



Reference Point Model, Cue Validity and Possessive Constructions: An Exploration in Cognitive Grammar

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ABSTRACT

Thirty participants from different L1 backgrounds (6 English, 6 German, 6 Japanese, 6 Chinese, 6 Greek) participated in production task. The experimenter used a set of sixteen pictures about possessive constructions which comprised of animate, inanimate, prototypical and non-prototypical stimuli for elicitation of possessive constructions in English language. The statistical analysis shows the significant effects of L1 and animacy. However, the effects of prototype were not significant. The factor animacy is dominant over other factors because the statistical results are only computed for the s-genitive constructions. The qualitative analysis also shows the similar results that participants preferred 's' possessive for describing the animate possessum and 'of' possessive construction for inanimate possessum. The results of the experiment support Langacker's model of Cognitive Grammar by demonstrating the form-meaning pairings that constitute its symbolic assemblies. For example, the different possessive constructions of "my" and "mine" represent different symbolic assemblies, each with a specific form-meaning pairing. This experiment examines how participants interpret and produce possessive constructions in English using the "form-meaning pairings" of Cognitive Grammar. It explores the influence of the reference point model and cue validity on the production of possessive constructions. The participants' responses reveal differences in the way they interpret and produce possessive constructions based on the reference point model, as well as on the degree of cue validity they assign to particular constructions.



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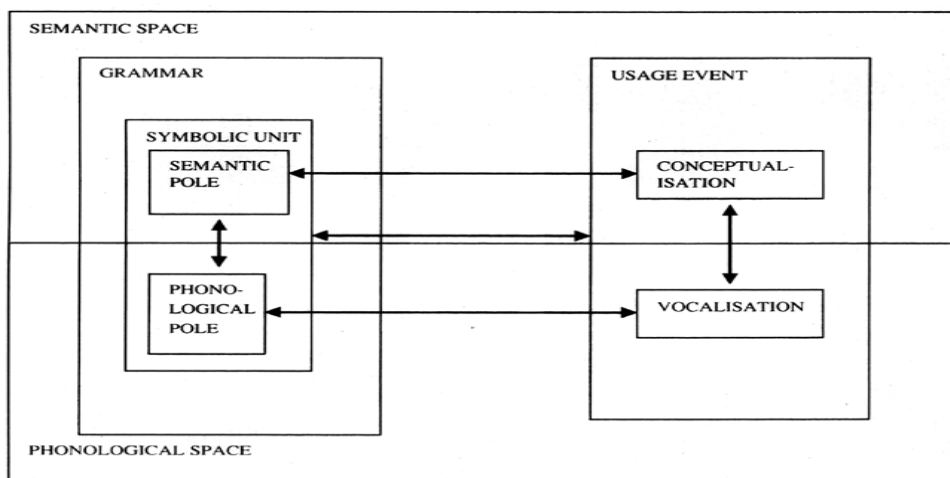
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1. Introduction

Cognitive grammar can be interpreted in two key ways. In a narrower sense, grammar is defined as the combination of syntax and morphology. In a broader sense, it encompasses not only syntax and morphology but also explores the functioning of language as a whole, aligning with approaches like generative and cognitive linguistics. Similarly, the concept of "construction" can be understood in two ways: narrowly, as the combination of syntactic phrases, and more broadly, as any type of linguistic unit. (as in cognitive approach by (Broccias, 2006). Langacker (1987) model is called cognitive grammar because it views language not as the product of specialized language modules but as the result of general cognitive processes. This perspective suggests that language operates under the same fundamental principles as other human cognitive systems. In this way, cognitive

grammar aligns with the generalization commitment. Broadly speaking, grammar refers to the entire language system, encompassing sound, meaning, and morphosyntax (Evens & Green, 2006). The term "grammar" in this context is not limited to its narrow meaning, which focuses solely on the morphological or syntactic aspects of language. Instead, it is used in a broader sense, encompassing the entire language system.

Figure 1: The Cognitive Model of Grammar (Langacker, 1987)



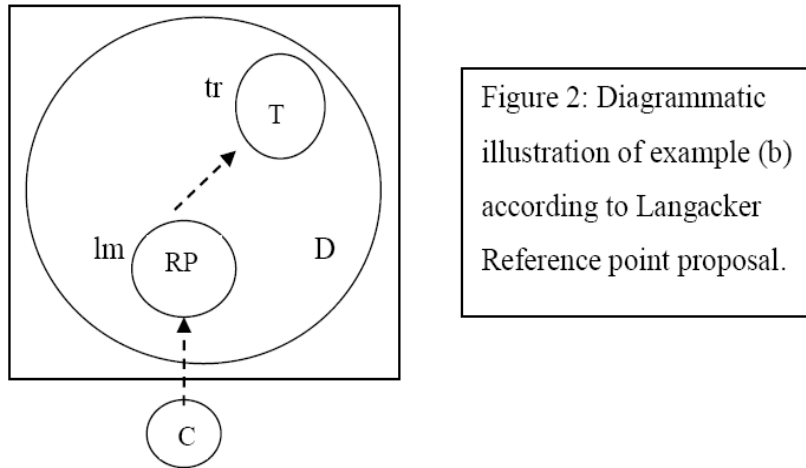
Langacker's Cognitive Grammar model adopts a symbolic or constructional perspective on language, rejecting the distinction between syntax and lexicon. Instead, it views grammar as a collection of form-meaning pairings, including morphemes, words, and grammatical constructions. These pairings, referred to by Langacker as symbolic assemblies, integrate sound, meaning, and grammar into a unified representation. Taylor (2003) characterizes prenominal possessives as a combination of syntactic, semantic, phonological, and pragmatic features, treating them as a prototype category with varying levels of membership. He argues that these constructions represent a grammatical realization of the reference point model, which helps to account for the specific constraints associated with this structure.

Langacker (1995) explains that the reference point model reflects a basic cognitive ability where we use one entity to mentally access and identify another entity (the target). This concept is evident in various linguistic forms, including prenominal possessives. For a possessive construction to be well-formed, the possessor must act as a suitable reference point to identify the target, known as the possessum. The relationship of possession involves two entities: the possessor (PR) and the possessum (PM), as shown in the following examples.

- | | | | |
|-----|-------------|-----|-----------------------|
| (a) | John's book | (b) | The girl's finger |
| | PR PM | | PR PM |
| (c) | My uncle | (d) | Strings of the guitar |
| | PM PR | | PM PR |

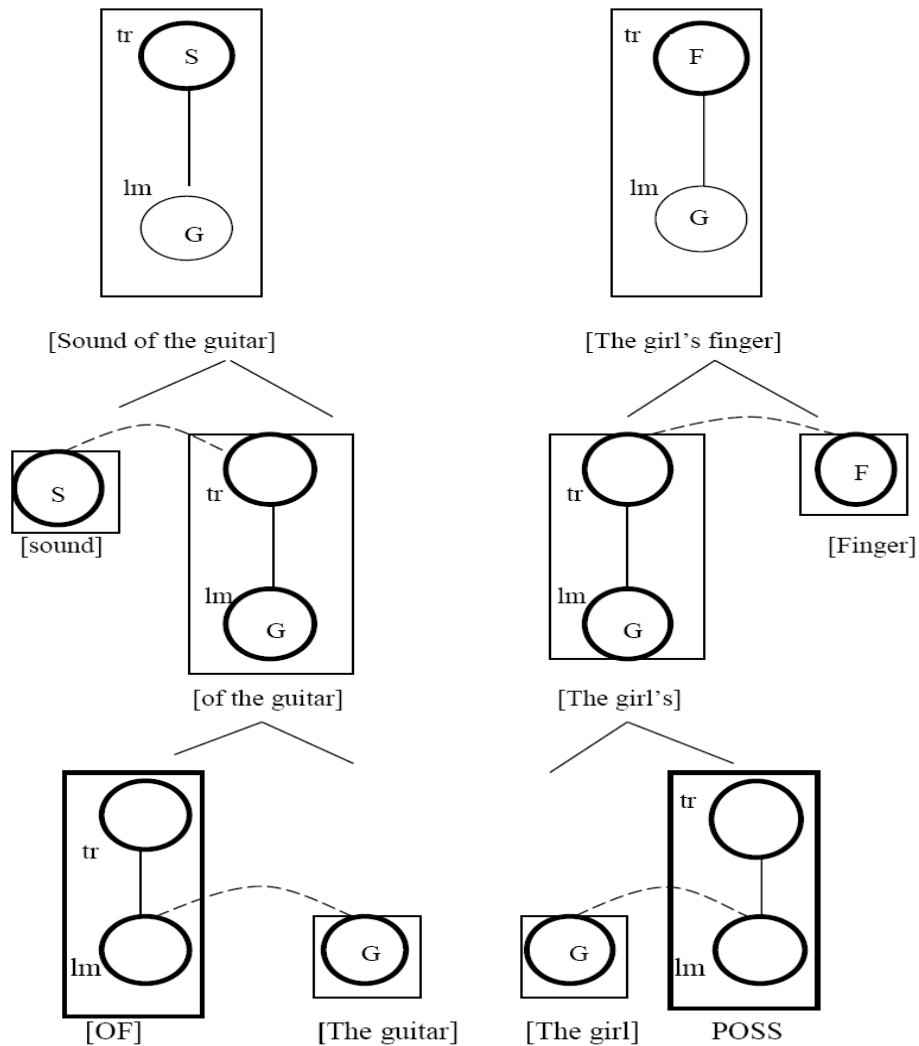
The relationship between the possessor (PR) and the possessum (PM) is not random but inherently asymmetrical. In English, possession is expressed through the possessive clitic 's, the preposition *of*, and possessive adjectives like *my* and *your*. Semantically, possessive relationships often denote kinship (e.g., *my brother*), body parts (e.g., *the girl's eyes*), or legal ownership (e.g., *Jean's shirt*). To explain the principles underlying the PR-PM relationship, Langacker introduced the reference point model. This model is based on the idea that we often use one entity as a mental reference point to establish a connection with another. Langacker describes this as the process of bringing an entity into individual conscious awareness by singling it out mentally (1995, p. 58). For instance, in the phrase *the girl's finger*, *the girl* serves as the reference point (RP) to mentally connect with the specific body part, *finger* (T) (see. Figure 1). Prototypical possessive constructions, such as those involving ownership, kinship, or part-whole relationships, rely on the PR acting as a reference point. However, there are various types of possessive relationships and multiple ways of encoding them linguistically.

Figure 2: Diagrammatic illustration of example b (Langacker Reference point model)



T = Target, D = Domain, C = Conceptualizer, RP = Reference point, tr = trajectory,
 lm = landmark, --> = mental path²

Figure 3: Diagrammatic representation of Possessive examples (Langacker's reference point model)¹



(a) Integration of the sound of the Guitar

(b) Integration of The girl's finger

¹(For more detail see; After Langacker 1991: 172)

Whenever a relation is built up between the two entities e.g. a PR & PM relation, both the entities don't have equal relation. One of the entity is more prominent and is the focus of attention that is the trajectory **tr** of the relation. The trajectory is then connected to the less salient entity i.e. the landmark **lm**. The example (figure 3a) characterizes the sound (tr) with respect to the guitar (lm).

Example (figure 3b) characterizes the finger (tr) with respect to the girl (lm). The emphasis is on the finger. But in case of Guitar on the table, the guitar is tr and table is lm. Because here the guitar is located with respect to table. Trajectory and landmark both serve as relation between the entities involved in a relation and the relation is characterized or determined by the status of these entities. The conceptualizer forms a mental connection with the PR entity, which functions as a reference point to identify the target entity, the PM.

The PR acts as the reference point, while the dominion (D) represents the area surrounding the reference point, containing related entities. For example, in (b), where the target entity is *finger*, the search domain includes body parts (Figure3). Similarly, if the target entity is *uncle*, the search domain would encompass relatives.

2. Cue validity of the Possessor²

Reference point analysis establishes a semantic connection between the PR and the PM. The two entities cannot be arbitrarily combined to create a possessive relationship. There are certain relations that are not compatible semantically. Reference point model poses some constraints on the semantic relation of PR to the PM. If two entities are semantically related to each other, it doesn't mean that they can be put together in the reference model. Some entities are better reference points for the identification of targets than others. The speaker or hearer tries to identify the target uniquely.

The question is what determines the choice of reference point? And why some entities that have a transparent semantic relationship with the target cannot function as reference points. For instance, *the tail's dog and *the hat's girl Taylor (1996) are implausible. Because in these constructions the tail and the hat cannot serve as reference points. The girls and the dog serve as a better reference point and have high cue validity than the tail and the hat. Certain entities provide a better and more reliable cue to identify the target and therefore, function as reference points.

In a part whole relationship, the whole has high cue validity for the identification of the part. While the part has minimal cue validity for the identification of the whole, especially a part which has no independent existence cannot serve as a reference point. Similar is the case with the items of clothing? The wearer has high cue validity than the items of clothing. The hat cannot characterize the girl and has zero cue validity with respect to the girl and that's the reason of implausibility of *the hat's girl.

3. Experiments

3.1 Production Task

3.1.1 Material

For the production task pictures were adopted from Nikolas (2010). She used these pictures. The production task consisted of 16 set of pictures. Eight set of pictures were about washing and eight set of pictures were about touching.

There were four conditions in this task that were *animate prototypical*, *animate non prototypical*, *inanimate prototypical* and *inanimate non prototypical*. In these pictures the animate PRs were a woman, a boy, a girl and a man. And inanimate PRs were house and tower. The four types of possessives are illustrated in the figure 4 below.

² For more detail see John R. Taylor (1969)

Figure 4: shows the pictures used for the animate prototypical & animate non prototypical possessives








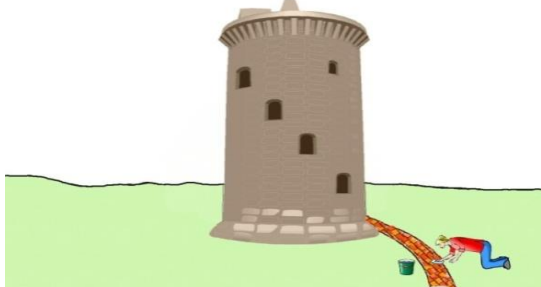
Animate possessors	
Animate Prototypical Boy/girl PR body parts PM	Animate Non prototypical Boy/girl PR bike/tennis racket PM
	
Cue: touch, woman, boy, head	cue: touch, woman, girl, bike
	
Cue: wash, woman, boy, face	Cue: wash, woman, girl, tennis racket

Figure 5: shows the pictures used for the inanimate prototypical & inanimate non prototypical possessives

Inanimate possessors	
Inanimate prototype House/tower PR Window, door PM	Inanimate Non prototypical House tower PR path and fence PM
	
Cue: touch, woman, door, house	cue: touch, woman, fence, house
	
Cue: wash, woman, window, house	Cue: wash, woman path, tower

4. Procedure

The experimenter has a set of 16 pictures in a folder. The participants saw the same set of pictures on a slide show. The participant's pictures were in a particular order while the experimenter's set of pictures were not in the same order as the participant's set of pictures. The participant has to help the experimenter to get her set of pictures arranged in the same order as that of participants'. The cue words were given at the bottom of the slides. The participants have to use these cues to help the experimenter. Participant has to

describe the pictures in a single sentence but in case if it doesn't help the experimenter. The experimenter asked the participant to explain the picture more. The participant was advised not to use the color hints to describe the pictures e.g. green shirt, blond hair woman etc. as the experimenter set of pictures was black and white. Participants' description was recorded for this task. After the experiment, the audio recording was transcribed and annotated using the ELAN multimedia annotator, and the data was analyzed both qualitatively and quantitatively.

5. Qualitative Analysis

The reference point model and cue validity have a significant impact on the production of possessive constructions. The reference Point model is a cognitive theory of language. It proposes that a speaker interprets a phrase or an utterance on the basis of its context. It means that a speaker may interpret same phrase differently in different contexts. According to reference point model speakers interpret possessive constructions in various ways; for instance when a speaker says "my friend's house, the speaker might be referring to a friend's house or it could be stranger's house depending on the context. Cue validity plays a significant role for the production of possessive constructions. The speaker may prefer 's-possessive' construction or 'of-possessive constructions : my friend's house vs the house of my friend. The speaker may consider one possessive constructions as more valid than the other one. Cues plays an important role for deciding which construction is more correct than the other one. The interpretation depends on the context and the degree of cue validity. It depends on to what degree cue seems valid.

Previous research (such as Langacker (1987, 1995); Langacker (2003, 2008); Leung and Williams (2012)suggests that form-meaning pairings of cognitive grammar play a significant role in the production and interpretation of possessive constructions. This study suggests that speakers from different L1 backgrounds interpret possessive constructions on form-meaning pairings of cognitive grammar. The results support Langacker's model. The participants choose different possessive constructions in different contexts based on the form-meaning pairings because they represent different symbolic assemblies e.g. my vs mine. The experiment shows differences in participant's responses based on their L1 background. They assign different degrees of validity to particular constructions based on the reference point model, as well as on the degree of cue validity. Moreover, the results of this experiment suggest that the form-meaning pairings of Cognitive Grammar are indeed present in the interpretation and production of possessive constructions.

6. Quantitative Analysis

Repeated measures ANOVA was carried out for the Production task. The results of the ANOVA are as follows. Note that the following results are for only for the s-genitive constructions. That's why the factor Animacy (for detail see. Rosenbach (2002, 2004, 2005, 2006, 2008, 2014) and Animacy Rule Model see. Romano (2016) is dominant over other factors.

Main effect of L1

There is significant effect of L1 in participant analysis.

$F_1(4, 25) = 3.993$ $p = .01$ $p < .05$

Effect of Animacy

The effect of Animacy is also highly significant in participant analysis.

$F_1(1, 25) = 129.4$ $p < .001$

Interaction between L1 & Animacy

The interaction between L1 and Animacy is also highly significant.

$F_1(4, 25) = 9.701$ $p < .001$

Effect of prototype

There was no significant effect of prototype

$F_1(1, 25) = 1.108$ $p > .05$

Interaction between L1 & prototype

The interaction between L1 and prototype was not significant.

$F(4, 25) = .244$ $p > .05$

Overall, there is significant effect of L1 and animacy and a significant interaction between L1 and animacy. But the effect of prototype was not significant and the interaction between L1 and prototype was also not significant.

Table 1: Results

Descriptive Statistics				
	L1	Mean	Std. Deviation	N
ANIMATE_ PROTOTYPE	1	83.3333	25.81989	6
	2	83.3333	24.57980	6
	3	56.2500	47.26918	6
	4	91.6667	15.13825	6
	5	8.3333	20.41241	6
	Total	64.5833	41.01137	30
ANIMATE_ NON-PROTOTYPE	1	83.3333	40.82483	6
	2	75.0000	30.61862	6
	3	56.2500	44.54632	6
	4	94.5833	8.72019	6
	5	25.0000	41.83300	6
	Total	66.8333	41.48085	30
INANIMATE_ PROTO	1	10.4167	25.51552	6
	2	22.9167	21.53002	6
	3	8.3333	20.41241	6
	4	6.2500	10.45825	6
	5	27.0833	30.01736	6
	Total	15.0000	22.60035	30
INANIMATE_ NONPROTOTYPE	1	8.3333	20.41241	6
	2	8.3333	20.41241	6
	3	.0000	.00000	6
	4	.0000	.00000	6
	5	6.2500	10.45825	6
	Total	4.5833	13.32750	30

7. Conclusion

The results of this research indicate that language background L1 and animacy play a significant role in the production of possessive constructions in English. Note that the following results are for only for the s-genitive constructions. That's why the factor animacy is dominant over other factors. However, the effects of prototype were not significant. The factor of animacy dominated over other factors, as the statistical results were only computed for the s-genitive constructions. The results are in line with the previous studies such as (Bock & Miller, 1991; Collins, 2015; Colomines Roque, 2016; Feist, 2012; Luk & Shirai, 2009; Taylor, 1996). It supports Rosenbach (2008, 2014) results that demonstrate animacy is a major factor in deciding which possessive constructions should be used; whether 's possessive' is valid or 'of possessive' construction is correct in a particular context.

Over all the study provides a value able insight for both language learners and language teachers. It proposes that both language learners and language teachers should consider L1 and animacy as important factors for English language possessive constructions. The teachers should focus on language learner's native language and

animacy while designing activities for teaching English possessive constructions. The learners should also take into account both of these factors while studying English possessive constructions. These findings are useful for future research on language production.

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