaning). In other words, while in accordance with the general model of MDT, the F component is believed to be common in both the mother and daughter elements, some samples of Persian reduplication, such as those presented below, do not follow this rule:

Sentence examples:

- (16) b. *sær~a~sær-e*    *baq*    *æz*    *čæmæn*    *sæbz*    *bud*  
 head-ø-head-EZ    orchard    of    grass    green    be.PST.3SG  
 ‘All over the orchard was green because of grass.’

- c. *dær donyay-e gædim mo'amelat be suræet-e pay~a~pay*  
 in world-EZ ancient transactions in form-EZ foot-ø-foot  
*bud*  
 be.PST.3SG<sup>9</sup>  
 'In the ancient world, the transactions were in the form of this for that.'

- d. *dær gærm-a-gærm-e næbærd rostæm æz æsb-æš foru*  
 in warm-ø-warm-EZ battle Rostam from horse-3SG.POSS off  
*oftad*  
 fall.PST.3SG  
 'In the midst of the battle, Rostam fell off his horse.'

Finally, it is worth mentioning that Persian medial full reduplication is quite comparable with some English NPN constructions analyzed by Jackendoff (2008). Jackendoff takes such English constructions as *day by day*, *point for point*, *face to face*, and *book upon book* and maintains that they represent a mixture of productivity and idiomaticity.<sup>10</sup>

An interesting discussion posed by Jackendoff (2008: 4) is that while the choice of N is fairly free in English NPN construction, the prepositions are limited to only five or six ones: *to*, *by*, *for*, *after*, and *(up)on*. A short review of Persian medial full reduplication leads us to a similar conclusion: the intervening elements in Persian medial full reduplication are limited only to *be*, *ta*, *(æn)dær*, *tu*, and *-a* (see patterns 11a–16a above). This does not imply, by any means, that the decision to be made about the productivity or idiomaticity of a Persian medial full reduplication is only a function of the semantic nature of the daughter elements. While we may easily extend a construction like *do~be~do* '2 by 2' (see pattern 11a above) to an unlimited series of new cases (such as *se~be~se* '3 by 3',

<sup>9</sup> In the standard Persian, a plural inanimate noun may concord with a third person singular/plural verb. In colloquial Persian, however, the singular alternative is mostly preferred.

<sup>10</sup> There are two major differences between English NPN construction and Persian medial full reduplication: 1) in contrast to Persian medial full reduplication, English NPN construction covers non-duplicated expressions as *hand in glove* or *tongue in cheek* in addition to such duplicated forms as *night after night* or *dollar for dollar*; 2) in contrast to English NPN construction, daughter elements of Persian medial full reduplication are not limited to one single grammatical category such as the category of noun (by virtue of a particular property we have already labelled as input-output diversity).

*dæh~be~dæh* ‘10 for 10’, or *sæd~be~sæd* ‘100 for 100’), by virtue of the semantic nature of the system of numbers which consists of an infinite set of quantities, we can accordingly ascribe the productivity of this pattern to the semantic nature of the intervening element involved (that is why we may have *do~dær~do* ‘two by two’ or *do~ændær~do* ‘two in two’ but not \**do~tu~do* which may literally mean ‘2 by 2’).

Jackendoff (2008: 23–24) divides English NPN constructions into three major classes, according to their being productive, semi-productive, or idiomatic. Since NPN constructions are found in many languages, including Dutch (Postma 1995), Japanese (Matsuyama 2004), German, Polish, Russian, and French (Jackendoff 2008), some global implications may arise from Jackendoff’s classification. If the speakers can stretch a pattern to new cases they have not heard before with appropriate contextual support, the pattern involved can be classified as productive. In other words, if the pattern involved is productive, the speakers freely accept novel cases and know what they mean. Having in mind pattern 11a above, it may be suggested that in addition to such lexicalized cases as *čehre~be~čehre* ‘face to face’ or *dæm~be~dæm* ‘continuously’, one can generalize the pattern to some new expressions such as *rusta~be~rusta* ‘from one village to another’, *færd~be~færd* ‘individual after individual’, or *saniyeh~be~saniyeh* ‘every second’.

In semi-productive constructions, on the other hand, acceptable instances tend to cluster around central cases in family resemblance patterns and speakers may vary in the cases they find acceptable (Jackendoff 2008: 23). In addition, speakers may be able to stretch the pattern to related cases, though often not entirely comfortably. For instance, while we have the form *dæm~a~dæm* ‘continuously’ (see pattern 16a above), we do not feel comfortable in stretching it to such new cases as \**ruz~a~ruz* ‘every day’, \**sa’æt~a~sa’æt* ‘every hour’ or ?*šæb~a~šæb* ‘every night’ even though the semantic feature bundle of all these new instances include a time component (the expression *šæb~a~šæb* has recently been used in some registers as poetry and that is why we have not starred it as ill-formed). Thus, pattern 16a seems to be less productive than pattern 11a and may be regarded as semi-productive.

Using the terminology of Construction Grammar, Pinker (1999, quoted in Jackendoff 2008: 24) suggests that instances of productive generalizations may or may not be listed in the memory (i.e., in the

lexicon). In other words, the rule is stated as a lexical item with a variable in it. By contrast, Pinker claims that the instances of semi-productive generalizations are nothing more than some lists and that generalizations among them are implicit in memory without being extracted as lexical rules (Jackendoff 2008: 24). Jackendoff (2002 as quoted in Jackendoff 2008: 24) adopts a similar position first, but later, he writes:

An alternative possibility for the semi-productive generalizations is that there are explicit rules, but they have a different sort of variable in them, say with a feature [semi-productive]. Such a variable can be satisfied only by listed instances and occasional neologisms.

He finally adopts this alternative and suggests that “some variables are marked [productive] and others [semi-productive]” (Jackendoff 2008: 24).

As for idiomaticity, however, the idiomatic cases of Persian medial full reduplication are not capable of being stretched to new cases since the compositionality principle will no longer be at work, and hence the hearer is not able to predict the meaning. One may claim that the less the number of instances of a pattern, the more idiomatic (or less productive) the pattern will be. It is exactly for this reason that pattern 14a above, for instance, does not have a large number of instances. There are such Persian constructions as *šir~tu~šir* and *xær~tu~xær* both meaning ‘higgledly-piggledly’ but it will be impossible to stretch this pattern into *\*boz~tu~boz* (lit. ‘goat in goat’), *\*mar~tu~mar* (lit. ‘snake in snake’), or *\*sæg~tu~sæg* (lit. ‘dog in dog’).

#### 4.2.2 Final full reduplication

Another subcategory of Persian total reduplication is called final full reduplication in which the reduplicant daughter is followed by a suffix element. Final full reduplication, too, is appropriate to be analyzed within the MDT framework, although according to the criterion of proximity (see table 1 above), it is possible to be analyzed through phonological copying approaches as well.

- (17) a. ADJ/N + ADJ/N + *-an* → ADV
-

Examples:

*lærz~lærzan* ‘the act of trembling’ + ‘the act of trembling’ + *-an* = ‘in the state of trembling’, *læng~længan* ‘lame’ + ‘lame’ + *-an* = ‘limpingly’, *xoš~xošan* ‘happy’, ‘slow’ + ‘happy’, ‘slow’ + *-an* = ‘at a leisurely pace’, ‘slowly’

Sentence example:

b. *æhmæd læng~læng-an be xane amæd*  
 Ahmad lame-lame-ADV to home come.PST.3SG  
 ‘Ahmad came home limpingly.’

(18) a. N/V + N/V + *-æk* → N [N]<sub>[F+ instrumental]</sub>  
/N/V/<sub>[F]</sub> /N/V/ + *-æk*<sub>[F]</sub>

Examples:

*bad~badæk*, *row~rowæk*, *qar~qaræk* ‘the sound of a crow’, ‘noise’ + ‘the sound of a crow’, ‘noise’ + *-æk* = ‘a noise maker’, ‘a rattle’; (fig.) ‘an old car’, *sut~sutæk* ‘whistle’ + ‘whistle’ + *-æk* = ‘a penny whistle’, ‘a tin whistle’

Sentence example:

b. *row + row + -æk → row~rowæk*  
 ‘go’ + ‘go’ + INS → ‘rocker’

*row~row-æk be bæče komæk mikonæd ke rah berævæd*  
 go-go-INS to child help do.PRS.3SG that path go.PRS.SBJV.3SG  
 ‘A rocker helps a child to walk.’

c. *bad + bad + -æk → bad~badæk*  
 ‘wind’ + ‘wind’ + INS → ‘kite’

*mina ba bad~bad-æk bazi mikonæd*  
 Mina with wind-wind-INS play do.PRS.PROG.3SG  
 ‘Mina is playing with the kite.’

(19) a. ADJ/N + ADJ/N + *-æki* → ADV [ADV]<sub>[in a state of F]</sub>  
/ADJ/N/<sub>[F]</sub> /ADJ/N/ + *-æki*<sub>[F]</sub>

Examples:

*howl~howlæki* ‘hasty’ + ‘hasty’ + *-æki* = ‘in a hasty manner’, *zir~ziræki* ‘bottom’ + ‘bottom’ + *-æki* = ‘clandestinely’, ‘surreptitiously’, *sor~soræki* ‘slippery’ + ‘slippery’ + *-æki* = ‘in a state of being slippery’, *zur~zuræki* ‘force’ + ‘force’ + *-æki* = ‘forcefully’

Sentence examples:

b. *polis mottæhæm-o zur~zur-æki dæstgir kærd*  
 polis accused-ACC force-force-ADV arrest do.PST.3SG  
 ‘The police arrested the accused forcefully.’

c. *mæryæm howl~howl-æki næhareš-o xord*  
 Maryam hasty-hasty-ADV lunch-3SG.POSS.ACC eat.PST.3SG  
 ‘Maryam had her lunch in a hasty manner.’

Here again the outputs are only used in the colloquial variety of Persian by virtue of the fact that the suffix *-æki* ‘-ly’ by its very nature cannot be used in formal situations and is specific to informal contexts.

(20) a.  $N + N + -u \rightarrow \text{ADJ}$  [ADJ]<sub>[doing frequently the act of F]</sub>  
/N/<sub>[F]</sub> /N/+ -u<sub>[F]</sub>

Examples:

*jiq~jiq* ‘a shrill cry’ + ‘a shrill cry’ + *-u* = (of a person) ‘speaking with a squeaky voice’, *neq~nequ* ‘act of nagging’ + ‘act of nagging’ + *-u* = (of a person) ‘nagging frequently’, *qor~qoru* ‘grumble’ + ‘grumble’ + *-u* = (of a person) ‘given to grumbling’, ‘shrewish’, *xor~xoru* ‘act of snoring’ + ‘act of snoring’ + *-u* = (of a person) ‘snoring frequently’, *zer~zeru* ‘strumming noise’ + ‘strumming noise’ + *-u* = (of a person) ‘strumming frequently’

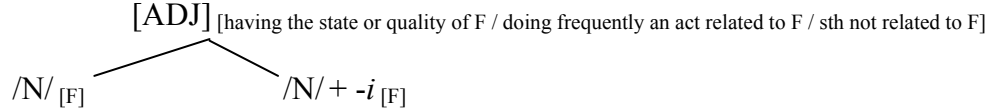
Sentence example:

b. *pirzæn-e qor~qor-u hæme ra æsæbani*  
 old.woman-EZ grumble-grumble-ADJ everyone ACC angry  
*kærd*  
 make.PST.3SG  
 ‘The shrewish old woman made everyone angry.’

This pattern, again, is specific to colloquial and slang registers of Persian. However, this is not merely a result of contextual restrictions governing the suffix element involved (*-u*) but, rather, it is due to the very semantic nature

of the base element itself which is attributed to informal contexts of situation.

(21) a. N + N + *-i* → ADJ



Examples:

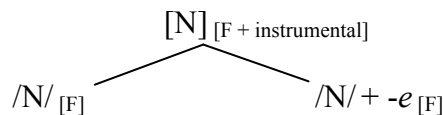
*fin~fini* ‘sniffle’ + ‘sniffle’ + *-i* = ‘the quality of one who sniffles frequently’, *xal~xali* ‘spot’ + ‘spot’ + *-i* = ‘spotted’, ‘marked with a mole’, *sær~særi* ‘head’ + ‘head’ + *-i* = ‘inconsiderate’, ‘careless’, *xæt~xæti* ‘line’, ‘stripe’ + ‘line’, ‘stripe’ + *-i* = ‘criss-cross’, *jun~juni* ‘life’, ‘soul’ + ‘life’, ‘soul’ + *-i* = ‘very dear’, ‘very close’, *fer~feri* ‘curl’ + ‘curl’ + *-i* = ‘curly’

Sentence example:

b. *sæg-e xal~xal-i xeyli ziba bud*  
 dog-EZ spot-spot-ADJ very pretty be.PST.3SG  
 ‘The spotted dog was very pretty.’

As can be seen in the examples above, the property of semantic diversity governs this pattern as well. Each of the three examples above relates to one dimension of the semantic component of the output.

(22) a. N + N + *-e* → N



Examples:

*jeq~jeqe* ‘a sharp sound’ + ‘a sharp sound’ + *-e* = ‘rattle’, *feš~feše* ‘a gushing noise’ + ‘a gushing noise’ + *-e* = ‘(sky-)rocket’, *ker~kere* ‘the sound of falling and raising of a curtain’ + ‘the sound of falling and raising of a curtain’ + *-e* = ‘roller shutter’, *fer~fere* ‘spin’ + ‘spin’ + *-e* = ‘peg-top’, ‘whirligig’, *gom~qome* ‘sound of pouring water’ + ‘sound of pouring water’ + *-e* = ‘canteen’, ‘flask’

Sentence example:

b. *fer~fere-ye abi æz bæqiye behtar-e*  
 spin-spin-EZ blue than others better-COP.PRS.3SG  
 ‘The blue whirligig is better than the others.’

The noun involved in this pattern is typically an onomatopoeic one as in *jeq~jeqe* ‘rattle’ and *feš~feše* ‘(sky-)rocket’ and as such, the output meaning is supposed to be an iconic one.

## 5. Discussion and conclusion

The present study aimed to analyze full reduplication patterns in Persian within the methodological framework of MDT. It examined the three Persian reduplication main subcategories in question against Inkelas and Zoll’s (2005) criteria of appropriate analytical approaches to different reduplication patterns. The study concluded that all three subcategories involved (i.e., pure, medial, and final Persian full reduplication patterns) are capable of being accounted for within the MDT framework, whereas the alternative phonological copying approaches seem to be applicable to Persian final full reduplication process only. It was also revealed that the alternative phonological copying approaches may also be capable of handling some limited patterns of Persian pure full reduplication.

One of our most striking observations is that Persian full reduplication patterns (especially those of pure full reduplication) are not limited to the level of morphological constituents (i.e., morphemes or words). Rather, they can be extended to the level of syntactic constructions (i.e., phrases or even full sentences). These larger elements, when inputted into the process of reduplication, are rank-shifted in the output in the sense that they accept the syntactic roles normally expected of smaller linguistic elements.

According to our data, in some Persian reduplication patterns, the grammatical category of the base element does not change in the output, while in other cases it does. Moreover, some patterns of Persian full reduplication show the property of input-output diversity in the sense that not only the syntactic categories which undergo the reduplication process are not limited to a single word class, but also there might be a variety of syntactic categories resulted in the output. In addition, there is also a diversity of semantic features, which makes the input-output semantic relationships unpredictable and opaque. As argued above, the input-output (semantic-syntactic) diversity may challenge the applicability of the MDT approach with respect to Persian full reduplication patterns. On one hand, if we present a separate constructional schema for any trivial syntactic or semantic changes, then we have actually deviated from the principle of



economy of analysis and, on the other hand, any increases in the syntactic or semantic properties of the linguistic elements in question would not be in line with one of the most important objectives of descriptive linguistics: capturing the linguistic regularities.

From a semantic point of view, Persian full reduplication process generally results in such meanings as repetition, continuity, sequence, intensification, alternation, succession, as well as the state of an action. However, apart from these, some stylistic dimensions may also be included in the output semantics. The point is that the patterns resulting from Persian full reduplication process may have particular stylistic functions being subject to some contextual limitations. In essence, not only may a given reduplication pattern have particular stylistic uses, but also different outputs of the same reduplication pattern may be specific to different contextual environments.

Another important characteristic of Persian full reduplication is that the input semantics will not necessarily lead to the output meaning. In other words, the output semantics generally moves on a relative continuum ranging from totally transparent iconic (compositional) meanings to quite unpredictable idiomatic and/or metaphorical meanings. Since both the two idiomatic/metaphorical and compositional meanings are lexicalized in the language, native speakers of Persian will be able to process them appropriately. Nevertheless, when it comes to such special areas as learning Persian as a second language or translating from Persian into other languages, the existence of idiomatic/metaphorical meanings may be problematic.

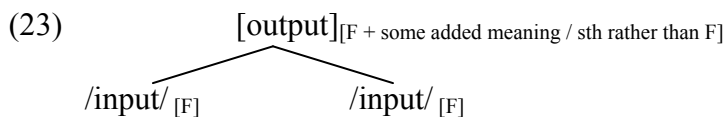
Furthermore, it is worth mentioning that metaphorical meanings in the output of a reduplication pattern are those meanings which have already been lexicalized in the language. Needless to say, most reduplicated forms, even if they have completely compositional meanings, are potentially capable of being used metaphorically. For example, the Persian sentence *ændišeha-ye rah-rah-æm ra nemixani* which roughly means '(you) don't read my striped thoughts' obviously refers to a metaphorical use of the word *rah-rah* rather than its literal meaning 'striped'. Such semantic shifts are not lexicalized in the language and hence have not been included in the present research.

The paper also shows that in some cases, the idiomatic/metaphorical semantics of output elements results from the semantic extension of input

elements involved and is therefore possible to be accounted for through some diachronic analyses. In the absence of reasonable historical analyses, however, the metaphorical aspects of Persian full reduplication may challenge the overall structure of the MDT model, at least with respect to its semantic component.

The high frequency of occurrence of reduplicated words in which the semantic feature bundle is totally lost in the output seems to challenge the general model of MDT since, as it has frequently been stated throughout the paper, according to the general constructional schema formulated in MDT (pattern 3 above), the output meaning is all the time assumed to consist of the input semantic feature bundle (F) plus some additional meaning.

Thus, in order to break this theoretical impasse, the ultimate proposal of this study is that the previous model of MDT be reformulated in terms of the following constructional schema (pattern 23). It may then be capable of accounting for both the existence and the lack of semantic relationships between the mother and daughter elements of any given reduplication process, at least in the case of Persian full reduplication:



The interpretation of the above pattern is that sister elements inputted into the reduplication process are semantically identical. However, the resulting output is not necessarily related to them semantically although in many cases, there might be some semantic relationships at work.

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**Appendix.** List of abbreviations

- 1/2/3 = first/second/third person
- ACC = accusative
- ADJ = adjective
- ADV = adverb
- EZ = Ezafe construction (in Persian language)
- F= feature (semantic feature bundle)
- I = interjection
- INDF = indefinite
- INS = instrumental
- I-O = input-output
- MDT = Morphological Doubling Theory
- MS = morpho-semantic (feature duplication)
- N = noun
- NEG = negation/negative
- Ø = zero element
- OBJ = object marker
- P = preposition
- PL = plural
- POSS = possessive construction
- PRF = perfect
- PROG = progressive
- PRS = present
- PST = past
- PTCP = participle
- RED = reduplication
- S = sentence
- SBJV = subjunctive
- SG = singular
- TP = a complete clause
- V= verb
- VP = verb phrase

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