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Persian noun-noun nominal compounds: metonymy and conceptual blending

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Abstract

The current study seeks to clarify various ways in which metonymy can affect the meaning of Persian noun-noun nominal compounds. An analysis of 280 endo- and exocentric Persian noun-noun nominal compounds reveals that as far as the role of metonymy in the construction of meaning is concerned, this cognitive mechanism can affect the meaning of Persian nominal compounds in four ways as follows: a) metonymical modifier, b) metonymical head, c) metonymical head and modifier, and d) metonymic nominal compounds as a whole. While the pattern of metonymical modifier only affects the meaning of endocentric compounds, the other three patterns function in the meaning of exocentric compounds. This study substantiates Brdar and Brdar-Szabo's (2013) and Brdar's (2017) assertion that metonymy may either act upon the constituents of the compound, i.e., before compounding (the first, second, and third pattern), or the compound as a whole, i.e., after the combination of constituents (the fourth pattern). It is also argued that the metonymical relationship between head and modifier cannot be regarded as a pattern. If such an argument was plausible, non-figurative endocentric compounds would also be metonymical and compounding would basically require the functioning of metonymy.

Keywords: conceptual metonymy; Persian; nominal compound; endocentric; exocentric.

1. Introduction

Within cognitive linguistics, analysing the conceptual and experimental basis of linguistic structures is of main interest, and formal structures of language are regarded as the reflection of the conceptual structure of mind (Geeraerts and Cuyckens, 2007: 3). For cognitive linguists, language system is not independent of cognitive processing; rather it is a reflection of cognitive abilities of mind. Imagination, as the ability of projecting concepts onto other concepts, is one of the major cognitive abilities (Barcelona, 2003: 1). Among human imagination devices, metaphor and metonymy are of primary interest in one of the earliest and most significant cognitive studies launched by Lakoff and Johnson (1980). The basic premise of this cognitive approach is that metaphor and metonymy are not purely rhetoric devices; however, everyday speech and even thought are fundamentally metaphorical and metonymical (Evans et al., 2007: 16-17). According to this view, conceptual metaphor and metonymy should be regarded distinct from metaphorical or metonymical expressions in view of the fact that a conceptual metaphor or metonymy may (or may not) be instantiated in linguistic constructions (and other types of non-verbal communicative devices), including words, sentences, etc. (Barcelona, 2003: 5). Compound words as linguistic constructions might be metaphorical and/or metonymical. An increasing amount of literature has already been concerned with analysing the role of cognitive concepts, including metaphor and metonymy, in the case of the semantics of compound words, especially English compounds. Focusing on adjective-noun combinations, Sweetser (1999) confirms that due to complex and variable interpretation of these constructions, their context-based analysis requires applying a variety of cognitive mechanisms including metaphor, metonymy, blending theory, frames, and active zones. Turner and Fauconnier (1995), Coulson (2001), and Fauconnier and Turner (2003) have investigated the semantics of some English compound nouns and compound adjectives within conceptual blending theory. They acknowledge the applicability of conceptual blending theory with regard to the semantic analysis of compound words. As Fauconnier and Turner (2003) point out, compound constituents mention two elements in two input spaces, and the listener must blend different elements of triggered input spaces within an integration network to achieve the whole meaning of the compound. Geeraerts (2002) proposes a prismatic model to explain how metaphor and metonymy interact with each other in the meaning of some Dutch idioms and compounds. He demonstrates that metaphor and metonymy may work in consecutive, parallel, or interchangeable ways. In an analysis of hyponymic compounds, such as *wheelchair*, Radden (2005) concludes that through metonymy the modifier element of hyponymic compounds foregrounds one salient property of the category. Radden (2005: 19) also claims that a PART FOR WHOLE metonymy is involved in compound words; this argument has been also confirmed by Janda (2011). In an attempt to provide the detailed cognitive analysis of metaphorical and/or metonymical compounds, Benczes (2006a) presents a comprehensive description of various ways in which the meaning of noun-noun compounds can be affected by metaphor

and/or metonymy. In the case of metonymy, she identifies five patterns, namely: metonymy-based modifier, metonymy-based profile determinant, metonymy-based modifier and profile determinant, metonymy-based compound as a whole, and metonymy-based relation between two constituents. Although Benczes (2006a) relies mainly on conceptual blending theory in her analysis, she also embraces metaphor and metonymy as analytical tools, following Sweetser's (1999) argumentation. Benczes' (2006b) investigation concentrates on the semantic analysis of the American neologism 'freedom fries'. She demonstrates that both constituents of this compound are respectively affected by DEFINING PROPERTY FOR CATEGORY (freedom for America) and METHOD FOR PRODUCTION (fried in oil for potatoes) metonymies. Barcelona (2008) discusses the interaction of metaphor and metonymy in the semantics of English and Spanish bahuvrihi compounds. According to Barcelona (2008), the exocentric nature of all bahuvrihi compounds is exclusively the output of the metonymy of CHARACTERISTIC PROPERTY FOR CATEGORY. He also claims that the meaning of bahuvrihi compounds is appropriately accountable in terms of conceptual blending theory. In a more recent study, Barcelona (2012) demonstrates how metonymy can affect the lexicon in three levels, specifically under the lexicon (phonology), in the lexicon (lexical metonymies), and above the lexicon (grammar). Barcelona (2012: 261) considers compound words as one part of grammar that can be affected by metonymy. Through carrying out an empirical study on the process of figurative meaning interpretation, Onysko (2014) investigates the role of metaphor and metonymy in the semantics of novel English noun-noun compounds. Based on participants' meaning interpretation of novel compounds, he introduces conceptual metonymy as the most basic and frequent figurative process in meaning interpretation. More recently, Brdar and Brdar-Szabo (2013) and Brdar (2017) elucidate the role of metonymy in word-formation processes comprehensively. They acknowledge that metonymy and concatenative word-formation processes, especially compounding and suffixation, do not happen simultaneously but operate cyclically. Accordingly, in the case of compounding, metonymy acts either upon the compound constituents, i.e., before compounding, or upon the overall meaning of the compound, i.e., after compounding. To determine the qualitative types of metonymic processes involved in the meaning of compounds, Diyanati and Onysko (2019) take Persian one-part metonymical compounds as a test case. They suggest that based on the relation between the metonymical element and the referent, different degrees of metonymic complexity are observable. They also claim that the prototypical nature of the metonymic association in the frame-based combination of compound constituents affects metonymical complexity. Although a detailed cognitive analysis of Persian noun-noun nominal compounds (Diyanati, 2019) has revealed that metonymical nominal compounds are more frequent than metaphorical compounds, no attempts have been made yet to uncover regularities behind the operation of metonymy in the meaning of Persian compounds. Accordingly, the present paper sets out to show various patterns in which metonymy can affect the meaning of Persian noun-noun nominal compounds, as the most productive compounding pattern in Persian (Amir-arjmandi and Assi, 2014: 12).

As some previous researches (Barcelona, 2008; Benczes, 2006a; Schmid, 2011) have acknowledged that conceptual blending theory can successfully explain the semantics of metaphorical and/or metonymical compounds, the current study relies on the conceptual blending model for tackling metonymy in Persian noun-noun nominal compounds. The remaining parts of the paper are structured as follows: section 2 lays out the theoretical dimensions of conceptual metonymy; section 3 accounts for the network model of conceptual blending theory; the fourth section is concerned with the methodology used for data collection; and finally, section 5 will follow on with analysing the selected Persian metonymical compounds within the network model of conceptual blending theory. Central to the fifth section will be the discussion of various ways metonymy may affect the meaning of Persian noun-noun nominal compounds.

2. Metonymy in cognitive linguistics

Even though in classical rhetoric metonymy was regarded as one of the major figures of speech, Lakoff and Johnson's (1980) ground-breaking book defines metonymy as another conceptual mechanism beyond metaphor 'to conceptualise one thing by means of its relation to something else' (37, 39). Accordingly, despite the traditional rhetoric, cognitive linguistics views metonymy as an essential conceptual process that influences various semiotic systems, particularly language. Metonymy, as a basic cognitive process, involves two conceptual elements which 'are contiguous in experience' (Lakoff and Johnson, 1980: 35; Barcelona, 2015: 145), and one of them is used to provide access to the other. More specifically, metonymy is described as an asymmetric mapping in which one conceptual entity, the source or the vehicle, is mapped or projected onto another contiguous conceptual entity, the target.

Although cognitive linguists have reached a complete consensus on the cognitive/conceptual nature and properties of metonymy, there is no consistent agreement on the conceptual structure 'within' which the source element is mapped onto the target element (cf. Barcelona, 2011). The definition of metonymy taken in this paper will be that of Radden and Kövecses (1999). According to Radden and Kövecses (1999), metonymy is a cognitive process in which one conceptual entity, the target, is made mentally accessible by means of another conceptual entity, the vehicle, within the same ICM. ICMs (idealised cognitive models), as developed by Lakoff (1987), are the basic means to structure knowledge. They 'include not only people's encyclopaedic knowledge of a particular domain but also the cultural models they are part of' (Radden and Kövecses, 1999: 20). ICMs contain rich details; however, they are 'idealised' in the sense that they represent an abstract of a number of experiences rather than specific instances of a given experience (Evans and Green, 2006).

3. Conceptual blending theory

Conceptual blending theory, as development of mental space theory (Fauconnier, 1994) and conceptual metaphor theory (Lakoff and Johnson, 1980), was originally introduced by Fauconnier and Turner (2002) with the aim of accounting for the human mental ability of blending on the conceptual level, that is, the ability of online conceptual combination and inventing new concepts (2002: v). According to Fauconnier and Turner (2002), through the process of conceptual blending, elements from input mental spaces are selectively projected and integrated into a blended space with an emergent conceptual content of its own. In this conceptual process, mental spaces refer to 'small conceptual packets' assembled while thinking and talking for local understanding and action (2002: 40). Elements within mental spaces are related to each other, and they are structured by our schematic knowledge, i.e., frames. The core idea of Fauconnier and Turner's (2002) proposed model is a mental space network, called conceptual integration network, which consists of at least four mental spaces, namely two input spaces, a generic space including shared elements of all spaces, and a blended space. Within conceptual integration networks, partial cross-space mapping connects counterpart elements within input spaces, and selected elements from input spaces are projected and merge a new blended space. The new blended space, as an integrated space, contains an emergent structure not projected from the inputs. Blending reduces the conceptual complexity of input spaces and yields them to a conceptual gestalt (Schmid, 2011). During blending, three processes, i.e., composition, completion, and elaboration, arise out of the emergent structure (Fauconnier and Turner 2002: 138-140). Based on various possibilities for reducing the complexity, connecting input spaces, and projecting elements and merging them into a new blend, a number of different kinds of integration networks are distinguishable. Fauconnier and Turner (2002) argue that four distinct kinds of integration networks stand out on a continuum and represent a gradient of complexity. In the simplex network, as the first type, one input space contains a frame with a set of roles and the other contains a set of values that fit with the roles in the first input space. Mirror network is the second type of conceptual integration network wherein generic space, input spaces, and the blended space have the same organizing frame. An organizing frame specifies the topology for the spaces, that is, it determines the relations among the elements within the space. Sharing the same organizing frame implies that the inputs mirror each other, and a cross-space mapping can easily be established. In the single-scope network, as the third type of network, each input space has its own different organizing frame, but only one of them shares its organizing frame with the blend. The fourth type of conceptual integration network is double-scope network, in which each input space has its own distinct organizing frame, but both organizing frames make an equal contribution to structure the blended space.

What is necessary to stress is that while a prototypical integration network is comprised of four spaces, the blended space of a network can also function as input space for a further

blending process. When the output of an integration network becomes the input for a further blend network, a multiple blend occurs.

According to Fauconnier and Turner (2002: 277), while our conceptual system is rich and vast, our linguistic system is relatively limited. This mismatch between the conceptual system and linguistic system raises a question: how can we convey the products of the conceptual system through the linguistic system? Fauconnier and Turner (2002: 227) believe that considering the linguistic system as a system of forms that functions as 'prompt for the construction of meaning' can be a solution to this problem. Following this approach, Fauconnier and Turner (2002) argue that words, like other elements, can prompt for mental spaces and be projected selectively to the blend. In compound words, each constituent prompts for an input space, and the frame associated with it is evoked in the space. The generic space which contains the commonalities of the inputs is evoked and maps onto each of the inputs, and elements and relations in inputs are selectively projected and form the blended space (Coulson, 2001). For example, if we consider the compound of *landyacht*, the constituents, which are called 'named elements', prompt for the space of land and yacht as input spaces. These inputs contain conventional meaning associated with the form of land and yacht. Following a cross-space mapping, some elements included in the inputs, together with the named elements, i.e., land and yacht, are projected into the blend. This projection results in a blended space that contains the new form of 'landyacht' and its distinct meaning.

4. Methodology

In this study, the starting point was to provide a list of Persian metonymical noun-noun compounds. To this end, Sokhan (Anvari, 2003), an eight-volume Persian monolingual dictionary, was consulted, and a total of 624 noun-noun nominal compounds were collected. After the examination of the possible effects of metaphor and/or metonymy in the meaning of the collected data, metaphorical compounds (i.e. compounds with metaphorical constituent(s) and compounds where the meaning as a whole is metaphorical) were removed. In total, 280 metonymical compounds were detected. By analysing the collected metonymical compounds, various patterns (pathways) in which metonymy can affect the meaning of Persian noun-noun nominal compounds were identified. The following sections discuss the identified patterns and analyse a set of examples within conceptual blending theory to show in detail how metonymy operates in their meaning.

It needs to be elaborated that (in contrast to English right-headedness and French left-headedness) Persian exhibits both right- and left-headedness. Accordingly, since both head and modifier can be either to the right or to the left, the head element is marked in bold print to aid in the understanding of the compound structure.

5. Discussion

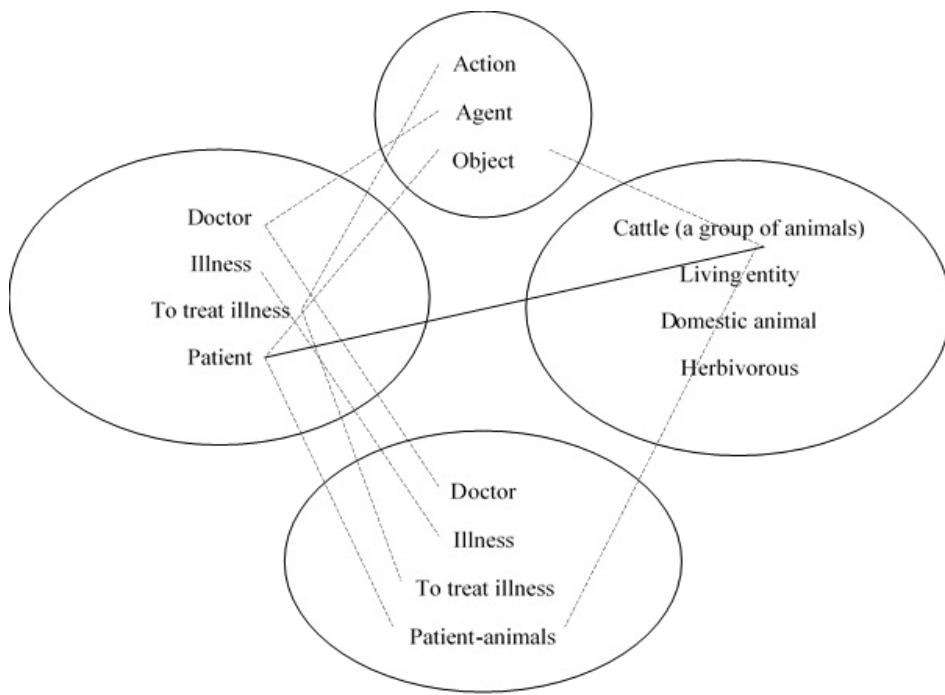
This section discusses the various ways metonymy acts upon noun-noun nominal compounds in our data. The idea that metonymy can affect the meaning of compounds is not new. As discussed earlier in the introduction, several cognitive linguists have confirmed that compounds, especially English compounds, are metonymical to some extent. What we wish to show in this section are the ways metonymy can affect the meaning of Persian noun-noun nominal compounds.

We have identified four patterns whereby metonymy affects Persian nominal compounds as follows: 1) metonymical modifier, 2) metonymical head, 3) metonymical head and modifier, and 4) metonymical compound as a whole. In what follows, the four patterns are discussed.

5.1. Compounds with metonymical modifiers

This section will look at compounds whose modifier element is understood metonymically. In total, 137 compounds of 280 metonymical compounds (48.92%) show this pattern. It seems that among Persian metonymical compounds, the metonymy-based modifier is the most frequent pattern. Interestingly, all of the compounds with metonymical modifiers are categorised traditionally as endocentric compounds, and their head element is literally interpreted.

dam-pezešk (lit. cattle-doctor) ‘veterinarian’ is a relatively straightforward case of compounds whose modifier is metonymical. The MEMBER OF A CATEGORY FOR THE CATEGORY acts upon the first constituent of the compound, i.e., *dam* (cattle), and it metonymically stands for the category of animals. As Figure 1 shows, the conceptualisation of *dam-pezešk* triggers a single-scope network with the space of *dam* (cattle) and the space of *pezešk* (doctor) as its inputs. The space of *dam* (cattle) is structured by the frame of animals, while the space of *pezešk* (doctor) contains the domain of medicine and someone who is trained to treat illness. The *pezešk* (doctor) input space consists of a number of elements such as the doctor and the illness, as well as a living entity that is treated (patient). The living entity in the space of *pezešk* (doctor) has no specific value. In other words, it has not been specified which living entity is treated by the doctor. *dam* (cattle), as a subcategory of animals, are alive and experience illness. Accordingly, since *dam* (cattle) can function as a value for the role of patient, a role-value vital relation maps the input of *dam* (cattle) onto the input of *pezešk* (doctor). The blended space inherits its organizing frame from the space of *pezešk* (doctor) and conceptualises a *dam-pezešk* (veterinarian). While the *pezešk* (doctor) space is literally projected to the blended space, the space of *dam* (cattle) is metonymically ('cattle' stands for animals) projected. The metonymic relation in this compound is a PART FOR WHOLE metonymy which acts within the Category-and-Member ICM.

FIGURE 1Integration network of *dam-pezešk*

bid-mesk (lit. willow-musk) ‘pussy willow’ is also an endocentric compound whose modifier, *mesk* (musk), is understood metonymically. The modifier of the compound stands metonymically for the defining property of musk. In the conceptualisation of ***bid-mesk***, a single-scope network is triggered. The space of *mesk* (musk) serves as one of the inputs and contains the concept of a fragrant substance obtained from a sac beneath the abdominal skin of the male deer. The space of *bid* (willow), as the other input, is distinctively different from the *mesk* (musk) space. The *bid* space contains a type of tree that has long, thin branches, narrow leaves, and catkins. In both inputs, a part-whole relation is observable; catkins are part of the tree, as a whole, and musk is part of the body of the deer. Accordingly, a generic space provides this similarity, and the <*bid* (willow)> is mapped onto the <*deer*>, and the catkins of the tree correspond to the <*mesk* (musk)>. The blended space inherits the organizing frame of the *bid* (willow) input, where the catkins of the tree are seen as *mesk* (musk) due to their fragrance. The blended space draws its elements from both of the input spaces selectively. Here, while the *bid* (willow) space is literally projected, the projection of the *mesk* (musk) space to the blend is metonymical.

As it has been argued, compounds with metonymical modifiers are common in Persian, and there are plenty of further Persian noun-noun nominal compounds that exemplify this pattern. Table 1 provides a selection of Persian compounds with metonymical modifiers. These

compounds can be further divided into subtypes according to the conceptual metonymy acting upon the meaning of the modifier.

As it has been demonstrated throughout this section, one pattern whereby metonymy acts upon the semantics of Persian nominal compounds is by affecting the modifying constituent of the compound. In this pattern, while the head element contributes its literal meaning, the modifier is understood metonymically.

TABLE 1

A selection of compounds with metonymical modifiers

COMPOUND	LIT. TRANS.	MEANING	TYPE OF METONYMY
<i>fir-bælal</i>	milk-corn	corn whose seeds are yet soft	ENTITY FOR ITS DEFINING PROPERTY
<i>qolve-sæng</i>	kidney-stone	cobblestone, a rounded stone larger than a pebble and smaller than a boulder	ENTITY FOR ITS DEFINING PROPERTY
<i>xan-dadaf</i>	khan-brother	the oldest and respected brother	ENTITY FOR ITS DEFINING PROPERTY
<i>tjub-pænbe</i>	wood-cotton plant	cork	ENTITY FOR ITS DEFINING PROPERTY
<i>madær-fæhr</i>	mother-town	metropolis	ENTITY FOR ITS DEFINING PROPERTY
<i>fir-zæn</i>	lion-woman	brave woman	ENTITY FOR ITS DEFINING PROPERTY
<i>gav-sændoq</i>	cow-box	strongbox, safe box	ENTITY FOR ITS DEFINING PROPERTY
<i>qalpaq-dozd</i>	hubcap-thief	a thief who steals exterior accessories of cars, such as, hubcap'	PART FOR WHOLE
<i>dʒæ?be-ræng</i>	box-color	painter box	PART FOR WHOLE
<i>næx-dændan</i>	thread-tooth	dental floss	OBJECT FOR ACTION
<i>sæng-e-pa</i>	stone-for-foot	stone used for cleaning foot	OBJECT FOR ACTION

5.2. Compounds with metonymical heads

This section will focus on compounds that contain a metonymical head noun and a non-metonymical and non-metaphorical modifier noun. Of the total of 280 metonymical compounds, in 64 compounds (22.85%), the head element is understood metonymically, i.e.,

it is a reference point to access a target entity within the same ICM. It is noteworthy that all of these 64 compounds are categorised traditionally as exocentric compounds, and they are conceptualised within a single-scope network.

An interesting example of compounds with a metonymical head is provided by **zæbt-e-sowt** (lit. recording-sound) ‘tape recorder’. The ACTION FOR INSTRUMENT conceptual metonymy acts upon the first constituent, i.e., *zæbt* (recording), and it implies the instrument that is used for recording. The domain *zæbt* (recording) serves as one of the inputs to the single-scope network. The other input space is the *sowt* (sound) domain, which has a distinct different organizing frame from the *zæbt* (recording) domain. In the *zæbt* (recording) space, the action of recording is the main concept; however, it is not clear what is recorded. Apart from the action of recording, a further activated concept in the *zæbt* (recording) space is the instrument that is used for the action of recording. The *sowt* (sound) input contains the concept of sound, as an unstable and recordable entity. An overarching generic space of ACTION, OBJECT, and INSTRUMENT made possible the linking of the two inputs. A role-value vital relation maps sound onto the role of object in the recording input. Through the metonymical projection (ACTION FOR INSTRUMENT) of the *zæbt* (recording) input and the literal projection of the *sowt* (sound) input, a blended space emerges that contains the concept of a sound recorder device. Since the aim of recording is to have access to recorded sounds, a sound recorder device indeed re-products sounds as well. It seems that this part of the whole meaning of **zæbt-e-sowt** results from the backward projection of the blended space to the inputs.

tsub-pærde (lit. wood-curtain) ‘curtain rod’ is another example of compounds whose head element is understood metonymically. **tsub-pærde** can be understood as a fixed strip of wood, metal, etc., from which a curtain hangs. In this compound, the head element, i.e., *tsub* (wood), metonymically stands for a long narrow device that is made of any kind of material. What is intriguing about **tsub-pærde** is that a metonymic chain acts upon the head element. Through the metonymy of A MEMBER OF A CATEGORY FOR THE CATEGORY, the wood stands for the general category of material. Then, through the MATERIAL CONSTITUTING AN OBJECT FOR THE OBJECT conceptual metonymy, which acts within Constitution ICM, the material stands for a long narrow device that is made of that material. The whole meaning of **tsub-pærde** can be analysed by a single-scope network. The *tsub* (wood) domain constitutes input 1 of the network. The *pærde* (curtain) domain is the other input space. The *tsub* (wood) input contains a hard, fibrous entity that forms the greater part of trees. In addition, *tsub* (wood), as a member of the category of material, is used to make wooden devices with a definite function. In the *tsub* (wood) input, the function of wooden devices, as a role, has not been specified. The other input contains the curtain, a piece of cloth that hangs across a window to make a private place or to prevent light from entering. It is only in a hanging position that the curtain can play its part. Considering that the curtain cannot hang by itself, the function of the curtain depends on an entity that is used to hang the curtain. As it has

been already pointed out, in the *tsub* (wood) input, the function of the wooden device has no value. Accordingly, a generic space of DEVICE, its MATERIAL, and its FUNCTION maps onto the inputs. Through a role-value relation, the function of the wooden device is brought in connection with the entity that is used to hang the curtain. The elements of the inputs are selectively projected. They yield to a blended space containing a device (not necessarily a wooden device) that is used to hang the curtain across the window. As the emergent structure of the blend shows, while the *pærde* (curtain) input is literally projected to the blend, the projection of the *tsub* (wood) input is affected by a metonymic chain, whereby wood (a member of the material category including iron, glass, etc.) stands for the whole category, and the category stands for devices made of it.

Our analyses show that in some cases metonymy acts just upon the head constituent of compounds. Thus, while the modifying constituent contributes its literal meaning, the head constituent contributes a metonymical interpretation to the whole meaning of the compound. Table 2 presents further examples of compounds with metonymical heads and non-figurative modifiers in Persian.

TABLE 2

A selection of compounds with metonymical heads

COMPOUND	LIT. TRANS.	MEANING	TYPE OF METONYMY
<i>mærg-e-muf</i>	death-of-rat	poison to kill rat	EFFECT FOR CAUSE
<i>adzor-færſ</i>	brick-carpet	pavement brick	ENTITY FOR ITS FUNCTION
<i>sæng-ab</i>	stone-water	a large stone bowl to keep water in old mosques	MATERIAL CONSTITUTING AN OBJECT FOR THE OBJECT
<i>dozd-bazar</i>	thief-bazaar	somewhere there are a lot of thieves and thefts usually happen	ENTITY FOR DEFINING PROPERTY
<i>komæk-ranænde</i>	helping-driver	someone who helps the bus driver in intercity travels	ACTION FOR AGENT
<i>bæhar-narendʒ</i>	spring-bitter orange	bitter orange blossom	TIME FOR ENTITY
<i>ab-mive</i>	water-fruit	fruit juice	PART FOR WHOLE

5.3. Compounds with metonymical heads and modifiers

In another pattern, conceptual metonymy acts upon both constituents of a Persian noun-noun nominal compound, i.e., both the head element and the modifying element are metonymical and serve as reference points to access target entities. In total, of 280 met-

onymical compounds, 63 compounds (22.5%) have metonymical heads and modifiers. Like compounds whose head element is metonymical, compounds with metonymical heads and modifiers are classified traditionally as exocentric compounds. The whole meaning of these compounds is constructed through a combination of the metonymical interpretation of both constituents.

læfz-e-qælæm (lit. the phonetical form of a word-of-pencil) ‘speech with properties of text’ is one of the compounds in our data exemplifying compounds with metonymical heads and modifiers. In **læfz-e-qælæm**, the first noun acts as the head constituent, while *qælæm* (pencil) is the modifying constituent. The PART OF A THING FOR THE WHOLE THING conceptual metonymy acts upon the first constituent, i.e., *læfz* (the phonetical form of a word), and it is understood as the ICM of speech. The second constituent, i.e., *qælæm* (pencil), shows a more complex metonymical relation. Through a metonymic chain within the Action ICM, *qælæm* (pencil) stands for the property of the text, as the output of writing. What happens here is that, first, the instrument (*qælæm*) serves as a reference point to access the action itself through the INSTRUMENT FOR ACTION conceptual metonymy. Then, through the ACTION FOR RESULT conceptual metonymy, the action of writing stands for its result (text). Finally, the conceptual metonymy of ENTITY FOR ITS DEFINING PROPERTY relates the text to its salient property. Considering that literally *læfz* refers to the phonetical form of a word and *qælæm* is an instrument used for writing, the meaning of the compound requires a more complex analysis. An exciting double-scope network is triggered by the compound **læfz-e-qælæm**. The two inputs have different organizing frames, indeed. The *læfz* (the phonetical form of a word) input space contains the pronunciation form of a word that is produced by the organs of speech while speaking and constitutes a part of the whole speech. The *qælæm* (pencil) and writing domain serves as the second input space of the blend network. This input contains a number of elements, including the pencil (as the instrument for writing), the action of writing, and the output of writing, i.e., text, which has rather different properties from speech, such as words and grammatical constructions used specifically in writing. The abstract frame of ACTION, INSTRUMENT, and RESULT OF ACTION is contained in a generic space and maps onto both input spaces. This common structure makes some cross-space mappings between the two input spaces possible; the <writing> maps onto <speaking>, the <pencil> corresponds to the organs of speech, and the <speech> is brought in connection with the <text> in the writing domain. Through the integration of selectively projected elements from both inputs, we have in the blended space a speech that has the properties of writing and text. Thus, in this compound, the pronunciation form of the word refers to speech, while *qælæm* (pencil) denotes properties and style of writing. In other words, both inputs are metonymically projected to the blended space.

dæst-færman (lit. hand-steering wheel) ‘driving skill’ is another creative compound where both constituents are understood metonymically. The analysis of **dæst-færman** is slightly more complex than **læfz-e-qælæm**. Since a metonymic chain acts upon each constituent,

Through a chain of metonymies, the head element, i.e., *dæst* (hand), stands for manual skills. First, the BODY PART FOR ITS TYPICAL FUNCTIONS conceptual metonymy operates, whereby hand stands for manipulating objects. Then, through the TYPICAL FUNCTIONS FOR ATTRIBUTES CONNECTED WITH THEM, manipulating objects serves as a reference point to access manual skills (cf. Barcelona, 2003: 266). Similarly to the *dæst* (hand) constituent, the modifying constituent serves as a salient reference point by which the action of driving can be accessed through a metonymic chain. *færman* (steering wheel), as part of the vehicle, stands for the whole vehicle through the typical metonymy of PART FOR WHOLE. This is followed by the second metonymic shift from the vehicle to driving through an OBJECT FOR ACTION metonymy. The structure of the meaning of ***dæst-færman*** can be best explained with the help of a double-scope blend network consisting of the *dæst* (hand) input space and the *færman* (steering wheel) input space. The *dæst* (hand) input contains hand as the main body part used widely to manipulate objects. Considering that manipulating objects involves the ability to skilfully move hands, having (manual) skills is also contained in the *dæst* (hand) input space, although the type of skill is not clear. The other input space also contains a number of concepts such as the steering wheel, the vehicle, and the act of driving the vehicle. The two input spaces are linked by a role-value relation, which maps <the act of driving>, as a value, to <having skill to do something>. In the blended space, <the skill to do something> and <the act of driving> are merged, thereby we get <the skill to drive> as the emergent meaning. The steering wheel is the main part of the vehicle that can be manipulated by the driver to control the vehicle and its direction. On the other hand, the primary function of the hands is manipulating and controlling objects that, if done more and more, would become a skill. Therefore, how skilfully a person can drive a vehicle is conceptualised through serving hand and steering wheel as cognitive reference points to access the concepts of skill and driving, respectively. Further examples for compounds with metonymical heads and modifiers will be given below in Table 3.

Needless to say, compounds where both constituents are understood metonymically require a more complex meaning construction process than compounds where just one constituent is metonymical. Employing a double-scope network in the analysis of compounds with metonymy-based heads and modifiers confirms their meaning complexity.

5.4. Compounds as metonymical wholes

Acting upon the compound as a whole is just another way metonymy can influence the meaning of Persian nominal compounds. In this case, the construction of the compound as a whole serves cognitively to access a target entity. Compound words that are created in this way consist of two components, a head element and a modifying constituent. The compound as a whole refers to a defining property of the target entity through the conceptual metonymy of PART FOR WHOLE. In total, we came across 16 compounds (5.71%) which form a metonymic whole. All of these compounds are semantically classified as exocentric compounds.

TABLE 3

A selection of compounds with metonymical heads and modifiers

COMPOUND	LIT. TRANS.	MEANING	TYPE OF METONYMY
<i>fir-xet</i>	milk-adobe brick	purgative manna	Head: ENTITY FOR ITS DEFINING PROPERTIES Modifier: ENTITY FOR ITS DEFINING PROPERTIES
<i>xak-fir</i>	soil-milk	sisymbrium irio, london rocket seeds	Head: ENTITY FOR ITS DEFINING PROPERTIES Modifier: ENTITY FOR ITS DEFINING PROPERTIES
<i>sekær-pænir</i>	sugar-cheese	noghl, a traditional soft candy that is made by boiling sugar with water and rose water	Head: MATERIAL CONSTITUTING AN ENTITY FOR THE ENTITY Modifier: ENTITY FOR ITS DEFINING PROPERTIES
<i>tjub-sigar</i>	wood- cigarette	wooden holder to smoke cigarette	Head: MATERIAL CONSTITUTING AN ENTITY FOR THE ENTITY ITSELF Modifier: OBJECT FOR ACTION
<i>dʒæhænnæm-dærre</i>	hell-valley	an unpleasant, painful, and insufferable place	Head: SPECIFIC FOR GENERIC Modifier: ENTITY FOR ITS DEFINING PROPERTIES
<i>bæhar-xab</i>	spring-sleep	a part of the building where fresh air flows and is used for sleeping in warm season	Head: ACTION FOR PLACE WHERE ACTION IS DONE Modifier: PART FOR WHOLE

sæng-sær (stone-head) ‘a kind of edible fish whose head is hard and rigid’ is an interesting example of compounds in which the combination as a whole is metonymical. In *sæng-sær*, the second noun, i.e., *sær* (head), acts as the head element, while the first noun, i.e., *sæng* (stone), functions as the modifying constituent. The semantic relation between the two constituents is that of comparison. In other words, a metaphorical relationship exists between the constituents through which *sær* (head) is conceptualised as *sæng* (stone) because of its hardness. What is interesting about the meaning of this compound is that it also involves a metonymic extension, which results in ‘a fish whose head is hard and rigid like a stone’. Through the conceptual metonymy of PART FOR WHOLE, the concept of <a hard and rigid head> serves as a cognitive reference point in order to access to the whole entity, i.e., fish. *sæng-sær* triggers an exciting multiple blend. This means that the blending process of this compound starts off with the *sæng* (stone) domain and the *sær* (head) domain, as input spaces, of which the former is the source domain and the latter the target domain. The metaphoric relationship operates between the two inputs. Possible elements within both inputs are projected and a blended space is merged, which contains a head that is hard and rigid like a stone. This blended space serves as the input space for another further

blending, where the two input spaces of a hard and rigid (stone-like) head and the fish are integrated. Through a part-whole vital relation, the fish as a whole is mapped to one part of its body, which has a defining property and seems to be the most salient part of it. In the blended space, fish and its head are fused. A hard and rigid head is part of the fish ICM, and since it is cognitively salient, it serves as a point to access the whole ICM of fish. Needless to say, because of a close association between the body and its parts, the latter can easily be used to access the body, as a whole.

Similar to *sæng-sær*, the compound *kase-poſt* as a whole is metonymical. The first noun, i.e., *kase* (bowl), acts as the modifying constituent for the second noun. The meaning construction of *kase-poſt* also involves two steps; first, the second noun, i.e., *poſt* (back), stands in a metaphorical relationship to the noun *kase* (bowl), based upon its resemblance. Thus, there is a back that is curved like a bowl in an upside-down position. This metaphorical conceptualisation serves itself as the input for a further metonymic extension (PART FOR WHOLE), thereby *poſt* (back) stands for the whole entity (i.e., turtle). Just like in the case of *sæng-sær*, the meaning of *kase-poſt* evokes a multiple blend. Table 4 lays out further examples of compounds in which a metonymical mapping underlies the compound as a whole.

TABLE 4

A selection of compounds as metonymical wholes

COMPOUND	LIT. TRANS.	MEANING	TYPE OF METONYMY
<i>kise-tæn</i>	bag-body	coelenterate, an aquatic animal which has bag-like body	PART FOR WHOLE
<i>xær-guſ</i>	donkey-ear	rabbit	PART FOR WHOLE
<i>lak-poſt</i>	shell-back	turtle	PART FOR WHOLE
<i>sæng-poſt</i>	stone-back	turtle	PART FOR WHOLE

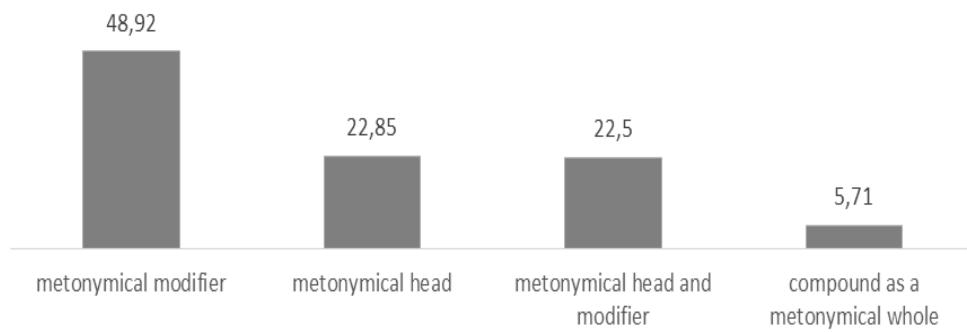
It is worth noting that in the compounds discussed so far in this section, metonymy acts definitely after metaphor. This means that the whole meaning of the compound cannot be explained by reversing the sequence of the metaphor and metonymy. Due to this sequencing of cognitive processes, what the listener takes as prompt (to construct a meaningful conceptual representation) is a metonymic whole, not a construction where the metaphor and metonymy act simultaneously. Given that the focus of the study is specifically on metonymical compounds, the semantic analysis of Persian nominal compounds that are metaphorical and metonymical as a whole is deferred for future work.

As can be seen in Figure 2, when comparing the frequencies of the four patterns whereby metonymy affects the meaning of Persian noun-noun nominal compounds, compounds

with metonymical modifiers are by far the most frequent pattern. This does not come as a surprise. Considering the semantic projection from the modifier to the head element, 'i.e., the head-centric nature of compounds' (Onysko, 2010: 245), compounds in which the modifying constituent is metonymical and the head element is non-figurative are semantically less complex. Based on the diagram, compounds in which the whole construction is metonymical take up the lowest rate. This low rate might be due to the complexity of the meaning construction process (two-step analysis) in these compounds.

FIGURE 2

Frequency of metonymical compounds per pattern



6. Conclusion

The purpose of the present study was to determine various ways in which conceptual metonymy affects the meaning construction of Persian noun-noun nominal compounds and yields to metonymical compounds. The results of this investigation show that four major types of metonymical compounds are identifiable in Persian: (1) compounds with metonymical modifiers and non-figurative head elements, such as *dam-pezešk* (cattle-doctor) 'veterinarian'; (2) compounds with metonymical heads and non-figurative modifiers, such as *tsub-pærde* (wood-curtain) 'curtain rod'; (3) compounds with metonymical heads and metonymical modifiers, such as *dæst-færman* (hand-steering wheel) 'driving skill'; and (4) metonymical compounds as a whole, such as *kase-post* (bowl-back) 'turtle'. In the last pattern, the whole meaning of the compound can be reached through a metonymic extension that acts right after a metaphoric relation linking the two constituents of the compound. This study found that in endocentric compounds, conceptual metonymy may act just upon the modifying constituent. In contrast, in exocentric compounds, it may operate on the head element, the modifier, or the compound as a whole. In the case of traditionally exocentric combinations, we did not come across compounds where the modifier contributes its metonymical meaning, and the head element is understood literally. An implicit conclusion of this pattern of metonymic operation is that endocentric compounds may be figurative (i.e., metonymical), similar to exocentric compounds. However, what distinguishes

between metonymical endocentric compounds and metonymical exocentric compounds is the metonymical part of the construction (the head, the modifier, or the construction as a whole). In exocentric compounds, either the head constituent (the second pattern), the two constituents (the third pattern), or the construction as a whole (the fourth pattern) may be understood metonymically. On the contrary, in endocentric compounds, only the modifying constituent may contribute its metonymical meaning (the first pattern). This means that the head constituent of endocentric compounds contributes its literal meaning and it can be modified by a noun that contributes its literal meaning, such as *ab-bæha* ‘water-cost’ (cost of water), its metonymical meaning, or its metaphorical meaning (it seems possible). The analysis also confirms Brdar and Brdar-Szabo’s (2013) and Brdar’s (2017) argumentation, that is, conceptual metonymy may act upon the constituents of the compound, i.e., prior to the compounding process (the first, second, and third pattern), or operate on the meaning of the compound as a whole, i.e., posterior to the compounding process (the fourth pattern).

As has been pointed out, Radden (2005) claims that it is through metonymy that in hyponymic compounds the modifying constituent foregrounds one salient property of the category. He also argues that compound words often involve the typical metonymy of PART FOR WHOLE. Also, Benczes (2006a) argues that the metonymical relationship between the modifier and the head is one of the ways to employ metonymy in the creation of compounds. She has mentioned *duckfoot* and *spoon handle* as compounds that exhibit a PART-WHOLE and a WHOLE-PART metonymic relationship between their constituents. Contrary to Radden’s (2005) and Benczes’s (2006a) argumentation, it appears that considering the PART-WHOLE and WHOLE-PART metonymic relationship between the two constituents of compounds glosses over the actual role of compounding word-formation process and regards non-figurative endocentric compounds, such as *duckfoot* and *spoon handle*, as metonymical compounds. Such an analysis yields the dependency of the compounding word-formation to the functioning of metonymy (which connects the two constituents). Accordingly, we exclude endocentric compounds where a PART-WHOLE or WHOLE-PART relationship exists between their constituents from metonymical compounds. In line with Brdar and Brdar-Szabo (2013) and Brdar (2017), we claim to believe that the metonymic relationship between the constituents of non-figurative endocentric compounds would describe compounding as a fundamentally metonymic process and even refute any need for compounding as a word-formation process.

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