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An Overview of Concept Hyponymy in Persian:
(From Cognitive Perspective)

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Abstract

In this paper the author is concerned with the role of cognitive and mental abilities of humans in the formation of hyponymy sense relation at the level of words of Persian language, additionally the importance of the role of developed image schemas in accordance with hyponymy, and also the function of some cognitive and analytical factors in the formation of these image schemas such as construal, consists of perspective (focus point and reference point), profile and scanning are so important to the author. The starting point is the study of the way of the formation of developed image schemas related to hyponymy sense relation. The author's fundamental claim is that the mentioned cognitive and analytical factors have a significant role in the formation of three developed image schemas related to hyponymy, and the mentioned schemas are given different names and they are shown through various figures as well. Next the theory of layered schemas (LST) is provided by analyzing some Persian simple structures including hyponymy. Moreover, we move towards a cognitive inter-lexical semantics in this paper by applying the proposed theory of the author (LST) on Persian linguistic data. For this purpose one example of Persian including hyponymy is analyzed on the basis of (LST). As the last step, the different stages of the formation of hyponymy sense relation between the words of Persian are shown through some cognitive figures to add a kind of consistency and support to the author's proposed program in this paper.

Keywords: hyponymy, developed image schemas, cognitive inter-lexical semantics, layered schemas theory

1. Introduction

Cognitivism considers language as a mental and cognitive system which is not separable from the other human's cognitive abilities. On the other hand we are not able to consider one element from the other inside the language system itself, it means syntax, morphology and phonology are not independent components, but they make a continuum accompanied with the other elements of language. In general we can say that the purpose of cognitivism is to access a deeper understanding of human's cognitive and linguistic capacities in order to use it's consequences for semantic, historical and cultural-sociological investigations of language and also for assigning a relationship between grammar and lexicon (Dabirmoghadam, 1383).

Cognitive linguistics studies the cognitive role of language which is the intruding role of informational structures in relation with the outside world. Cognitive linguists also believe that our interaction with the world is accomplished through the informational structures inside the mind and in this case consider the natural language as a treasure full of our knowledge about the world and a systematic collection of meaningful categories which helps us confronted with new experiences and save information about previous ones (Tibergien,1989).

In this article the author aims to investigate hyponymy sense relation at the level of words of Persian language on the basis of cognitive approach and explain the role and effect of speaker's mental and cognitive abilities to make such sense relation between the words, meanwhile the role of the part of the speaker's abilities called image schemas, which are the body of abstract and complex informational knowledge is mostly emphasized. The emphasis of the author is on the formation of developed image schemas, and their role in the

formation of hyponymy sense relation between words. Yet, all of the analytical-cognitive tools active in the formation of developed image schemas in the minds of Persian speakers are recognized. Finally the process of the formation of hyponymy is analyzed on the basis of layered schemas theory (LST), and its different stages shown through some cognitive figures, which definitely can be useful in consistency and supporting the role of cognitive and mental abilities of speakers through these processes. Generally the author investigates three hypotheses in this article:

A) The speakers of language cause the formation of hyponymy sense relation at the level of words of Persian language, according to their cognitive and mental abilities and the experience they gain from the outside world.
B) Speakers of Persian language prove the fundamental role of cognitive factors such as construal including perspective (focus point and reference point), profile and scanning in the formation of developed image schemas, by giving different construals from the scenes and phenomena of outside world.
C) Hyponymy sense relation at the level of words of Persian language can be analyzed by using layered schemas theory (LST).

2. Fundamental concepts

2.1.Image schemas: Image schemas are in between and conceptual structures used for thinking about more abstract topics and are formed on the basis of outside world experiences (Safavi,1383). From the technical term, image schemas, it is clear that they are mental, it means they are the representation of motional and comprehentional experiences and they are non-propositional as well. Meanwhile these schemas are imaginary; it means they are not restricted to special activity or comprehension. Johnson (1987) emphasizes on abstractness of schemas in comparison to the completeness of motional and visual images. According to Taylor (2002), image schemas exist at the level of generality and abstractness and they are above the concrete images. Speakers of language are able to create an infinite number of comprehensions, images and events deductively because of the abstractness of image schemas.

2.2. Construal

Safavi (1383) believes that it's the description of scenes by means of concepts and a collection of cognitive processes. Construal itself consists of some other cognitive factors:

2.2.1. Perspective

According to Safavi (1383), all of the speakers of language look at a special scene from a specific perspective and use language in order to point to this perspective. This is one of the factors of construal that consists of two other cognitive factors, named focus point and reference point.
Below is the summary description of these factors:

2.2.1.1. Focus point

Lee (2001) believes that focus point interferes with different kinds of construal and depends on one of the componential parts of the specific construal which has been distinguished and put in priority in comparison to the other parts. For instance, in sentence a) With this key, you can not open the door, the role of hearer has been distinguished, but in sentence b)This key can not open the door, the role of the key has been put in priority.

2.2.1.2. Reference point

It's the point according to which the position of other elements is compared in a specific scene (Safavi1383).

2.2.2.Profile

This is one of the other cognitive factors of construal, which provides a fundamental description of a special event or scene (Safavi,1383).

2.2.3.Scanning

It refers to the kind of the structure of profile and is divided into two groups: summary scanning and sequential scanning. In the former one, the description of an event is conducted by means of a noun phrase, while in the latter, the speaker describes the event, and provides the sequence of happening of that event (Safavi,1383).

2.3. Sense relations at the level of words

It refers to the study of the conceptual and semantic relations at the level of words. These kinds of relations can be seen among the concepts which seem independent at the first glance in semantic

component of language, but have a very close relationship with each other (Safavi,1383).

2.4. Concept hyponymy at word level

In this kind of relation there is the possibility that one special concept contains one or some other concepts. For example the word living things contains the meaning of the words creature and plant, and the word creature contains the meaning of the words animal and insect, and the meaning of the word plant contains the meanings vegetable, flower and tree as well. In this case the word which contains the meaning of the other words is called superordinate, and two or more words which share the same superordinate, are co-hyponyms. So animal and insect are co-hyponyms and the superordinate one is the term creature (Yule,1985).

3. Revision of concept hyponymy on the basis of cognitivism:

Conceptual relations between the words of language, is a kind of relation between the different contextual interpretations of words, not a relation between the words themselves. Therefore, the contextual interpretation of words, has a very important role in creating a conceptual relationship among the words of language (Croft,2004).

For instance, if we consider the words sag[1] [sæg] and heyvane khanegi[2] [heɪvâne Xânegɪ] in Persian, at the first glance, we may think that the conceptual relation between these two words, is a hyponymy relation, because the speakers of language interpret sag [sæg] as a kind of heyvane khanegi [heɪvâne Xânegɪ]. But, the hyponymy relation between these words, depends on contextual interpretation of the word sag [sæg]. If the speaker of the language means a kind of sag [sæg] which is considered as heyvane khanegi [heɪvâne Xânegɪ] in a specific context, then we can claim that between the two words is a relationship of hyponymy; otherwise if the speaker of language means a kind of sag [sæg] which is not considered as heyvane khanegi [heɪvâne Xânegɪ], there won't exist any kind of hyponymy relation between the two words. So, the speakers of Persian language do not consider the truth of the first proposition as a guarantee for the truth of the second proposition without considering the contextual interpretation:

a) [ɪn ʝek sæg æsʈ]
this a dog is
This is a dog.

b) [ɪn ʝek heɪvâne Xânegɪ æsʈ]
this a pet is
This is a pet.

Therfore, if we consider sag [sæg] x, and heyvane khanegi [heɪvâne Xânegɪ] y, here we can say that x is a kind of y. Moreover, interpretation is not something which is flexible all the time. For instance, we can never consider a hyponymy relation between two English words dog and cat in any context. They are completely distinct words (Croft, 2004).

In the following parts, the author aims to bring some examples of hyponymy from Persian, and analyze them on the basis of cognitivism by considering the context. Meanwhile,

1- dog 2- pet

identifying all of the analytical-cognitive tools which play important roles in making developed image schemas, and as a result making hyponymy sense relation is the other goal of the author. Finally, the evaluation of hyponymy sense relation on the basis of the author's layered schemas theory (LST) will be taken into consideration.

a) [mæn ʈeʔdâdɪ ɡol Xæɽɪdæm]
I some flowers bought
I bought some flowers.

b) [mæn ʈeʔdâdɪ ɽoz Xæɽɪdæm]
I some roses bought
I bought some roses.

a) [mâdæɽæm ʈælâ duːsʈ dâɽæd]
my mother gold likes
My mother likes gold.

b) [mâdæɽæm ɡuː ʃvâɽe duːsʈ dâɽæd]
my mother earings likes
My mother likes earings.

a) [væɾzeʃ bæɾâje sælâmæʈı mofıd æsʈ.]
Sport for health useful is
Sport is useful for health.

b) [ʃenâ bæɾâje sælâmæʈı mofıd æsʈ.]
Swimming for health useful is
Swimming is useful for health.

a) [loʈfæn meqdâɾı mıve bıɟâvæɾıd]
please some fruits bring
Please bring some fruits.

b) [loʈfæn meqdâɾı moz bıɟâvæɾıd]
please some bananas bring
Please bring some bananas.

The speakers of language cause the formation of some conceptual structures on the basis of mental and cognitive abilities, and the experience which is gained from the outside world as well. These structures are very abstract and complex, which are named schemas. In case of hyponymy sense relation, the author believes that speakers of language consider some characteristics for a special phenomenon by observing different kinds of that phenomenon. They also arrange all of the kinds of a special phenomenon in the same category. We have to know that all of the creatures of the world are able to categorize the world around them, but they categorize it from different perspectives. Words used for naming things in language, show the existence of categorization in language. For instance, the usage of the word flower means categorization of whatever which can be named flower, and differentiates it from the other categories.

Speakers of Persian language, in case of hyponymy, choose the elements or phenomena which are different kinds of a special phenomenon, as their focus point. For example, we say roz[1] noee gol ast [ɾoz nəuʔı gol æsʈ], so the focus point of speakers is roz [ɾoz] which is a kind of that special phenomenon, and the reason of choosing roz [ɾoz] as a kind of gol [gol] is all of the characteristics which belong to this kind of flower and puts it in flower category. Meanwhile, in the same proposition reference point doesn't play any role, and is

considered as a passive analytical-cognitive factor. Croft (2004) believes that there are two kinds of construal for hyponymy sense relation: default construal and contextual construal. For instance if we study hyponymy between two words, flower and Rose, for the construal of this relation, we use default construal according to concepts and principles of cognitivism. It means, the truth of the proposition, This is a Rose guarantees the truth of the proposition, This is a flower. In conclusion x is a kind of y in this sense relation. So Rose is considered as a flower in every context and every kind. In the next step, the speakers of Persian language start making a profile of this scene on the basis of focus point and the other cognitive factors:

[ɾoz nəuʔı gol æsʈ]
rose kind flower is
Rose is a kind of flower.

1- rose

As we witness here, roz [ɾoz] is considered as a kind of gol [gol] and is the focus point of the speakers in this profile. This profile is scanned in the minds of Persian speakers, and we say that the scanning process has been accomplished.

The author believes that a special kind of image schema is created here. This image schema is developed and named default typical image schema. Then it is used for thinking about more abstract topics, and make the hyponymy sense relation at the level of words of Persian language.

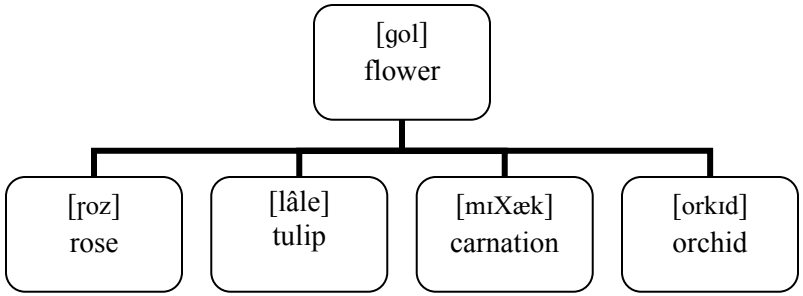

Figure 1. Abstract image of default typical schema

The other construal which plays an important role in the formation of typical image schema, and as a result the formation of hyponymy sense relation between the words of Persian language, is contextual construal. It's necessary to remind that hyponymy is a kind of relation between the contextual concept of words, and is always a context-based relation, but in some special cases, and between some special words, it requires a more specific context, because of this reason, we call this kind of construal, contextual construal.

For instance, if our aim is to analyze hyponymy relation between the words, heyvane khanegi [heɪvâne Xânegɪ] and sag [sæg], the truth of the proposition, in yek sag ast [ɪn ˌjek sæg æsʈ] must guarantee the truth of the proposition, in yek heyvane khanegi ast [ɪn ˌjek heɪvâne Xânegɪ æsʈ]. On the contrary to this prediction, we aren't able to consider every kind of sag [sæg] as heyvane khanegi [heɪvâne Xânegɪ] in Persian. Then if such a relation exists between these two words, the intended meaning of the speaker would be a kind of sag [sæg] which can be a kind of heyvane khanegi [heɪvâne Xânegɪ]. So the speakers of language interpret the scenes according to the context. In this construal, as in the default construal, a special kind of sag [sæg] is the focus point of the speakers, because it is distinguished by them. Reference point as another cognitive factor is again a passive cognitive tool in this construal. Finally, the speakers of Persian language start making a profile of this scene in their minds as follow:

[Sæge Xânegɪ nəʊʔɪ heɪvâne Xânegɪ æsʈ]
House-dog kind pet is
House-dog is a kind of pet.

As the last step this profile is scanned in the minds of Persian speakers as a developed image schema which has been named contextual typical image schema by the author.

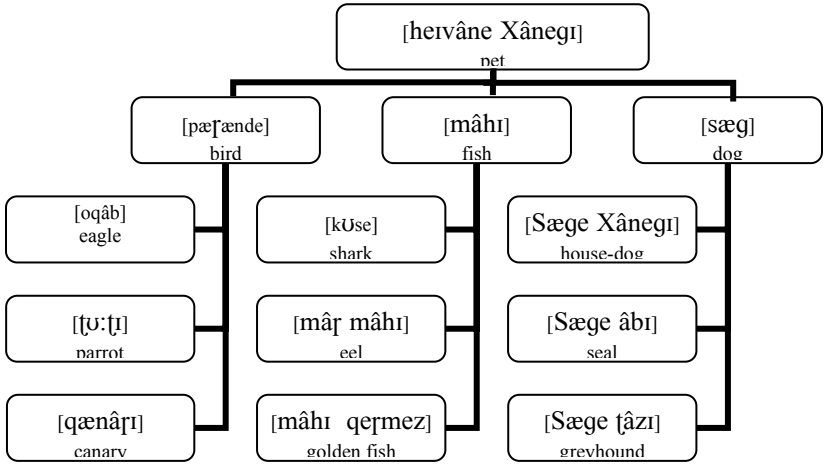

Figure 2. Abstract image of contextual typical schema

Containment schema is another developed schema which plays an important role beside the typical schema in the formation of hyponymy sense relation at the level of words of Persian language. The speakers of Persian language form this developed schema in their minds by gaining experience from the environment. The author believes that speakers of language form the abstract body of knowledge in their minds for the comprehension of more complex concepts. For instance, when they look at the glass of water, they can make the image that everything like a glass or …can contain another thing within itself. In case of the role of cognitive-analytical factors, we have to say that focus point in this kind of construal can be either on container element or on the containee. The reference point is the wall of the glass according to which, the position of the water can be determined. So, the reference point here is an active analytical-cognitive factor. Next, the speakers of Persian language make a profile of the intended scene as follows:

a) [meqdârɪ âb dær lɪvân æsʈ]
some water in glass is
There is some water in glass.

b) [lıvân meqdâɽı âb dâɽæd]
glass some water has
Glass has some water.

In hyponymy relation between the words of language, the superordinate word is interpreted as container, and the subordinate word is interpreted as containee. The last step is scanning process in which the special construal of containment is scanned and recorded in the minds of Persian speakers of language as an abstract developed schema named containment schema.

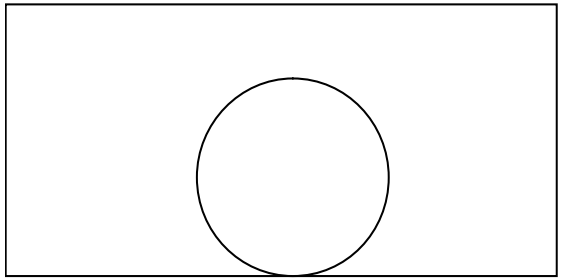

Figure 3. Abstract image of containment schema

The developed image schema which plays an important role in the formation of hyponymy sense relation at the level of words of Persian language, is made from the integration of both developed (default and contextual) typical schema and containment schema. On the other hand, the two schemas play a common role in this process.

4. Layered schemas theory (LST)

The author has represented the theoretical constructs of layered schemas model, and named this model as layered schemas theory (LST). Accordingly, this theory consists of i) the level of lexical concepts ii) primary layer of image schemas consists of experiential models iii) secondary layer of image schemas consists of various sub-models and vi) developed layer of image schemas containing abstract and complex schemas. Thus the meaning of an intended

word in an utterance arises by virtue of language users forming interpretations based on the lexical concepts employed, and the activation of different parts of experiential models, and sub-models (primary and secondary layers of image schemas). Moreover, the interpretations are always guided by background knowledge and extralinguistic context. Here the author is concerned with introducing and describing the construct of experiential models (primary layer). His claim is that experiential models, are related to the notion of frame (Barsalou 1999), semantic frame (Fillmore e.g., 1982; 1985; Fillmore and Atkins 1992) and domain (Langacker 1987). The main claim is that lexical concepts provide sites of access to experiential models and are relativised with respect to them. The reason for preferring this term over the related notions of domain/base or semantic frame, is that an experiential model is a coherent, non-linguistic knowledge structure, similar to what Langacker and Fillmore seem to have in mind. That is, it is a richly specified conceptual entity, akin to what Barsalou (1999) refers to by his use of the term frame. But an experiential model is accessed at various points by distinct lexical concepts, which are thus relativised to it, and in part, collectively constitute it. In other words, an experiential model represents an interface between richly-specified conceptual knowledge and nodes of access at particular points in the experiential models provided by specific lexical concepts.

Additionally, lexical concepts are conceptual units specialized for symbolic representation in language, but experiential models (primary layer) according to the author can be used as a basis for perceptual simulations, and consists of some sub-models (secondary layer) with more specific informational knowledge (see Barsalou 1999; and others, e.g. Prinz 2002 and Zwaan 2004). These sub-models together make the experiential models. Moreover, it is too important to add the point that in layered schemas theory (LST), according to the author, all of the schemas are arranged from the most primitive ones to the most developed schemas in a hierarchical position.

4.1.Lexical concept selection and interpretation

This is the process in which linguistic or extra-linguistic context selects for a particular lexical concept. Selecting the correct lexical concept is required for the interpretation process. One of the complexities associated with meaning-construction; however, is that many processes occur at the same time, and thus, it is far from clear that the processes involved are sequential (Gibbs 1994). Interpretation serves to activate part of the semantic potential that each lexical concept provides access to. This process of interpretation, then, provides the crucial break between lexical representation and meaning-construction. It is a consequence of interpretation that a conception arises.

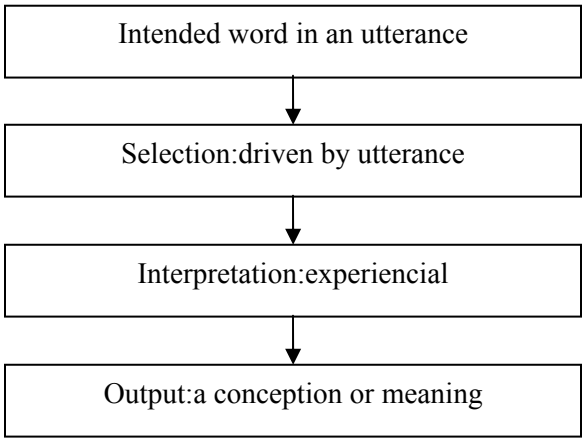

Figure 4. Meaning construction in layered schemas theory (LST)

5. Evaluation of hyponymy on the basis of (LST) theory

It's clear that evaluation of hyponymy sense relation on the basis of layered schemas theory would help us to prove the role of cognitive and mental abilities of humans in the formation of hyponymy at the level of words of Persian, and also demonstrates various stages of the formation of this sense relation.

Here we consider one example in this case to analyze it according to the author's theory:

a) [mæn ɟek dæsʈe ɡol Xæɽıdæm]
I one bouquet flower bought
I bought one bouquet of flowers.

b) [mæn ɟek dæsʈe ɽoz Xæɽıdæm]
I one bouquet rose bought
I bought one bouquet of roses.

Firstly, the author shows the relationship between lexical concept *gol*[1] [ɡol], it's experiential models (primary layer of image schemas), sub-models (secondary layer of image schemas), and developed layer of image schemas:

level of lexical concept

primary layer of schemas
(partially activated)

secondary layer of schemas
(Completely activated)

Developed layer of schemas

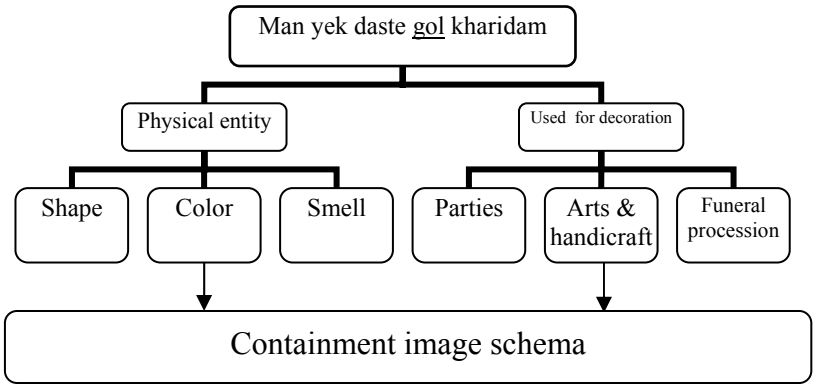

Figure 5. Formation of the concept gol

Here the author shows the relationship between lexical concept *roz* [ɾoz], its experiential models (primary layer of image schemas), sub-models (secondary layer of image schemas), and developed layer of image schemas:

level of lexical concept

primary layer of schemas
(partially activated)

secondary layer of schemas
(partially activated)

Developed layer of schemas

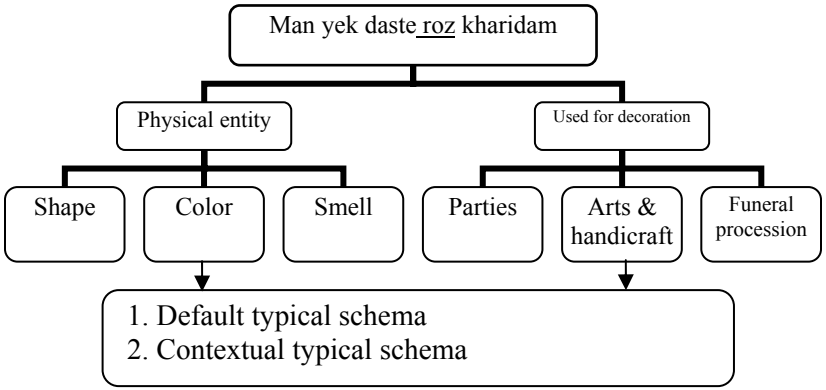

Figure 6. Formation of the concept roz

1- flower

As you see in these figures, lexical concept *gol* [gol] contains the concept of *roz* [ɾoz] in itself. Concept *gol* [gol] has a very wide conceptual scope that is able to contain the other concepts of the same kind within itself. Lexical concept *gol* [gol] is selected according to linguistic and extralinguistic context, then it provides access to part of it's semantic potential within experiential models. The experiential models include knowledge about the different uses of *gol* [gol]. Then more specific information included in experiential models called sub-models are accessed as well. But we have to take

into consideration that these fields are activated in general in case of lexical concept *gol* [gol]. The same process happens for the concept *roz* [ɾoz], and related experiential models, and sub-models are accessed by this concept, but here the information is more specific about lexical concept *roz* [ɾoz], and the activated fields by concept *roz* [ɾoz] are stimulated more specifically and more detailed. In addition, at the level of developed image schemas again we witness the activation of related abstract and complex image schemas, so for the concept *gol* [gol] containment schema and for the concept *roz* [ɾoz] default typical and contextual typical schemas are involved. The analysis of such relations on the basis of the author's layered schemas theory proves the significant role of the speaker's cognitive and mental abilities in the formation of hyponymy sense relation at the level of words of Persian language. Meanwhile, as it was found before, some of the other cognitive factors and tools interfere mostly in the formation of developed image schemas, and these developed image schemas are situated above humans experiential models and sub-models (primary and secondary layers of schemas) in the form of some abstract and complex body of knowledge, used for the comprehension of more abstract concepts. For instance, sense relations at the level of words is one of the abstract and complicated relations which are formed and recognized by the speakers of language with the help of developed image schemas and also primary-secondary ones. Two developed image schemas related to hyponymy, typical and containment schemas, cooperate with each other and with primary-secondary schemas to form this kind of sense

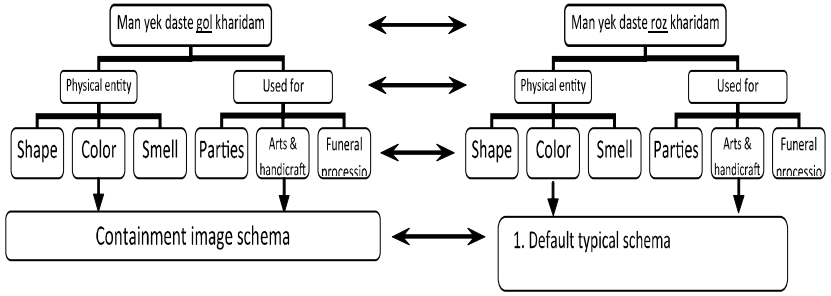

Figure 7. Model of formation of hyponymy sense relation between words

relation at the level of words, and the speakers of Persian recognize hyponymy sense relation between the concepts (*gol* [gol] and *roz* [ɾoz]) by the help and use of mentioned image schemas. In the following figure the author has shown this process between two intended concepts within a new model proposed for hyponymy sense relation at the level of words:

Conclusion

As the findings of this study show mental and cognitive abilities of the speakers of Persian language, and also the experience they receive from the environment play a significant role in the formation of hyponymy sense relation at the level of words of Persian. Meanwhile, image schemas are made on the basis of knowledge of outside world. As I proposed in this paper, two developed schemas named typical image schema and containment image schema, and primary-secondary layers of schemas are involved in the formation of hyponymy sense relation; however, we have to take into consideration that the typical one includes two schemas within itself: default typical and contextual typical image schema. All together are made in the speaker's minds on the basis of some cognitive and mental factors and tools. As proved and shown in the paper, factors like perspective (focus point and reference point), profile and scanning, totally known as construal, have the main role of making developed image schemas in the minds of speakers. Finally, I analyzed one Persian example according to layered schemas theory (LST) proposed here. By the use of (LST) theory we are able to move towards a cognitive inter-lexical semantics, because it plays the role of an interface between lexical concepts and cognitive principles and factors. Moreover, the research presented here is programmatic. As the mentioned models by the author are psychological rather than linguistic entities, we require a fully fleshed out psychologically-based account. Additionally, I have presented no experimental evidence for the different cognitive and mental processes involved here. Clearly, psycholinguistic evidence will be required in order to support, and modify the proposed and used theories in this paper.

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