



A Construction Morphology Approach to the Analysis of Compound Adjectives Made of *Sāz* (*Maker*) in Persian¹

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Abstract

In the present study, we attempted to specify the constructional schemas relevant to the compounds made by the present stem 'sāz' in Persian within the framework of the construction morphology (Booij, 2010). To this end, 150 compounds were brought together from numerous sources, such as the *Persian Corpus of Bijankhan*, Persian novels as well as some Persian websites. Having collected the data, we tabulated and categorized them on the basis of the preverbal elements. Afterwards, a comparison was made, as a result of which it was indicated that there can be a general constructional schema inside which 5 sub-schemas can be placed. Certainly, the broad schema denotes the construction by which a noun (preverbal element) is combined with the verbal element (present stem *sāz*) to create an adjective that implies the agent of an action, namely the agent of building or making an object. However, there were two exceptions among the whole dataset: a compound in spite of resembling the other compounds regarding its construction denotes the semantic role of patient: *dastsāz* (handmade), referring to an object which is made by hands as well as the compound *ḍāsāz* (*embedded object*), whereas in other compounds, the stem means the agent that builds,

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creates or makes. Consequently, as might be expected, two broad constructional schemas have been obtained: one relevant to the agents and the other relevant to patients.

Keywords: compound, construction morphology, stem, schema, semantic aspect

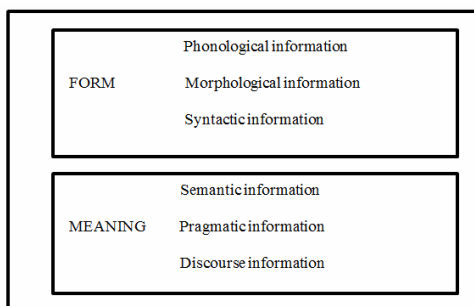
1. Introduction

Construction Morphology, hereafter CM, which is introduced by Booij (2010) is a theory established on the basis of syntactic, morphological and lexical relations as well as the semantic features of the complex words. In this theory, the structure of words is represented by some schemas at the lexical level in a way that a constant position is allocated to suffixes (Shaghghi, 2016, p. 103).

According to Booij (2009), CM is a lexeme-based approach within the framework of which the internal structure of the complex lexemes along with the syntagmatic relations among them is perceived through making a comparison between the systematic correlations of form and meaning. Stated by Booij (2010), words are considered as the linguistic signs enjoying the conventional form and meaning associations. Booij (2012) believed that constructional schemas are regarded as some tools for the representation of morphological constructions. Indeed, every construction has two parts: semantic and formal. The former is composed of morpho-syntactic as well as phonological features, whereas the latter comprises semantic, pragmatic and discourse features, all of which can be depicted by a figure as below called a construction:

Figure 1

Constructions as pairings of form and meaning (Booij, 2010)



CM considers word-formation patterns as abstract schemas where form and meaning are paired. As an example, when native speakers of a language like English are exposed to words such as *writer*, *listener*, *speaker*, *runner*, *driver* and *follower*, they will conclude that there is a pattern, namely a construction like $[[V] \text{ er}]_N$. To put it another way, the native speakers will arrive at the fact that as a result of attaching *-er* to the simple form of the verbs, nominal agent will be produced. Such a production could be called a construction.

With respect to the abovementioned enlightenments, the current research question can be stated as follows:

What constructional schema the compound words made of *sāz* (*maker*) in Persian follow?

1.1. The Persian Language and the Structure of Words

Contemporary Persian is considered as the language frequently used in Iran. It is also regarded as the official language of the Iranian people as well (Sadeghi, 2000, p.111). The Persian language, henceforth Persian, which is considered as the mother language of Iran enjoys multiple varieties with respect to time, place, social situations as well as pragmatic aspects (Batani, 1970, pp. 8-10). The Standard Persian, however, is the variety on which linguistic analyses have always been done unless a particular accent or dialect is the focus of a specific study. Likewise, throughout this paper, by Persian it is meant the standard variety of this language spoken in Tehran, the capital of Iran, and is written and used for education, media and so on.

Like the words of global living languages, the words in Persian, as Natel-Khanlari (1972, p. 162) states, are classified into two types: simple and complex. According to him, simple words refer to the words for which no independent constituent does exist. By contrast, complex words are composed of two or more constituents.

Proposed by Gholamalizadeh (1995, p. 255), given the way they have been made as well as their structure, the Persian words can be put into one of these three categories: simple, compound and derivational. By simple words, he

means the lexical units which are composed of only one single morpheme such as *dar* (door), *pañzere* (window) and *medād* (pencil). Compound words, by contrast, refer to the words composed of more than one lexeme, generally two lexemes such as *dāruḫāne* (drugstore). In addition, by derivational words he meant the words in the structure of which at least one bound morpheme is used such as *divāri* (pertaining to wall). In Persian, most of the attributive adjectives are made by adding *-i* to the end of nouns: *divār* (=wall) + *-i* (=attributive adjective maker suffix) = *divāri* (=relevant to wall).

1.2. Persian Stems

Stems may be considered as either a single root morpheme or two root morphemes. They can also be a combination of a root morpheme plus a derivational affix. However, what all these forms have in common refers to the fact that they are the linguistic units inflectional affixes can be attached to (Crystal, 2003).

In Persian, there are two types of stem: past and present. These two stems are called verbal stems, as they are the forms from which different verbal inflections are made (Jahanshiri, 2020). As an example, the infinitive form of the verb *sāxtan* (to build) can be referred to from which two stems are derived: *sāxt* and *sāz*. The former is the simple past form of the verb, whereas the latter is in the present form. Thus, *sāxt* means *made* while *sāz* means *make*. However, as both stems can play the role of the second element of the secondary compounds in Persian, the present stem *sāz* semantically equals *maker* when it participates in the process of compounding.

1.3. Paper Structure

The remainder of this paper has been organized in the following way. Section 2 is a brief account of prior pieces of research, which have been done in English, Persian and several other languages throughout the world. In Section 3, the method via which the data has been collected, compared and analyzed will be described. The tabulation of findings alongside their English versions is the main focus of Section 4. The analysis of data will be put into discussion in

the same section as well. In the last section, that is to say Section 5, the concluding remarks will be expressed.

2. Literature Review

Needless to say, the CM approach proposed by Booij in 2010 and revised in 2016 is a newly established theory within the framework of which not much research has been done throughout the world. However, as far as the authors have found, a handful of studies have been conducted in such languages as German, Arabic, Chinese, Japanese, Italian and Greek, which are pointed out below. It ought to be stated that the following pieces of research have been ordered from the most recent ones to the oldest ones.

Koutsoukos and Pavlakou (2009) have studied Modern Greek in terms of its agent suffixes. They have studied masculine and feminine agent suffixes on the basis of the framework of CM introduced by Booij (2005a). They have argued for both masculine and feminine suffixes while comparing them to their cross-linguistic data. Arcodio (2010) has done a research in Mandarin Chinese in CM framework. Hüning (2018) has studied the verbs in *-ieren* in German. He has discussed the problems relevant to the study of foreign word formation in German. In fact, he has tried to show that CM is very appropriate to justify this phenomenon with respect to its central notions. Davis and Tsujimura (2018) have examined the non-concatenative morphological system of Arabic with respect to CM. Arcodia and Basciano (2018) analyzed the word-formation process in Chinese based on CM. Tsujimura and Davis (2018) published an article concentrating on word formation in Japanese in CM framework. Masini and Lacobini's paper focusing on schemas in Italian is a body of research published in 2018. Their attention is restricted to both schemas and discontinuity in Italian. In his article Spuy (2020) has discovered the English plurals are in line with CM.

As for Persian, it should be said that there are multiple works which have been carried out with regard to the approach proposed by CM (Bamshadi & Ghatreh, 2017; Bamshadi & Davari Ardakani, 2018; Bamshadi, Ansarian & Davari Ardakani, 2018; Bamshadi, Ansarian & Davari Ardakani, 2019;

Bamshadi & Ansarian, 2020; Bamshadi, Ansarian & Davari Ardakani, 2020). However, it appears that there are only two pieces of research which are highly relevant to the current study. One is the work by Azimdokht and Rafiei (2019) who have examined the semantic variations of the present stem *paz* (cook), concluding that the compounds whose second part is this stem have the agentive meaning. Moreover, they have argued that the traditional hypothesis of extending the concept of agent fails to justify how the relevant sub-schemas can be formed. Another study belongs to Azimdokht, Rafiei and Rezaei (2018) in which they have discovered the semantic variations of the present stem *yaab* [*jāb*] (=find) in Persian. They have concluded that the traditional hypothesis of extending the concept of agent fails to justify how the relevant sub-schemas can be formed.

3. Method

From the Persian Corpus of Bijankhan, the online version¹, as well as multiple electronic sources such as websites, articles and books alongside the linguistic intuition of the authors, 82 compound words the second part of which was *sāz* (maker) were extracted and each was examined within the theoretical framework of CM. Eventually, comparisons were made among the words all to see what type of constructional schema their structure follows. It is notable that from the whole data, for the sake of saving space, only 68 compound words whose second element is *sāz* has been tabulated in this paper.

4. Findings and Discussion

In this section, the linguistic expressions comprising the compound words in question are presented in both Persian and English. Indeed, the English versions exhibit not only the phonetic transcription relevant to each compound construction in Persian, but they also display the semantic equivalents as well. It is also worth noting that the data were primarily in a sentential or syntactic phrases form, but due to saving space and for the sake of simplicity, only the compound words were mentioned here, as Table 1 shows:

¹ <http://corpora.phil.hhu.de/bonito/run.cgi/>

Table 1

Phonetic forms and the English equivalents of Persian compound words

Compound Words	Phonetic Transcription	English Meaning
آهنگ ساز	āhangsāz	composer
طلاساز	talāsāz	goldsmith
برج ساز	borđzsāz	jerry-builder
سبب ساز	sababsāz	causer
زمینه ساز	zaminesāz	precursor
مدرسه ساز	madresesāz	school builder
بازیکن ساز	bāzikonsāz	player maker
شخصیت ساز	šaxsijatsāz	character maker
مسأله ساز	masʔalesāz	problematic
مکان ساز	makānsāz	locator
صفت ساز	sefatsāz	adjective maker
مسجد ساز	masđedsāz	mosque builder
جواهر ساز	đjavāhersāz	jeweler
لغت ساز	loqatsāz	word producer
بهینه ساز	behinesāz	optimizer
انبوه ساز	anbuhsāz	mass constructor
فضا ساز	fazāsāz	space creator
شبیه ساز	šabihsāz	simulator
*دست ساز	dastsāz	hand-made
آتی ساز	ātisāz	future maker
شهر ساز	šahrsāz	planner
فرهنگ ساز	farhangsāz	culture creator
مسکن ساز	maskansāz	home maker
راه ساز	rāhsāz	road builder
بنا ساز	banāsāz	constructor
آسفالت ساز	āsfałtsāz	asphalt producer
قهوه ساز	qahvesāz	coffee maker

پول ساز	pulsāz	money maker
چاره ساز	čāresāz	remedial
جاساز	čāsāz	embedded object

Exploring the fact that what type of schema the overall construction of the compounds tabulated here follows is the core subject of the next section.

From the two basic types of morphological patterns, that is affixation and compounding (Haspelmath, 2002, p. 34), the latter, according to Lieber (2010), has a head with two main properties: it functions as the syntactic category determiner, and it identifies the semantic type of the whole compound. For instance, in the compound *greenhouse*, the word *green* is an adjective while *house* is a noun, but as English is a right-head language, the compound *greenhouse* is a noun.

The study of the structure of compound words suggests that most of them have originally been syntactic structures (Shaghghi, 2008, p. 92). Due to the frequently used collocations of these syntactic structures, they have gradually turned into compound words. One class of such syntactic categories refers to those compounds the second parts of which are the present stems of verbs. The following examples were taken from Shaghghi (2008):

Table 2

Persian compounds with verbal stems

Persian Compounds	English Equivalents	First Element	Meaning	Second Element	Meaning
ābpāf	sprinkler	āb	water	pāf	splash
nurafkan	lighting	nur	light	afkan	cast
delnefin	sweet	del	heart	nefin	sit

Given what has been stated above, it ought to be said that the compound we are going to discuss throughout this paper belongs to this category, as it is composed of two parts whose second element is the stem of a

present verb. As Shaghghi (2008, p. 93-94) says, the compound words in Persian are divided into two groups based on the constituents they are composed of, hence primary and secondary compounds. In primary compounds, no elements are verbal stems. In contrast, if one of the compound elements is a verbal stem, the compound will be considered as a secondary compound. Therefore, the compounds made of *sāz* (maker) in the present article are of the secondary type, as the element *sāz* is the present stem of a verb.

In what follows, the schemas and subschemas relevant to *sāz* are explored. It is worth mentioning that having been reviewed the data extracted from the corpus and other available sources, it was found that the compound words the second element of which is *sāz* are of the nominal and adjectival syntactic categories. In effect, the compounds schemas can be figured out as follows:

$$[[X]_{N/ADJ_i} [-sāz]_{PRS\ STM}]_{N/ADJ_j} \longleftrightarrow [SEM_i \text{ agent of creation}]_{N/ADJ_j}$$

In the above schema, *X* refers to any nominal category which can substitute *X*. Hence, *N* has been used beside it outside the bracket. By *PRS*, *STM* and *ADJ*, the schema means *present*, *stem* and *adjective* respectively. The two indices *i* and *j* denote the two parts of the compounds made by *sāz*. The notation *SEM* means the semantic interpretation of the compounds and the arrow in between refers to the two-sided connection between the form and meaning of the compound. By the expression *agent of creation*, the schema points out the fact that via the attachment of the present stem to the nominal elements, an adjective will be produced that denotes any entity that builds, makes or creates something.

Notably, the schema is indeed the main schema. However, with respect to the semantic variations of the data, it subsumes four sub-schemas which will be introduced as follows.

It should be said that the outcome of such a combination, that is the combination of a noun and the verbal stem *sāz* can be regarded as either a nominal agent or an adjectival agent. As two examples, the following expressions can be pointed to where one compound can serve to be a nominal

agent (Expression I) and the other one can be regarded as an adjectival agent (Expression II):

Expression I

dar inčā borčsāz zījād ast

in here tower builder many is

There are too many jerry-builders here.

Expression II

in mozu barāje xānevāde mojkelsāz ast

this matter for family problematic is

This matter is problematic for the family.

According to Expression I, the compound word *borčsāz*, made of two parts *borč* (tower) and *sāz*—functions as the main subject of the sentence which makes it to be taken as a nominal agent, whereas in Expression II, the compound functions as the subject complement which functions as an adjective. Hence, it can be regarded as the adjectival agent in this sentence.

This section is allocated to the investigation of the analysis of the construction of the compounds made out of *sāz*. To begin with, it may be essential to restate the research question here: What constructional schema do the compound words made of *sāz* in Persian follow? In order to provide the question with an appropriate answer in line with the CM approach, the following analyses are worth arguing. As mentioned earlier, a general schema could be assumed for the compounds whose second element is *sāz* as follows:

$$[[x]_{Ni} \quad [-sāz]_{PRS\ STM}]_{N/ADJj} \longleftrightarrow [SEM_i \quad \text{agent of creation}]_{N/ADJj}$$

A number of 52 compound words whose second part is *sāz* were brought together from a couple of sources as the *Persian Corpus of Bijankhan*, some monolingual Persian dictionaries, Persian grammar course books as well as the authors' linguistic intuition. As our data were going to be analyzed within the theoretical framework of CM, the inspection of them revealed that for the present stem *sāz*, 5 sub-schemas may be defined as follows, showing such semantic relations as agent, cause and instrument:

$$1) [[N]_i \quad [sāz]_j]_N \leftrightarrow [\text{the 'agent' which does } SEM_i \text{ in } SEM_j]_N$$

According to this sub-schema, when the stem is added to a nominal

base, a sort of compound will be made which semantically refers to the agent of an affair. As an example, the compound *filmsāz* (=movie maker) can be pointed out which means a person who makes movies. Other relevant examples of this schema are presented in the following table:

Table 3

Compounds with agentive meaning

Compounds	Meaning
filmsāz	movie maker
āhangsāz	composer
kābinetsāz	cabinet maker
dārusāz	pharmacist
talāsāz	goldsmith
kelidsāz	locksmith
maskansāz	house maker
maqulesāz	category maker
bordʒsāz	jerry-builder
rāhsāz	road constructor

Sometimes the stem *sāz* is added to a nominal base and makes an adjective with causative meaning. The relevant schema for such compounds would be depicted as follows:

$$2) [[N]_i [sāz]_j]_{ADJ} \leftrightarrow [\text{the property of 'agent' which does SEM}_j \text{ in SEM}_i]_{ADJ}$$

In this case, the associated compounds semantically refer to an entity that causes something. To put it another way, the stem *sāz* refers to the fact that something in the outside world causes the nominal base of the compound to exist. Table (4) displays the pertinent specimens:

Table 4*Compounds with cause-effect (causative) meaning*

Compounds	Meaning
xabarsāz	high profile
ebhāmsāz	ambiguity maker
pulsāz	profitable
sababsāz	causer
tārixsāz	history maker
dāstānsāz	story maker
moʃkelsāz	problematic
farhangsāz	culture builder
zaminesāz	precursor
behinesāz	optimizer

In some cases, the stem *sāz* in combination with another element, typically a noun, refers to an instrument with the help of which some edible object will be produced. The following schema shows such a relation:

$$3) \text{ [[N]}_i \text{ [sāz]}_j \text{]}_N \leftrightarrow \text{ [the 'instrument noun' which does SEM}_j \text{ in SEM}_i \text{]}_N$$

The most frequently used compounds included in this schema are the ones shown by Table (5):

Table 5*Compounds with instrumental meaning*

Compounds	Meaning
qazāsāz	food maker
qahvesāz	coffee maker
ʃājsāz	tea maker
sāndeviʃsāz	grill

For the word *dastsāz*, being an adjective, and the element *dast* (hand) is considered an instrument for it, the following sub-schema seems to be appropriate:

- 4) $[[N]_i [s\bar{a}z]_j]_{ADj} \leftrightarrow$ [the property of the factitive in which the act of SEM_j has done by the instrument SEM_i]_k

For the compound *ḡāsās* (embedded object), being an adjective and a noun, some notions as follows could be considered:

As a nominal compound, it refers to an object furtively located in some place, whereas as an adjectival compound, it refers to the properties of an object furtively located in some place. Therefore, two schemas will belong to this compound as follows:

- 5-1) $[[N]_i [s\bar{a}z]_j]_{Ni} \leftrightarrow$ [the 'theme' to which the act of SEM_j has been done furtively]_N

- 5-2) $[[N]_i [s\bar{a}z]_j]_{ADj} \leftrightarrow$ [the property of the 'patient' to which the act of SEM_j has been done furtively]_{ADj}

6. Conclusion

As stated by CM, there is a mutual relationship between form, meaning and the overall construction of words. Throughout this paper, with respect to the theoretical framework proposed by Booij (2010; 2018), the Persian compounds made by *sāz* (maker) were examined as a result of which it was revealed that there could be a general constructional schema at the core of which 5 sub-schemas can be located. The comprehensive schema represents the overall construction by virtue of which a noun (preverbal element) is combined with the verbal element (present stem *sāz*) to create a compound noun, which indicates the agent of an action, specifically the agent of building or making an object. Nevertheless, there were two types of exclusion among the whole data. There was a compound notwithstanding resembling the other compounds with respect to its construction points toward the semantic role of patient: *dastsāz* (handmade), which is an adjective describing the objects made by hand. The other compound is *ḡāsās* (embedded object) which refers to the property of an object in a way that that object has been stealthily hidden. In contrast, in other compounds, the present stem means the agent that builds, creates or makes an object. Needless to say, two broad constructional schemas

have been gained: one associated to agentive adjectives and the other associated to patient ones.

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